

| シリーズ<br>Grade   |   | エンドミル<br>スクエアエンドミル（防振 ネック付き含む）                                                                                                                                                                                        |  | 掲載<br>ページ | 加工<br>条件 |
|-----------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------|----------|
| 防振              | 侍 | 超硬43/46°防振4枚刃スクエアエンドミル 不等リード/不等分割刃先ギャッシュランド採用Champagne Goldコーティング<br>4346MT Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 43/46°Unequal Spacing Teeth                                   |                                                                                   | 1-2       | 53       |
| 防振              | 侍 | 超硬43/45°防振4枚刃スクエアエンドミル 不等リード/不等分割刃先ギャッシュランド採用POWERコーティング<br>4345PT Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 43/45°Unequal Spacing Teeth                                            |                                                                                   | 3-4       | 54       |
| 防振              | 刀 | 超硬43/45°防振4枚刃スクエアエンドミル 不等リード/不等分割刃先ギャッシュランド採用AITiNコーティング<br>4345ST Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 43/45°Unequal Spacing Teeth                                            |                                                                                   | 5-6       | 54       |
| 防振              | 侍 | 超硬35/38°防振4枚刃スクエアエンドミル 不等リード/不等分割刃先ギャッシュランド採用Champagne Goldコーティング<br>3538MT Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 43/46°Unequal Spacing Teeth                                   |                                                                                   | 7         | 55       |
| 防振              | 侍 | 超硬35/38°防振4枚刃スクエアエンドミル 不等リード/不等分割刃先ギャッシュランド採用POWERコーティング<br>3538PT Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 43/45°Unequal Spacing Teeth                                            |                                                                                   | 8         | 55       |
| 防振              | 刀 | 超硬35/38°防振4枚刃スクエアエンドミル 不等リード刃先ギャッシュランド採用AlCrNコーティング<br>3538S Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 35/38°                                                                       |                                                                                   | 9         | 55       |
| 防振              | 侍 | 超硬23/26°防振4枚刃スクエアエンドミル 不等リード/不等分割刃先ギャッシュランド採用Amberコーティング<br>2326MT2 Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 23/26°                                                                |                                                                                   | 10        | 56       |
| 防振<br>ネック       | 侍 | 超硬40/42°防振4枚刃スクエアエンドミル ネック付不等リード/不等分割刃先ギャッシュランド採用Champagne Goldコーティング<br>4042N Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 40/42°Unequal Spacing Teeth With Neck For Rib Processing   |                                                                                   | 11        | 57       |
|                 | 刀 | 超硬35°2枚刃スクエアエンドミル 刃先ギャッシュランド採用AlCrSiNコーティング〔スタンダードエンドミル〕<br>48S2F Series/2 Flutes Square Carbide End Mill                                                                                                             |                                                                                   | 12        | 58       |
|                 | 刀 | 超硬35°4枚刃スクエアエンドミル 刃先ギャッシュランド採用AlCrSiNコーティング〔スタンダードエンドミル〕<br>48S4F Series/4 Flutes Square Carbide End Mill                                                                                                             |                                                                                   | 13        | 59       |
|                 | 刀 | 超硬35°6枚刃スクエアエンドミル 刃先ギャッシュランド採用AlCrSiNコーティング<br>48S6F Series/4 Flutes Square Carbide End Mill                                                                                                                          |                                                                                   | 14        | 60       |
|                 | 刀 | 超硬35°SUS用4枚刃スクエアエンドミル 刃先ギャッシュランド採用TiANコーティング<br>48M4F Series / 4 Flutes Square Carbide End Mill For Stainless Steel                                                                                                   |                                                                                   | 15        | 61       |
|                 | 刀 | 超硬35°高硬度用4枚刃スクエアエンドミル 刃先ギャッシュランド採用TiAlCrSiNコーティング<br>60H4F Sereis/4 Flutes Square Carbide End Mill For Hardened Steel                                                                                                 |                                                                                   | 16        | 62       |
|                 |   | 超硬35°高硬度用4枚刃スクエアエンドミル 刃先ギャッシュランド採用Blue Nanoコーティング<br>65S4F Series/4 Flutes Square Carbide End Mill For Hardened Steel                                                                                                 |                                                                                   | 17        | 62       |
|                 | 侍 | 超硬45°高硬度用6枚刃スクエアエンドミル 刃先ギャッシュランド採用Blue Nano II コーティング<br>65H16F Series/ 6 Flutes Square Carbide End Mill For Hardened Steel                                                                                           |                                                                                   | 18        | 63       |
| 非鉄              |   | 超硬45°アルミ用3枚刃スクエアエンドミル 刃先ギャッシュランド採用ノンコート<br>45AL3F Series/3 Flutes Square Carbide End Mill For Aluminum                                                                                                                |                                                                                   | 19        | 64       |
| 非鉄              | 刀 | 超硬40°アルミ用3枚刃スクエアエンドミル 刃先ギャッシュランド採用ノンコート<br>48AL3F Series/3 Flutes Square Carbide End Mill For Aluminum                                                                                                                |                                                                                   | 20        | 64       |
| 非鉄<br>DLC       | 刀 | 超硬45°アルミ用3枚刃スクエアエンドミル 刃先ギャッシュランド採用DLCコーティング<br>45AL3FDLC1 Series/3 Flutes Square Carbide End Mill with DLC Coating For Aluminum                                                                                       |                                                                                   | 21        | 64       |
| 防振<br>非鉄        | 侍 | 超硬38/40/42°アルミ用3枚刃スクエアエンドミル 不等リード/不等分割刃先ギャッシュランド採用<br>384042AL3F Series/ation 3 Flutes Square Carbide End Mill for Aluminum Variable Helix Leads 38/40/42°Unequal Spacing Teeth                                       |                                                                                   | 22        | -        |
| 防振<br>非鉄<br>DLC | 侍 | 超硬38/40/42°アルミ用3枚刃スクエアエンドミル 不等リード/不等分割刃先ギャッシュランド採用DLCコーティング<br>384042AL3DLC1 Series/Anti-Vibration 3 Flutes Square Carbide End Mill with DLC Coating for Aluminum Variable Helix Leads 38/40/42°Unequal Spacing Teeth |                                                                                   | 23        | -        |
| コーナーエンドミル       |   |                                                                                                                                                                                                                       |                                                                                   |           |          |
| 防振<br>CR        | 侍 | 超硬40/43°防振4枚刃コーナーエンドミル 不等リード/不等分割刃先ギャッシュランド採用Champagne Goldコーティング<br>4043CR4F Series/Anti-Vibration 4 Flutes Coner Radius Carbide End Mill Variable Helix Leads 40/43°Unequal Spacing Teeth                           |                                                                                   | 24        | 53       |
|                 | 刀 | 超硬35°2枚刃コーナーエンドミル 刃先ギャッシュランド採用AlCrSiNコーティング<br>48CR2F Series/2 Flutes Coner Radius Carbide End Mill                                                                                                                   |                                                                                   | 25-26     | 58       |
|                 | 刀 | 超硬35°4枚刃コーナーエンドミル 刃先ギャッシュランド採用AlCrSiNコーティング<br>48CR4F Series/4 Flutes Coner Radius Carbide End Mill                                                                                                                   |                                                                                   | 27-28     | 59       |
| ボールエンドミル        |   |                                                                                                                                                                                                                       |                                                                                   |           |          |
|                 | 刀 | 超硬30°2枚刃ボールエンドミル AlCrSiNコーティング<br>48B2F Series/2 Flutes Ball Nose Carbide End Mill For Steel                                                                                                                          |                                                                                   | 29        | 65       |
|                 | 刀 | 超硬30°4枚刃ボールエンドミル AlCrSiNコーティング<br>48B2F Series/4 Flutes Ball Nose Carbide End Mill For Steel                                                                                                                          |                                                                                   | 30        | 66       |
|                 | 刀 | 超硬30°高硬度用2枚刃ボールエンドミル TiAlCrSiNコーティング<br>60B2F Series/2 Flutes Ball Nose Carbide End Mill for Hardened Steel                                                                                                           |                                                                                   | 31        | 67       |
|                 |   | 超硬30°高硬度用2枚刃ボールエンドミル Blue Nanoコーティング<br>65B2F Series/2 Flutes Ball Nose Carbide End Mill for Hardened Steel                                                                                                           |                                                                                   | 32        | 67       |
| ラフィングエンドミル      |   |                                                                                                                                                                                                                       |                                                                                   |           |          |
| 防振<br>ラフ        | 侍 | 超硬43/45°防振4枚刃ラフィングエンドミル 強ねじれファインカット不等リード/不等分割刃先R付POWERコーティング<br>4345R Series/Anti-Vibration 4 Flutes Carbide Roughing End Mill Variable Helix Leads 43/45° Unequal Spacing Teeth                                      |                                                                                   | 33        | 68       |
| 防振<br>ラフ        | 侍 | 超硬37/38°防振4枚刃ラフィングエンドミル 中ねじれファインカット不等リード/不等分割刃先R付POWERコーティング<br>3738R Series/Anti-Vibration 4 Flutes Carbide Roughing End Mill Variable Helix Leads 37/38° Unequal Spacing Teeth                                      |                                                                                   | 34        | 68       |
| 防振<br>ラフ        | 侍 | 超硬19/21°防振4枚刃ラフィングエンドミル 弱ねじれファインカット不等リード/不等分割刃先R付POWERコーティング<br>1921R Series/Anti-Vibration 4 Flutes Carbide Roughing End Mill Variable Helix Leads 19/21° Unequal Spacing Teeth                                      |                                                                                   | 35        | 68       |
| 防振<br>ラフ        | 侍 | 超硬43/45°防振4枚刃ラフィングエンドミル 強ねじれファインカット不等リード/不等分割刃先R付Champagne Goldコーティング<br>4345RF Series/Anti-Vibration 4 Flutes Carbide Roughing End Mill Variable Helix Leads 43/45° Unequal Spacing Teeth                            |                                                                                   | 36        | 68       |
|                 |   | 超硬35°4枚刃ラフィングエンドミル 刃先ギャッシュランド採用Tixcoコーティング<br>55R4F Series/4 Flutes Roughing Carbide End Mill                                                                                                                         |                                                                                   | 37        | 69       |
| 非鉄              |   | 超硬35°アルミ用3枚刃ラフィングエンドミル 刃先ギャッシュランド採用ノンコート<br>55RAL3F Series/3 Flutes Roughing Carbide End Mill For Aluminum                                                                                                            |                                                                                   | 38        | 70       |
| 非鉄<br>DLC       | 刀 | 超硬35°アルミ用3枚刃ラフィングエンドミル 刃先ギャッシュランド採用DLCコーティング<br>55RAL3FDLC1 Series/3 Flutes Roughing Carbide End Mill For Aluminum                                                                                                    |                                                                                   | 39        | 70       |

|   |                                                                                 |                                                                                   |           |          |
|---|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------|----------|
|   | 超硬ドリル<br>オイルホール無し                                                               |  | 掲載<br>ページ | 加工<br>条件 |
| 刀 | 超硬3Dタイプオイル穴無し2枚刃ドリル<br>2 Flutes Tungsten Carbide Drill 3D Type without Oil Hole |                                                                                   | 41-43     | 71       |
| 刀 | 超硬5Dタイプオイル穴無し2枚刃ドリル<br>2 Flutes Tungsten Carbide Drill 5D Type without Oil Hole |                                                                                   | 44-46     | 71       |
|   | オイルホール有り                                                                        |                                                                                   |           |          |
| 刀 | 超硬3Dタイプオイル穴有り2枚刃ドリル<br>2 Flutes Tungsten Carbide Drill 3D Type with Oil Hole    |                                                                                   | 47-49     | 71       |
| 刀 | 超硬3Dタイプオイル穴有り2枚刃ドリル<br>2 Flutes Tungsten Carbide Drill 3D Type with Oil Hole    |                                                                                   | 50-52     | 71       |

# 超硬43/46°防振4枚刃スクエアエンドミル【侍シリーズ】 不等リード/不等分割刃先ギャッシュランド採用Champagne Goldコーティング

4346MT Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 43/46°Unequal Spacing Teeth

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● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             | ○                                | △                                | ○               | ●                        | ●                                         | ○                 |                 |                                |   |

| 型番                      | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | 刃長D表記   | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|-------------------------|-----------|--------------|-------------------|----------------------|--------------------|---------|--------------------------------------------|-----------------|---------|
| T4346-030MT-010D-50-4F  | 3.0       |              | 4.0               | 3.0                  | 50.0               | 刃長：1D   |                                            | +0/-0.02        | 2,080   |
| T4346-040MT-010D-50-4F  | 4.0       |              | 4.0               | 4.0                  | 50.0               | 刃長：1D   |                                            | +0/-0.02        | 2,080   |
| T4346-050MT-010D-50-4F  | 5.0       |              | 6.0               | 5.0                  | 50.0               | 刃長：1D   |                                            | +0/-0.02        | 2,930   |
| T4346-060MT-010D-50-4F  | 6.0       |              | 6.0               | 6.0                  | 50.0               | 刃長：1D   |                                            | +0/-0.02        | 2,930   |
| T4346-080MT-010D-60-4F  | 8.0       |              | 8.0               | 8.0                  | 60.0               | 刃長：1D   |                                            | +0/-0.02        | 5,090   |
| T4346-100MT-010D-75-4F  | 10.0      |              | 10.0              | 10.0                 | 75.0               | 刃長：1D   |                                            | +0/-0.02        | 7,000   |
| T4346-010MT-015D-50-4F  | 1.0       |              | 4.0               | 1.5                  | 50.0               | 刃長：1.5D |                                            | +0/-0.02        | 2,080   |
| T4346-015MT-015D-50-4F  | 1.5       |              | 4.0               | 2.3                  | 50.0               | 刃長：1.5D |                                            | +0/-0.02        | 2,080   |
| T4346-020MT-015D-50-4F  | 2.0       |              | 4.0               | 3.0                  | 50.0               | 刃長：1.5D |                                            | +0/-0.02        | 2,080   |
| T4346-025MT-015D-50-4F  | 2.5       |              | 4.0               | 3.8                  | 50.0               | 刃長：1.5D |                                            | +0/-0.02        | 2,080   |
| T4346-030MT-015D-50-4F  | 3.0       |              | 6.0               | 4.5                  | 50.0               | 刃長：1.5D |                                            | +0/-0.02        | 2,930   |
| T4346-040MT-015D-50-4F  | 4.0       |              | 6.0               | 6.0                  | 50.0               | 刃長：1.5D |                                            | +0/-0.02        | 2,930   |
| T4346-050MT-015D-50-4F  | 5.0       |              | 6.0               | 7.5                  | 50.0               | 刃長：1.5D |                                            | +0/-0.02        | 2,930   |
| T4346-060MT-015D-50-4F  | 6.0       |              | 6.0               | 9.0                  | 50.0               | 刃長：1.5D |                                            | +0/-0.02        | 2,930   |
| T4346-080MT-015D-60-4F  | 8.0       |              | 8.0               | 12.0                 | 60.0               | 刃長：1.5D |                                            | +0/-0.02        | 5,090   |
| T4346-100MT-015D-75-4F  | 10.0      |              | 10.0              | 15.0                 | 75.0               | 刃長：1.5D |                                            | +0/-0.02        | 7,000   |
| T4346-120MT-015D-75-4F  | 12.0      |              | 12.0              | 18.0                 | 75.0               | 刃長：1.5D |                                            | +0/-0.02        | 10,000  |
| T4346-160MT-015D-100-4F | 16.0      |              | 16.0              | 24.0                 | 100.0              | 刃長：1.5D |                                            | +0/-0.03        | 20,610  |
| T4346-200MT-015D-100-4F | 20.0      |              | 20.0              | 30.0                 | 100.0              | 刃長：1.5D |                                            | +0/-0.03        | 36,360  |
| T4346-010MT-020D-50-4F  | 1.0       |              | 4.0               | 2.0                  | 50.0               | 刃長：2D   |                                            | +0/-0.02        | 2,080   |
| T4346-015MT-020D-50-4F  | 1.5       |              | 4.0               | 3.0                  | 50.0               | 刃長：2D   |                                            | +0/-0.02        | 2,080   |
| T4346-020MT-020D-50-4F  | 2.0       |              | 4.0               | 4.0                  | 50.0               | 刃長：2D   |                                            | +0/-0.02        | 2,080   |
| T4346-025MT-020D-50-4F  | 2.5       |              | 4.0               | 5.0                  | 50.0               | 刃長：2D   |                                            | +0/-0.02        | 2,080   |
| T4346-030MT-020D-50-4F  | 3.0       |              | 6.0               | 6.0                  | 50.0               | 刃長：2D   |                                            | +0/-0.02        | 2,930   |
| T4346-035MT-020D-50-4F  | 3.5       |              | 6.0               | 7.0                  | 50.0               | 刃長：2D   |                                            | +0/-0.02        | 2,930   |
| T4346-040MT-020D-50-4F  | 4.0       |              | 6.0               | 8.0                  | 50.0               | 刃長：2D   |                                            | +0/-0.02        | 2,930   |
| T4346-050MT-020D-50-4F  | 5.0       |              | 6.0               | 10.0                 | 50.0               | 刃長：2D   |                                            | +0/-0.02        | 2,930   |
| T4346-060MT-020D-50-4F  | 6.0       |              | 6.0               | 12.0                 | 50.0               | 刃長：2D   |                                            | +0/-0.02        | 2,930   |
| T4346-080MT-020D-60-4F  | 8.0       |              | 8.0               | 16.0                 | 60.0               | 刃長：2D   |                                            | +0/-0.02        | 4,770   |
| T4346-100MT-020D-75-4F  | 10.0      |              | 10.0              | 20.0                 | 75.0               | 刃長：2D   |                                            | +0/-0.02        | 6,470   |
| T4346-120MT-020D-75-4F  | 12.0      |              | 12.0              | 24.0                 | 75.0               | 刃長：2D   |                                            | +0/-0.02        | 9,050   |
| T4346-160MT-020D-100-4F | 16.0      |              | 16.0              | 32.0                 | 100.0              | 刃長：2D   |                                            | +0/-0.03        | 20,910  |
| T4346-200MT-020D-100-4F | 20.0      |              | 20.0              | 40.0                 | 100.0              | 刃長：2D   |                                            | +0/-0.03        | 36,360  |
| T4346-010MT-025D-50-4F  | 1.0       |              | 4.0               | 2.5                  | 50.0               | 刃長：2.5D |                                            | +0/-0.02        | 2,080   |
| T4346-015MT-025D-50-4F  | 1.5       |              | 4.0               | 4.0                  | 50.0               | 刃長：2.5D |                                            | +0/-0.02        | 2,080   |
| T4346-020MT-025D-50-4F  | 2.0       |              | 4.0               | 5.0                  | 50.0               | 刃長：2.5D |                                            | +0/-0.02        | 2,080   |
| T4346-025MT-025D-50-4F  | 2.5       |              | 4.0               | 6.0                  | 50.0               | 刃長：2.5D |                                            | +0/-0.02        | 2,080   |
| T4346-030MT-025D-50-4F  | 3.0       |              | 6.0               | 8.0                  | 50.0               | 刃長：2.5D |                                            | +0/-0.02        | 2,930   |
| T4346-035MT-025D-50-4F  | 3.5       |              | 6.0               | 9.0                  | 50.0               | 刃長：2.5D |                                            | +0/-0.02        | 2,930   |
| T4346-040MT-025D-50-4F  | 4.0       |              | 6.0               | 10.0                 | 50.0               | 刃長：2.5D |                                            | +0/-0.02        | 2,930   |
| T4346-050MT-025D-50-4F  | 5.0       |              | 6.0               | 13.0                 | 50.0               | 刃長：2.5D |                                            | +0/-0.02        | 2,930   |
| T4346-060MT-025D-50-4F  | 6.0       |              | 6.0               | 15.0                 | 50.0               | 刃長：2.5D |                                            | +0/-0.02        | 2,930   |
| T4346-080MT-025D-60-4F  | 8.0       |              | 8.0               | 20.0                 | 60.0               | 刃長：2.5D |                                            | +0/-0.02        | 4,770   |
| T4346-100MT-025D-75-4F  | 10.0      |              | 10.0              | 25.0                 | 75.0               | 刃長：2.5D |                                            | +0/-0.02        | 7,000   |
| T4346-120MT-025D-75-4F  | 12.0      |              | 12.0              | 30.0                 | 75.0               | 刃長：2.5D |                                            | +0/-0.02        | 10,000  |
| T4346-160MT-025D-100-4F | 16.0      |              | 16.0              | 40.0                 | 100.0              | 刃長：2.5D |                                            | +0/-0.03        | 20,610  |
| T4346-200MT-025D-100-4F | 20.0      |              | 20.0              | 50.0                 | 100.0              | 刃長：2.5D |                                            | +0/-0.03        | 36,360  |
| T4346-010MT-030D-50-4F  | 1.0       |              | 4.0               | 3.0                  | 50.0               | 刃長：3D   |                                            | +0/-0.02        | 2,080   |
| T4346-015MT-030D-50-4F  | 1.5       |              | 4.0               | 4.5                  | 50.0               | 刃長：3D   |                                            | +0/-0.02        | 2,080   |
| T4346-020MT-030D-50-4F  | 2.0       |              | 4.0               | 6.0                  | 50.0               | 刃長：3D   |                                            | +0/-0.02        | 2,080   |



# 超硬43/46°防振4枚刃スクエアエンドミル【侍シリーズ】

## 不等リード/不等分割刃先ギャッシュランド採用Champagne Goldコーティング

GO TO THE ONLINE STORE!

4346MT Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 43/46°Unequal Spacing Teeth

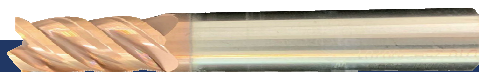


● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| 材料 | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨 | ●                               | ●                             | ○                                | △                                | ○               | ●                        | ●                                         | ○                 |                 |                                |   |

| 型番                      | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | 刃長D表記 | ネック長<br>(刃長含む)<br>Neck+Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|-------------------------|-----------|--------------|-------------------|----------------------|--------------------|-------|------------------------------------------|-----------------|---------|
| T4346-025MT-030D-50-4F  | 2.5       |              | 4.0               | 7.5                  | 50.0               | 刃長：3D |                                          | +0/-0.02        | 2,080   |
| T4346-030MT-030D-50-4F  | 3.0       |              | 6.0               | 9.0                  | 50.0               | 刃長：3D |                                          | +0/-0.02        | 2,930   |
| T4346-035MT-030D-50-4F  | 3.5       |              | 6.0               | 10.5                 | 50.0               | 刃長：3D |                                          | +0/-0.02        | 2,930   |
| T4346-040MT-030D-50-4F  | 4.0       |              | 6.0               | 12.0                 | 50.0               | 刃長：3D |                                          | +0/-0.02        | 2,930   |
| T4346-040MT-030D-75-4F  | 4.0       |              | 6.0               | 12.0                 | 75.0               | 刃長：3D |                                          | +0/-0.02        | 4,090   |
| T4346-040MT-030D-100-4F | 4.0       |              | 6.0               | 12.0                 | 100.0              | 刃長：3D |                                          | +0/-0.02        | 5,000   |
| T4346-050MT-030D-50-4F  | 5.0       |              | 6.0               | 15.0                 | 50.0               | 刃長：3D |                                          | +0/-0.02        | 2,930   |
| T4346-050MT-030D-75-4F  | 5.0       |              | 6.0               | 15.0                 | 75.0               | 刃長：3D |                                          | +0/-0.02        | 4,090   |
| T4346-050MT-030D-100-4F | 5.0       |              | 6.0               | 15.0                 | 100.0              | 刃長：3D |                                          | +0/-0.02        | 5,000   |
| T4346-060MT-030D-50-4F  | 6.0       |              | 6.0               | 18.0                 | 50.0               | 刃長：3D |                                          | +0/-0.02        | 2,930   |
| T4346-060MT-030D-75-4F  | 6.0       |              | 6.0               | 18.0                 | 75.0               | 刃長：3D |                                          | +0/-0.02        | 4,090   |
| T4346-060MT-030D-100-4F | 6.0       |              | 6.0               | 18.0                 | 100.0              | 刃長：3D |                                          | +0/-0.02        | 5,000   |
| T4346-080MT-030D-60-4F  | 8.0       |              | 8.0               | 24.0                 | 60.0               | 刃長：3D |                                          | +0/-0.02        | 5,130   |
| T4346-080MT-030D-75-4F  | 8.0       |              | 8.0               | 24.0                 | 75.0               | 刃長：3D |                                          | +0/-0.02        | 6,360   |
| T4346-080MT-030D-100-4F | 8.0       |              | 8.0               | 24.0                 | 100.0              | 刃長：3D |                                          | +0/-0.02        | 7,420   |
| T4346-100MT-030D-75-4F  | 10.0      |              | 10.0              | 30.0                 | 75.0               | 刃長：3D |                                          | +0/-0.02        | 7,000   |
| T4346-100MT-030D-100-4F | 10.0      |              | 10.0              | 30.0                 | 100.0              | 刃長：3D |                                          | +0/-0.02        | 10,450  |
| T4346-100MT-030D-150-4F | 10.0      |              | 10.0              | 30.0                 | 150.0              | 刃長：3D |                                          | +0/-0.02        | 14,240  |
| T4346-120MT-030D-75-4F  | 12.0      |              | 12.0              | 36.0                 | 75.0               | 刃長：3D |                                          | +0/-0.02        | 10,000  |
| T4346-120MT-030D-100-4F | 12.0      |              | 12.0              | 36.0                 | 100.0              | 刃長：3D |                                          | +0/-0.02        | 14,090  |
| T4346-120MT-030D-150-4F | 12.0      |              | 12.0              | 36.0                 | 150.0              | 刃長：3D |                                          | +0/-0.02        | 19,100  |
| T4346-160MT-030D-100-4F | 16.0      |              | 16.0              | 48.0                 | 100.0              | 刃長：3D |                                          | +0/-0.03        | 20,610  |
| T4346-160MT-030D-150-4F | 16.0      |              | 16.0              | 48.0                 | 150.0              | 刃長：3D |                                          | +0/-0.03        | 33,330  |
| T4346-200MT-030D-150-4F | 20.0      |              | 20.0              | 60.0                 | 150.0              | 刃長：3D |                                          | +0/-0.03        | 50,000  |
| T4346-010MT-040D-50-4F  | 1.0       |              | 4.0               | 4.0                  | 50.0               | 刃長：4D |                                          | +0/-0.02        | 2,480   |
| T4346-015MT-040D-50-4F  | 1.5       |              | 4.0               | 6.0                  | 50.0               | 刃長：4D |                                          | +0/-0.02        | 2,480   |
| T4346-020MT-040D-50-4F  | 2.0       |              | 4.0               | 8.0                  | 50.0               | 刃長：4D |                                          | +0/-0.02        | 2,480   |
| T4346-025MT-040D-50-4F  | 2.5       |              | 4.0               | 10.0                 | 50.0               | 刃長：4D |                                          | +0/-0.02        | 2,480   |
| T4346-030MT-040D-50-4F  | 3.0       |              | 6.0               | 12.0                 | 50.0               | 刃長：4D |                                          | +0/-0.02        | 3,390   |
| T4346-040MT-040D-50-4F  | 4.0       |              | 6.0               | 16.0                 | 50.0               | 刃長：4D |                                          | +0/-0.02        | 3,500   |
| T4346-050MT-040D-50-4F  | 5.0       |              | 6.0               | 20.0                 | 50.0               | 刃長：4D |                                          | +0/-0.02        | 4,010   |
| T4346-060MT-040D-50-4F  | 6.0       |              | 6.0               | 24.0                 | 50.0               | 刃長：4D |                                          | +0/-0.02        | 4,170   |
| T4346-080MT-040D-75-4F  | 8.0       |              | 8.0               | 32.0                 | 75.0               | 刃長：4D |                                          | +0/-0.02        | 7,500   |
| T4346-100MT-040D-100-4F | 10.0      |              | 10.0              | 40.0                 | 100.0              | 刃長：4D |                                          | +0/-0.02        | 10,930  |
| T4346-120MT-040D-100-4F | 12.0      |              | 12.0              | 48.0                 | 100.0              | 刃長：4D |                                          | +0/-0.02        | 14,670  |
| T4346-160MT-040D-150-4F | 16.0      |              | 16.0              | 64.0                 | 150.0              | 刃長：4D |                                          | +0/-0.03        | 38,970  |
| T4346-200MT-040D-200-4F | 20.0      |              | 20.0              | 80.0                 | 200.0              | 刃長：4D |                                          | +0/-0.03        | 69,120  |
| T4346-010MT-050D-50-4F  | 1.0       |              | 4.0               | 5.0                  | 50.0               | 刃長：5D |                                          | +0/-0.02        | 3,100   |
| T4346-015MT-050D-50-4F  | 1.5       |              | 4.0               | 7.5                  | 50.0               | 刃長：5D |                                          | +0/-0.02        | 3,100   |
| T4346-020MT-050D-50-4F  | 2.0       |              | 4.0               | 10.0                 | 50.0               | 刃長：5D |                                          | +0/-0.02        | 3,100   |
| T4346-025MT-050D-50-4F  | 2.5       |              | 4.0               | 12.5                 | 50.0               | 刃長：5D |                                          | +0/-0.02        | 3,100   |
| T4346-030MT-050D-50-4F  | 3.0       |              | 6.0               | 15.0                 | 50.0               | 刃長：5D |                                          | +0/-0.02        | 3,830   |
| T4346-040MT-050D-50-4F  | 4.0       |              | 6.0               | 20.0                 | 50.0               | 刃長：5D |                                          | +0/-0.02        | 4,010   |
| T4346-050MT-050D-50-4F  | 5.0       |              | 6.0               | 25.0                 | 50.0               | 刃長：5D |                                          | +0/-0.02        | 4,170   |
| T4346-060MT-050D-75-4F  | 6.0       |              | 6.0               | 30.0                 | 75.0               | 刃長：5D |                                          | +0/-0.02        | 5,160   |
| T4346-080MT-050D-100-4F | 8.0       |              | 8.0               | 40.0                 | 100.0              | 刃長：5D |                                          | +0/-0.02        | 9,110   |
| T4346-100MT-050D-100-4F | 10.0      |              | 10.0              | 50.0                 | 100.0              | 刃長：5D |                                          | +0/-0.02        | 11,840  |
| T4346-120MT-050D-120-4F | 12.0      |              | 12.0              | 60.0                 | 120.0              | 刃長：5D |                                          | +0/-0.02        | 16,380  |
| T4346-160MT-050D-200-4F | 16.0      |              | 16.0              | 80.0                 | 200.0              | 刃長：5D |                                          | +0/-0.03        | 49,450  |
| T4346-200MT-050D-200-4F | 20.0      |              | 20.0              | 100.0                | 200.0              | 刃長：5D |                                          | +0/-0.03        | 72,340  |

# 超硬43/45°防振4枚刃スクエアエンドミル【侍シリーズ】 不等リード/不等分割刃先ギャッシュランド採用POWERコーティング



4345PT Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 43/45°Unequal Spacing Teeth

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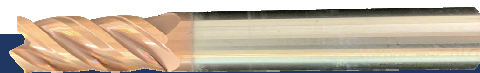


● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             | ● < 60                           | ●                                | ●               | ○                        | ○                                         |                   |                 |                                |   |

| 型番                       | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | 刃長D表記 | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|--------------------------|-----------|--------------|-------------------|----------------------|--------------------|-------|--------------------------------------------|-----------------|---------|
| T4345-010PTW-025D-50-4F  | 1         |              | 4                 | 2.5                  | 50                 |       |                                            | +0/-0.02        | 1,540   |
| T4345-020PTW-025D-50-4F  | 2         |              | 4                 | 5                    | 50                 |       |                                            | +0/-0.02        | 1,540   |
| T4345-030PTW-025D-50-4F  | 3         |              | 4                 | 8                    | 50                 |       |                                            | +0/-0.02        | 1,540   |
| T4345-040PTW-025D-50-4F  | 4         |              | 4                 | 10                   | 50                 |       |                                            | +0/-0.02        | 1,540   |
| T4345-050PTW-025D-50-4F  | 5         |              | 6                 | 13                   | 50                 |       |                                            | +0/-0.02        | 2,160   |
| T4345-060PTW-025D-50-4F  | 6         |              | 6                 | 15                   | 50                 |       |                                            | +0/-0.02        | 2,160   |
| T4345-080PTW-025D-60-4F  | 8         |              | 8                 | 20                   | 60                 |       |                                            | +0/-0.02        | 4,300   |
| T4345-080PTC-025D-60-4F  | 8         | 0.14C        | 8                 | 20                   | 60                 |       |                                            | +0/-0.02        | 4,300   |
| T4345-100PTW-025D-75-4F  | 10        |              | 10                | 25                   | 75                 |       |                                            | +0/-0.02        | 6,550   |
| T4345-100PTC-025D-75-4F  | 10        | 0.16C        | 10                | 25                   | 75                 |       |                                            | +0/-0.02        | 6,550   |
| T4345-120PTW-025D-75-4F  | 12        |              | 12                | 30                   | 75                 |       |                                            | +0/-0.02        | 8,590   |
| T4345-120PTC-025D-75-4F  | 12        | 0.2C         | 12                | 30                   | 75                 |       |                                            | +0/-0.02        | 8,590   |
| T4345-030PTW-030D-50-4F  | 3         |              | 4                 | 9                    | 50                 |       |                                            | +0/-0.02        | 1,540   |
| T4345-040PTW-030D-50-4F  | 4         |              | 4                 | 12                   | 50                 |       |                                            | +0/-0.02        | 1,540   |
| T4345-040PTW-030D-75-4F  | 4         |              | 4                 | 12                   | 75                 |       |                                            | +0/-0.02        | 2,260   |
| T4345-040PTW-030D-100-4F | 4         |              | 4                 | 12                   | 100                |       |                                            | +0/-0.02        | 2,870   |
| T4345-050PTW-030D-50-4F  | 5         |              | 6                 | 15                   | 50                 |       |                                            | +0/-0.02        | 2,160   |
| T4345-050PTW-030D-75-4F  | 5         |              | 6                 | 15                   | 75                 |       |                                            | +0/-0.02        | 3,070   |
| T4345-050PTW-030D-100-4F | 5         |              | 6                 | 15                   | 100                |       |                                            | +0/-0.02        | 4,000   |
| T4345-060PTW-030D-50-4F  | 6         |              | 6                 | 18                   | 50                 |       |                                            | +0/-0.02        | 2,160   |
| T4345-060PTW-030D-75-4F  | 6         |              | 6                 | 18                   | 75                 |       |                                            | +0/-0.02        | 3,070   |
| T4345-060PTW-030D-100-4F | 6         |              | 6                 | 18                   | 100                |       |                                            | +0/-0.02        | 4,000   |
| T4345-080PTW-030D-60-4F  | 8         |              | 8                 | 24                   | 60                 |       |                                            | +0/-0.02        | 4,300   |
| T4345-080PTC-030D-60-4F  | 8         | 0.14C        | 8                 | 24                   | 60                 |       |                                            | +0/-0.02        | 4,300   |
| T4345-080PTW-030D-75-4F  | 8         |              | 8                 | 24                   | 75                 |       |                                            | +0/-0.02        | 5,330   |
| T4345-080PTC-030D-75-4F  | 8         | 0.14C        | 8                 | 24                   | 75                 |       |                                            | +0/-0.02        | 5,330   |
| T4345-080PTW-030D-100-4F | 8         |              | 8                 | 24                   | 100                |       |                                            | +0/-0.02        | 6,761   |
| T4345-080PTC-030D-100-4F | 8         | 0.14C        | 8                 | 24                   | 100                |       |                                            | +0/-0.02        | 6,761   |
| T4345-100PTW-030D-75-4F  | 10        |              | 10                | 30                   | 75                 |       |                                            | +0/-0.02        | 6,550   |
| T4345-100PTC-030D-75-4F  | 10        | 0.16C        | 10                | 30                   | 75                 |       |                                            | +0/-0.02        | 6,550   |
| T4345-100PTW-030D-100-4F | 10        |              | 10                | 30                   | 100                |       |                                            | +0/-0.02        | 9,010   |
| T4345-100PTC-030D-100-4F | 10        | 0.16C        | 10                | 30                   | 100                |       |                                            | +0/-0.02        | 9,010   |
| T4345-100PTW-030D-150-4F | 10        |              | 10                | 30                   | 150                |       |                                            | +0/-0.02        | 13,920  |
| T4345-100PTC-030D-150-4F | 10        | 0.16C        | 10                | 30                   | 150                |       |                                            | +0/-0.02        | 13,920  |
| T4345-120PTW-030D-75-4F  | 12        |              | 12                | 36                   | 75                 |       |                                            | +0/-0.02        | 8,600   |
| T4345-120PTC-030D-75-4F  | 12        | 0.2C         | 12                | 36                   | 75                 |       |                                            | +0/-0.02        | 8,600   |
| T4345-120PTW-030D-100-4F | 12        |              | 12                | 36                   | 100                |       |                                            | +0/-0.02        | 11,870  |
| T4345-120PTC-030D-100-4F | 12        | 0.2C         | 12                | 36                   | 100                |       |                                            | +0/-0.02        | 11,870  |
| T4345-120PTW-030D-150-4F | 12        |              | 12                | 36                   | 150                |       |                                            | +0/-0.02        | 17,200  |
| T4345-120PTC-030D-150-4F | 12        | 0.2C         | 12                | 36                   | 150                |       |                                            | +0/-0.02        | 17,200  |
| T4345-160PTC-030D-100-4F | 16        | 0.25C        | 16                | 48                   | 100                |       |                                            | +0/-0.03        | 20,470  |
| T4345-160PTC-030D-150-4F | 16        | 0.25C        | 16                | 48                   | 150                |       |                                            | +0/-0.03        | 32,750  |
| T4345-200PTC-030D-150-4F | 20        | 0.3C         | 20                | 60                   | 150                |       |                                            | +0/-0.03        | 47,080  |

# 超硬43/45°防振4枚刃スクエアエンドミル【侍シリーズ】 不等リード/不等分割刃先ギャッシュランド採用POWERコーティング



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4345PT Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 43/45°Unequal Spacing Teeth

● 第一推奨/First recommendation ○第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             | ● < 60                           | ●                                | ●               | ○                        | ○                                         |                   |                 |                                |   |

| 型番                       | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | 刃長D表記 | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|--------------------------|-----------|--------------|-------------------|----------------------|--------------------|-------|--------------------------------------------|-----------------|---------|
| T4345-010PTW-040D-50-4F  | 1         |              | 4                 | 4                    | 50                 |       |                                            | +0/-0.02        | 2,160   |
| T4345-015PTW-040D-50-4F  | 2         |              | 4                 | 6                    | 50                 |       |                                            | +0/-0.02        | 2,160   |
| T4345-020PTW-040D-50-4F  | 2         |              | 4                 | 8                    | 50                 |       |                                            | +0/-0.02        | 2,160   |
| T4345-025PTW-040D-50-4F  | 3         |              | 4                 | 10                   | 50                 |       |                                            | +0/-0.02        | 2,160   |
| T4345-030PTW-040D-75-4F  | 3         |              | 6                 | 12                   | 75                 |       |                                            | +0/-0.02        | 3,180   |
| T4345-040PTW-040D-75-4F  | 4         |              | 6                 | 16                   | 75                 |       |                                            | +0/-0.02        | 3,180   |
| T4345-050PTW-040D-75-4F  | 5         |              | 6                 | 20                   | 75                 |       |                                            | +0/-0.02        | 3,180   |
| T4345-060PTW-040D-75-4F  | 6         |              | 6                 | 24                   | 75                 |       |                                            | +0/-0.02        | 3,180   |
| T4345-080PTW-040D-100-4F | 8         |              | 8                 | 32                   | 100                |       |                                            | +0/-0.02        | 6,670   |
| T4345-080PTC-040D-100-4F | 8         | 0.14C        | 8                 | 32                   | 100                |       |                                            | +0/-0.02        | 6,670   |
| T4345-100PTW-040D-100-4F | 10        |              | 10                | 40                   | 100                |       |                                            | +0/-0.02        | 9,850   |
| T4345-100PTC-040D-100-4F | 10        | 0.16C        | 10                | 40                   | 100                |       |                                            | +0/-0.02        | 9,850   |
| T4345-120PTW-040D-100-4F | 12        |              | 12                | 48                   | 100                |       |                                            | +0/-0.02        | 13,180  |
| T4345-120PTC-040D-100-4F | 12        | 0.2C         | 12                | 48                   | 100                |       |                                            | +0/-0.02        | 13,180  |

# 超硬43/45°防振4枚刃スクエアエンドミル【刀シリーズ】 不等リード/不等分割刃先ギャッシュランド採用AlTiNコーティング



GO TO THE ONLINE STORE!

4345ST Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 43/45°Unequal Spacing Teeth



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             | ○                                |                                  | ●               | △                        |                                           | ●                 |                 |                                |   |

| 型番                       | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | 刃長D表記 | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|--------------------------|-----------|--------------|-------------------|----------------------|--------------------|-------|--------------------------------------------|-----------------|---------|
| T4345-010STW-025D-50-4F  | 1         |              | 4                 | 2.5                  | 50                 |       |                                            | +0/-0.02        | 1,540   |
| T4345-020STW-025D-50-4F  | 2         |              | 4                 | 5                    | 50                 |       |                                            | +0/-0.02        | 1,540   |
| T4345-030STW-025D-50-4F  | 3         |              | 4                 | 8                    | 50                 |       |                                            | +0/-0.02        | 1,540   |
| T4345-040STW-025D-50-4F  | 4         |              | 4                 | 10                   | 50                 |       |                                            | +0/-0.02        | 1,540   |
| T4345-050STW-025D-50-4F  | 5         |              | 6                 | 13                   | 50                 |       |                                            | +0/-0.02        | 2,160   |
| T4345-060STW-025D-50-4F  | 6         |              | 6                 | 15                   | 50                 |       |                                            | +0/-0.02        | 2,160   |
| T4345-080STW-025D-60-4F  | 8         |              | 8                 | 20                   | 60                 |       |                                            | +0/-0.02        | 4,300   |
| T4345-080STC-025D-60-4F  | 8         | 0.14C        | 8                 | 20                   | 60                 |       |                                            | +0/-0.02        | 4,300   |
| T4345-100STW-025D-75-4F  | 10        |              | 10                | 25                   | 75                 |       |                                            | +0/-0.02        | 6,550   |
| T4345-100STC-025D-75-4F  | 10        | 0.16C        | 10                | 25                   | 75                 |       |                                            | +0/-0.02        | 6,550   |
| T4345-120STW-025D-75-4F  | 12        |              | 12                | 30                   | 75                 |       |                                            | +0/-0.02        | 8,590   |
| T4345-120STC-025D-75-4F  | 12        | 0.2C         | 12                | 30                   | 75                 |       |                                            | +0/-0.02        | 8,590   |
| T4345-030STW-030D-50-4F  | 3         |              | 4                 | 9                    | 50                 |       |                                            | +0/-0.02        | 1,540   |
| T4345-040STW-030D-50-4F  | 4         |              | 4                 | 12                   | 50                 |       |                                            | +0/-0.02        | 1,540   |
| T4345-040STW-030D-75-4F  | 4         |              | 4                 | 12                   | 75                 |       |                                            | +0/-0.02        | 2,260   |
| T4345-040STW-030D-100-4F | 4         |              | 4                 | 12                   | 100                |       |                                            | +0/-0.02        | 2,870   |
| T4345-050STW-030D-50-4F  | 5         |              | 6                 | 15                   | 50                 |       |                                            | +0/-0.02        | 2,160   |
| T4345-050STW-030D-75-4F  | 5         |              | 6                 | 15                   | 75                 |       |                                            | +0/-0.02        | 3,070   |
| T4345-050STW-030D-100-4F | 5         |              | 6                 | 15                   | 100                |       |                                            | +0/-0.02        | 4,000   |
| T4345-060STW-030D-50-4F  | 6         |              | 6                 | 18                   | 50                 |       |                                            | +0/-0.02        | 2,160   |
| T4345-060STW-030D-75-4F  | 6         |              | 6                 | 18                   | 75                 |       |                                            | +0/-0.02        | 3,070   |
| T4345-060STW-030D-100-4F | 6         |              | 6                 | 18                   | 100                |       |                                            | +0/-0.02        | 4,000   |
| T4345-080STW-030D-60-4F  | 8         |              | 8                 | 24                   | 60                 |       |                                            | +0/-0.02        | 4,300   |
| T4345-080STC-030D-60-4F  | 8         | 0.14C        | 8                 | 24                   | 60                 |       |                                            | +0/-0.02        | 4,300   |
| T4345-080STW-030D-75-4F  | 8         |              | 8                 | 24                   | 75                 |       |                                            | +0/-0.02        | 5,330   |
| T4345-080STC-030D-75-4F  | 8         | 0.14C        | 8                 | 24                   | 75                 |       |                                            | +0/-0.02        | 5,330   |
| T4345-080STW-030D-100-4F | 8         |              | 8                 | 24                   | 100                |       |                                            | +0/-0.02        | 6,761   |
| T4345-080STC-030D-100-4F | 8         | 0.14C        | 8                 | 24                   | 100                |       |                                            | +0/-0.02        | 6,761   |
| T4345-100STW-030D-75-4F  | 10        |              | 10                | 30                   | 75                 |       |                                            | +0/-0.02        | 6,550   |
| T4345-100STC-030D-75-4F  | 10        | 0.16C        | 10                | 30                   | 75                 |       |                                            | +0/-0.02        | 6,550   |
| T4345-100STW-030D-100-4F | 10        |              | 10                | 30                   | 100                |       |                                            | +0/-0.02        | 9,010   |
| T4345-100STC-030D-100-4F | 10        | 0.16C        | 10                | 30                   | 100                |       |                                            | +0/-0.02        | 9,010   |
| T4345-100STW-030D-150-4F | 10        |              | 10                | 30                   | 150                |       |                                            | +0/-0.02        | 13,920  |
| T4345-100STC-030D-150-4F | 10        | 0.16C        | 10                | 30                   | 150                |       |                                            | +0/-0.02        | 13,920  |
| T4345-120STW-030D-75-4F  | 12        |              | 12                | 36                   | 75                 |       |                                            | +0/-0.02        | 8,600   |
| T4345-120STC-030D-75-4F  | 12        | 0.2C         | 12                | 36                   | 75                 |       |                                            | +0/-0.02        | 8,600   |
| T4345-120STW-030D-100-4F | 12        |              | 12                | 36                   | 100                |       |                                            | +0/-0.02        | 11,870  |
| T4345-120STC-030D-100-4F | 12        | 0.2C         | 12                | 36                   | 100                |       |                                            | +0/-0.02        | 11,870  |
| T4345-120STW-030D-150-4F | 12        |              | 12                | 36                   | 150                |       |                                            | +0/-0.02        | 17,200  |
| T4345-120STC-030D-150-4F | 12        | 0.2C         | 12                | 36                   | 150                |       |                                            | +0/-0.02        | 17,200  |
| T4345-160STC-030D-100-4F | 16        | 0.25C        | 16                | 48                   | 100                |       |                                            | +0/-0.03        | 20,470  |
| T4345-160STC-030D-150-4F | 16        | 0.25C        | 16                | 48                   | 150                |       |                                            | +0/-0.03        | 32,750  |
| T4345-200STC-030D-150-4F | 20        | 0.3C         | 20                | 60                   | 150                |       |                                            | +0/-0.03        | 47,080  |



# 超硬43/45°防振4枚刃スクエアエンドミル【刀シリーズ】 不等リード/不等分割刃先ギャッシュランド採用AlTiNコーティング

GO TO THE ONLINE STORE!

4345ST Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 43/45°Unequal Spacing Teeth



● 第一推奨/First recommendation ○第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             | ○                                |                                  | ●               | △                        |                                           | ●                 |                 |                                |   |

| 型番                       | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | 刃長D表記 | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|--------------------------|-----------|--------------|-------------------|----------------------|--------------------|-------|--------------------------------------------|-----------------|---------|
| T4345-010STW-040D-50-4F  | 1         |              | 4                 | 4                    | 50                 |       |                                            | +0/-0.02        | 2,160   |
| T4345-015STW-040D-50-4F  | 2         |              | 4                 | 6                    | 50                 |       |                                            | +0/-0.02        | 2,160   |
| T4345-020STW-040D-50-4F  | 2         |              | 4                 | 8                    | 50                 |       |                                            | +0/-0.02        | 2,160   |
| T4345-025STW-040D-50-4F  | 3         |              | 4                 | 10                   | 50                 |       |                                            | +0/-0.02        | 2,160   |
| T4345-030STW-040D-75-4F  | 3         |              | 6                 | 12                   | 75                 |       |                                            | +0/-0.02        | 3,180   |
| T4345-040STW-040D-75-4F  | 4         |              | 6                 | 16                   | 75                 |       |                                            | +0/-0.02        | 3,180   |
| T4345-050STW-040D-75-4F  | 5         |              | 6                 | 20                   | 75                 |       |                                            | +0/-0.02        | 3,180   |
| T4345-060STW-040D-75-4F  | 6         |              | 6                 | 24                   | 75                 |       |                                            | +0/-0.02        | 3,180   |
| T4345-080STW-040D-100-4F | 8         |              | 8                 | 32                   | 100                |       |                                            | +0/-0.02        | 6,670   |
| T4345-080STC-040D-100-4F | 8         | 0.14C        | 8                 | 32                   | 100                |       |                                            | +0/-0.02        | 6,670   |
| T4345-100STW-040D-100-4F | 10        |              | 10                | 40                   | 100                |       |                                            | +0/-0.02        | 9,850   |
| T4345-100STC-040D-100-4F | 10        | 0.16C        | 10                | 40                   | 100                |       |                                            | +0/-0.02        | 9,850   |
| T4345-120STW-040D-100-4F | 12        |              | 12                | 48                   | 100                |       |                                            | +0/-0.02        | 13,180  |
| T4345-120STC-040D-100-4F | 12        | 0.2C         | 12                | 48                   | 100                |       |                                            | +0/-0.02        | 13,180  |

# 超硬35/38°防振4枚刃スクエアエンドミル【侍シリーズ】 不等リード/不等分割刃先ギャッシュランド採用Champagne Goldコーティング



GO TO THE ONLINE STORE!



3538MT Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 35/38°Unequal Spacing Teeth

● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             | ○                                | △                                | ○               | ●                        | ●                                         | ○                 |                 |                                |   |

| 型番                       | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | 刃長D表記   | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|--------------------------|-----------|--------------|-------------------|----------------------|--------------------|---------|--------------------------------------------|-----------------|---------|
| T3538-030MTW-020D-50-4F  | 3.0       |              | 4.0               | 6.0                  | 50.0               | 刃長：2D   |                                            | +0/-0.02        | 1,820   |
| T3538-040MTW-020D-50-4F  | 4.0       |              | 4.0               | 8.0                  | 50.0               | 刃長：2D   |                                            | +0/-0.02        | 1,820   |
| T3538-050MTW-020D-50-4F  | 5.0       |              | 6.0               | 10.0                 | 50.0               | 刃長：2D   |                                            | +0/-0.02        | 2,720   |
| T3538-060MTW-020D-50-4F  | 6.0       |              | 6.0               | 12.0                 | 50.0               | 刃長：2D   |                                            | +0/-0.02        | 2,720   |
| T3538-080MTW-020D-60-4F  | 8.0       |              | 8.0               | 16.0                 | 60.0               | 刃長：2D   |                                            | +0/-0.02        | 4,700   |
| T3538-100MTW-020D-75-4F  | 10.0      |              | 10.0              | 20.0                 | 75.0               | 刃長：2D   |                                            | +0/-0.02        | 6,200   |
| T3538-120MTW-020D-75-4F  | 12.0      |              | 12.0              | 24.0                 | 75.0               | 刃長：2D   |                                            | +0/-0.02        | 8,320   |
| T3538-030MTW-025D-50-4F  | 3.0       |              | 4.0               | 8.0                  | 50.0               | 刃長：2.5D |                                            | +0/-0.02        | 1,820   |
| T3538-040MTW-025D-50-4F  | 4.0       |              | 4.0               | 10.0                 | 50.0               | 刃長：2.5D |                                            | +0/-0.02        | 1,820   |
| T3538-050MTW-025D-50-4F  | 5.0       |              | 6.0               | 13.0                 | 50.0               | 刃長：2.5D |                                            | +0/-0.02        | 2,720   |
| T3538-060MTW-025D-50-4F  | 6.0       |              | 6.0               | 15.0                 | 50.0               | 刃長：2.5D |                                            | +0/-0.02        | 2,720   |
| T3538-080MTW-025D-60-4F  | 8.0       |              | 8.0               | 20.0                 | 60.0               | 刃長：2.5D |                                            | +0/-0.02        | 4,700   |
| T3538-100MTW-025D-75-4F  | 10.0      |              | 10.0              | 25.0                 | 75.0               | 刃長：2.5D |                                            | +0/-0.02        | 6,200   |
| T3538-120MTW-025D-75-4F  | 12.0      |              | 12.0              | 30.0                 | 75.0               | 刃長：2.5D |                                            | +0/-0.02        | 9,150   |
| T3538-030MTW-030D-50-4F  | 3.0       |              | 4.0               | 9.0                  | 50.0               | 刃長：3D   |                                            | +0/-0.02        | 1,910   |
| T3538-040MTW-030D-50-4F  | 4.0       |              | 4.0               | 12.0                 | 50.0               | 刃長：3D   |                                            | +0/-0.02        | 1,910   |
| T3538-050MTW-030D-50-4F  | 5.0       |              | 6.0               | 15.0                 | 50.0               | 刃長：3D   |                                            | +0/-0.02        | 2,820   |
| T3538-050MTW-030D-75-4F  | 5.0       |              | 6.0               | 15.0                 | 75.0               | 刃長：3D   |                                            | +0/-0.02        | 3,510   |
| T3538-060MTW-030D-50-4F  | 6.0       |              | 6.0               | 18.0                 | 50.0               | 刃長：3D   |                                            | +0/-0.02        | 2,820   |
| T3538-060MTW-030D-75-4F  | 6.0       |              | 6.0               | 18.0                 | 75.0               | 刃長：3D   |                                            | +0/-0.02        | 3,510   |
| T3538-080MTW-030D-60-4F  | 8.0       |              | 8.0               | 24.0                 | 60.0               | 刃長：3D   |                                            | +0/-0.02        | 4,790   |
| T3538-080MTW-030D-75-4F  | 8.0       |              | 8.0               | 24.0                 | 75.0               | 刃長：3D   |                                            | +0/-0.02        | 5,460   |
| T3538-100MTW-030D-75-4F  | 10.0      |              | 10.0              | 30.0                 | 75.0               | 刃長：3D   |                                            | +0/-0.02        | 6,590   |
| T3538-100MTW-030D-100-4F | 10.0      |              | 10.0              | 30.0                 | 100.0              | 刃長：3D   |                                            | +0/-0.02        | 8,970   |
| T3538-120MTW-030D-75-4F  | 12.0      |              | 12.0              | 36.0                 | 75.0               | 刃長：3D   |                                            | +0/-0.02        | 9,350   |
| T3538-120MTW-030D-100-4F | 12.0      |              | 12.0              | 36.0                 | 100.0              | 刃長：3D   |                                            | +0/-0.02        | 11,520  |

# 超硬35/38°防振4枚刃スクエアエンドミル【侍シリーズ】 不等リード/不等分割刃先ギャッシュランド採用POWERコーティング



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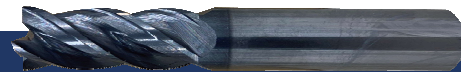


3538PT Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 35/38°Unequal Spacing Teeth

● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             | ●<60                             | ●                                | ●               | ○                        | ○                                         |                   |                 |                                |   |

| 型番                       | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | 刃長D表記   | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|--------------------------|-----------|--------------|-------------------|----------------------|--------------------|---------|--------------------------------------------|-----------------|---------|
| T3538-030PTW-020D-50-4F  | 3         |              | 4                 | 6                    | 50                 | 刃長：2D   |                                            | +0/-0.02        | 1,540   |
| T3538-040PTW-020D-50-4F  | 4         |              | 4                 | 8                    | 50                 | 刃長：2D   |                                            | +0/-0.02        | 1,540   |
| T3538-050PTW-020D-50-4F  | 5         |              | 6                 | 10                   | 50                 | 刃長：2D   |                                            | +0/-0.02        | 2,160   |
| T3538-060PTW-020D-50-4F  | 6         |              | 6                 | 12                   | 50                 | 刃長：2D   |                                            | +0/-0.02        | 2,160   |
| T3538-080PTW-020D-60-4F  | 8         |              | 8                 | 16                   | 60                 | 刃長：2D   |                                            | +0/-0.02        | 4,300   |
| T3538-100PTW-020D-75-4F  | 10        |              | 10                | 20                   | 75                 | 刃長：2D   |                                            | +0/-0.02        | 6,550   |
| T3538-120PTW-020D-75-4F  | 12        |              | 12                | 24                   | 75                 | 刃長：2D   |                                            | +0/-0.02        | 8,600   |
| T3538-030PTW-025D-50-4F  | 3         |              | 4                 | 8                    | 50                 | 刃長：2.5D |                                            | +0/-0.02        | 1,540   |
| T3538-040PTW-025D-50-4F  | 4         |              | 4                 | 10                   | 50                 | 刃長：2.5D |                                            | +0/-0.02        | 1,540   |
| T3538-050PTW-025D-50-4F  | 5         |              | 6                 | 13                   | 50                 | 刃長：2.5D |                                            | +0/-0.02        | 2,160   |
| T3538-060PTW-025D-50-4F  | 6         |              | 6                 | 15                   | 50                 | 刃長：2.5D |                                            | +0/-0.02        | 2,160   |
| T3538-080PTW-025D-60-4F  | 8         |              | 8                 | 20                   | 60                 | 刃長：2.5D |                                            | +0/-0.02        | 4,300   |
| T3538-100PTW-025D-75-4F  | 10        |              | 10                | 25                   | 75                 | 刃長：2.5D |                                            | +0/-0.02        | 6,550   |
| T3538-120PTW-025D-75-4F  | 12        |              | 12                | 30                   | 75                 | 刃長：2.5D |                                            | +0/-0.02        | 8,600   |
| T3538-030PTW-030D-50-4F  | 3         |              | 4                 | 9                    | 50                 | 刃長：3D   |                                            | +0/-0.02        | 1,540   |
| T3538-040PTW-030D-50-4F  | 4         |              | 4                 | 12                   | 50                 | 刃長：3D   |                                            | +0/-0.02        | 1,540   |
| T3538-050PTW-030D-50-4F  | 5         |              | 6                 | 15                   | 50                 | 刃長：3D   |                                            | +0/-0.02        | 2,060   |
| T3538-050PTW-030D-75-4F  | 5         |              | 6                 | 15                   | 75                 | 刃長：3D   |                                            | +0/-0.02        | 3,070   |
| T3538-060PTW-030D-50-4F  | 6         |              | 6                 | 18                   | 50                 | 刃長：3D   |                                            | +0/-0.02        | 2,160   |
| T3538-060PTW-030D-75-4F  | 6         |              | 6                 | 18                   | 75                 | 刃長：3D   |                                            | +0/-0.02        | 3,070   |
| T3538-080PTW-030D-60-4F  | 8         |              | 8                 | 24                   | 60                 | 刃長：3D   |                                            | +0/-0.02        | 4,300   |
| T3538-080PTW-030D-75-4F  | 8         |              | 8                 | 24                   | 75                 | 刃長：3D   |                                            | +0/-0.02        | 5,330   |
| T3538-100PTW-030D-75-4F  | 10        |              | 10                | 30                   | 75                 | 刃長：3D   |                                            | +0/-0.02        | 6,550   |
| T3538-100PTW-030D-100-4F | 10        |              | 10                | 30                   | 100                | 刃長：3D   |                                            | +0/-0.02        | 9,020   |
| T3538-120PTW-030D-75-4F  | 12        |              | 12                | 36                   | 75                 | 刃長：3D   |                                            | +0/-0.02        | 8,600   |
| T3538-120PTW-030D-100-4F | 12        |              | 12                | 36                   | 100                | 刃長：3D   |                                            | +0/-0.02        | 11,870  |



# 超硬35/38°防振4枚刃スクエアエンドミル【刀シリーズ】 不等リード刃先ギャッシュランド採用AlCrNコーティング

GO TO THE ONLINE STORE!

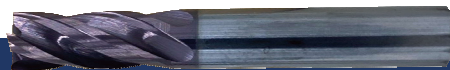
3538S Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 35/38°



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             | △                                |                                  | ●               | ○                        |                                           | ○                 |                 |                                |   |

| 型番                 | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|--------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T3538-020S-50-4F   | 2.0       |              | 4.0               | 6.0                  | 50.0               |                  |                                            | +0/-0.02        | 2,100   |
| T3538-030S-50-4F   | 3.0       |              | 4.0               | 9.0                  | 50.0               |                  |                                            | +0/-0.02        | 2,100   |
| T3538-040S-50-4F   | 4.0       |              | 4.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,100   |
| T3538-050S-50-4F   | 5.0       |              | 6.0               | 13.0                 | 50.0               |                  |                                            | +0/-0.02        | 3,030   |
| T3538-055S-50-4F   | 5.5       |              | 6.0               | 16.0                 | 50.0               |                  |                                            | +0/-0.02        | 4,430   |
| T3538-060S-50-4F   | 6.0       |              | 6.0               | 16.0                 | 50.0               |                  |                                            | +0/-0.02        | 3,030   |
| T3538-070S-50-4F   | 7.0       |              | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 4,900   |
| T3538-080S-60-1-4F | 8.0       |              | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 4,900   |
| T3538-080S-60-2-4F | 8.0       |              | 8.0               | 25.0                 | 60.0               |                  |                                            | +0/-0.02        | 7,810   |
| T3538-100S-75-4F   | 10.0      |              | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 8,750   |
| T3538-120S-75-4F   | 12.0      |              | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 11,660  |
| T3538-160S-100-4F  | 16.0      |              | 16.0              | 36.0                 | 100.0              |                  |                                            | +0/-0.03        | 21,580  |
| T3538-200S-100-4F  | 20.0      |              | 20.0              | 45.0                 | 100.0              |                  |                                            | +0/-0.03        | 33,250  |



# 超硬23/26°防振4枚刃スクエアエンドミル【侍シリーズ】 不等リード/不等分割刃先ギャッシュランド採用Amberコーティング

GO TO THE ONLINE STORE!

T2326MT2 Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 23/26°Unequal Spacing Teeth



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             | ○                                |                                  | △               | ●                        | ○                                         | ○                 |                 |                                |   |

| 型番                       | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|--------------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T2326-030MT2-030D-50-4F  | 3.0       |              | 6.0               | 9.0                  | 50.0               |                  |                                            | +0/-0.02        | 2,820   |
| T2326-040MT2-030D-50-4F  | 4.0       |              | 6.0               | 12.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,820   |
| T2326-050MT2-030D-50-4F  | 5.0       |              | 6.0               | 15.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,820   |
| T2326-060MT2-030D-50-4F  | 6.0       |              | 6.0               | 18.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,820   |
| T2326-080MT2-030D-60-4F  | 8.0       |              | 8.0               | 24.0                 | 60.0               |                  |                                            | +0/-0.02        | 4,340   |
| T2326-100MT2-030D-75-4F  | 10.0      |              | 10.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 6,180   |
| T2326-120MT2-030D-75-4F  | 12.0      |              | 12.0              | 36.0                 | 75.0               |                  |                                            | +0/-0.02        | 8,020   |
| T2326-160MT2-030D-100-4F | 16.0      |              | 16.0              | 48.0                 | 100.0              |                  |                                            | +0/-0.03        | 18,673  |



# 超硬40/42°防振4枚刃スクエアエンドミル【侍シリーズ】

ネック付不等リード/不等分割刃先ギャッシュランド採用Champagne Goldコーティング [GO TO THE ONLINE STORE!](#)

4042N Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 40/42°Unequal Spacing Teeth With Neck For Rib Processing



● 第一推奨/First recommendation ○第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             | ○                                | △                                | ○               | ●                        | ●                                         | ○                 |                 |                                |   |

| 型番                           | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|------------------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T4042-030MT-6-4-9NL50-4F     | 3.0       |              | 6.0               | 4.0                  | 50.0               | 2.8              | 3D                                         | +0/-0.02        | 3,530   |
| T4042-040MT-6-6-12NL50-4F    | 4.0       |              | 6.0               | 6.0                  | 50.0               | 3.7              | 3D                                         | +0/-0.02        | 3,530   |
| T4042-050MT-6-8-15NL50-4F    | 5.0       |              | 6.0               | 8.0                  | 50.0               | 4.7              | 3D                                         | +0/-0.02        | 3,530   |
| T4042-060MT-6-9-18NL50-4F    | 6.0       |              | 6.0               | 9.0                  | 50.0               | 5.5              | 3D                                         | +0/-0.02        | 3,530   |
| T4042-080MT-8-12-24NL60-4F   | 8.0       |              | 8.0               | 12.0                 | 60.0               | 7.3              | 3D                                         | +0/-0.02        | 6,100   |
| T4042-100MT-10-15-30NL75-4F  | 10.0      |              | 10.0              | 15.0                 | 75.0               | 9.1              | 3D                                         | +0/-0.02        | 9,470   |
| T4042-120MT-12-18-36NL100-4F | 12.0      |              | 12.0              | 18.0                 | 100.0              | 11               | 3D                                         | +0/-0.02        | 15,040  |
| T4042-030MT-6-4-15NL75-4F    | 3.0       |              | 6.0               | 4.0                  | 75.0               | 2.8              | 5D                                         | +0/-0.02        | 4,470   |
| T4042-040MT-6-6-20NL75-4F    | 4.0       |              | 6.0               | 6.0                  | 75.0               | 3.7              | 5D                                         | +0/-0.02        | 4,470   |
| T4042-050MT-6-8-25NL75-4F    | 5.0       |              | 6.0               | 8.0                  | 75.0               | 4.7              | 5D                                         | +0/-0.02        | 4,470   |
| T4042-060MT-6-9-30NL75-4F    | 6.0       |              | 6.0               | 9.0                  | 75.0               | 5.5              | 5D                                         | +0/-0.02        | 4,470   |
| T4042-080MT-8-12-40NL100-4F  | 8.0       |              | 8.0               | 12.0                 | 100.0              | 7.3              | 5D                                         | +0/-0.02        | 8,440   |
| T4042-100MT-10-15-50NL100-4F | 10.0      |              | 10.0              | 15.0                 | 100.0              | 9.1              | 5D                                         | +0/-0.02        | 11,760  |
| T4042-120MT-12-18-60NL110-4F | 12.0      |              | 12.0              | 18.0                 | 110.0              | 11               | 5D                                         | +0/-0.02        | 15,620  |



# 超硬35°2枚刃スクエアエンドミル【刀シリーズ】

## 刃先ギャッシュランド採用AlCrSinコーティング

48S2F Series/2 Flutes Square Carbide End Mill

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● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        |                                           | ○                 |                 |                                |   |

| 型番                | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|-------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T48-005S-50-2F    | 0.5       |              | 4.0               | 1.0                  | 50.0               |                  |                                            | +0/-0.02        | 850     |
| T48-008S-50-2F    | 0.8       |              | 4.0               | 2.0                  | 50.0               |                  |                                            | +0/-0.02        | 850     |
| T48-010S-50-2F    | 1.0       |              | 4.0               | 3.0                  | 50.0               |                  |                                            | +0/-0.02        | 850     |
| T48-015S-50-2F    | 1.5       |              | 4.0               | 4.0                  | 50.0               |                  |                                            | +0/-0.02        | 850     |
| T48-020S-50-1-2F  | 2.0       |              | 4.0               | 3.0                  | 50.0               |                  |                                            | +0/-0.02        | 850     |
| T48-020S-50-2-2F  | 2.0       |              | 4.0               | 6.0                  | 50.0               |                  |                                            | +0/-0.02        | 850     |
| T48-020S-75-2F    | 2.0       |              | 4.0               | 15.0                 | 75.0               |                  |                                            | +0/-0.02        | 1,060   |
| T48-025S-50-1-2F  | 2.5       |              | 4.0               | 6.0                  | 50.0               |                  |                                            | +0/-0.02        | 850     |
| T48-025S-50-2-2F  | 2.5       |              | 4.0               | 8.0                  | 50.0               |                  |                                            | +0/-0.02        | 950     |
| T48-030S-04-50-2F | 3.0       |              | 4.0               | 9.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,130   |
| T48-030S-06-50-2F | 3.0       |              | 6.0               | 9.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,130   |
| T48-030S-06-75-2F | 3.0       |              | 6.0               | 12.0                 | 75.0               |                  |                                            | +0/-0.02        | 1,550   |
| T48-040S-04-50-2F | 4.0       |              | 4.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,130   |
| T48-040S-06-50-2F | 4.0       |              | 6.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,370   |
| T48-045S-50-1-2F  | 4.5       |              | 6.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,370   |
| T48-045S-50-2-2F  | 4.5       |              | 6.0               | 13.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,370   |
| T48-050S-50-2F    | 5.0       |              | 6.0               | 13.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,370   |
| T48-055S-50-2F    | 5.5       |              | 6.0               | 16.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,370   |
| T48-060S-50-2F    | 6.0       |              | 6.0               | 16.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,370   |
| T48-060S-100-2F   | 6.0       |              | 6.0               | 20.0                 | 100.0              |                  |                                            | +0/-0.02        | 1,970   |
| T48-065S-60-2F    | 6.5       |              | 8.0               | 16.0                 | 60.0               |                  |                                            | +0/-0.02        | 2,360   |
| T48-070S-60-2F    | 7.0       |              | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 2,360   |
| T48-075S-60-2F    | 7.5       |              | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 2,360   |
| T48-080S-60-2F    | 8.0       |              | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 2,360   |
| T48-080S-100-2F   | 8.0       |              | 8.0               | 25.0                 | 100.0              |                  |                                            | +0/-0.02        | 2,880   |
| T48-085S-75-2F    | 8.5       |              | 10.0              | 23.0                 | 75.0               |                  |                                            | +0/-0.02        | 3,590   |
| T48-090S-75-2F    | 9.0       |              | 10.0              | 23.0                 | 75.0               |                  |                                            | +0/-0.02        | 3,590   |
| T48-100S-75-2F    | 10.0      |              | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 3,590   |
| T48-100S-100-2F   | 10.0      |              | 10.0              | 30.0                 | 100.0              |                  |                                            | +0/-0.02        | 4,090   |
| T48-120S-75-2F    | 12.0      |              | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 4,930   |
| T48-120S-100-2F   | 12.0      |              | 12.0              | 35.0                 | 100.0              |                  |                                            | +0/-0.02        | 5,600   |
| T48-160S-150-2F   | 16.0      |              | 16.0              | 36.0                 | 150.0              |                  |                                            | +0/-0.03        | 18,000  |
| T48-200S-150-2F   | 20.0      |              | 20.0              | 45.0                 | 150.0              |                  |                                            | +0/-0.03        | 25,120  |

# 超硬35°4枚刃スクエアエンドミル【刀シリーズ】

## 刃先ギャッシュランド採用AlCrSinコーティング

48S4F Series/4 Flutes Square Carbide End Mill



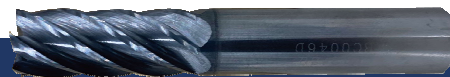
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● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        |                                           | ○                 |                 |                                |   |

| 型番                  | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|---------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T48-010S-50-4F      | 1.0       |              | 4.0               | 3.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,230   |
| T48-015S-04-50-4F   | 1.5       |              | 4.0               | 5.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,230   |
| T48-015S-06-50-4F   | 1.5       |              | 6.0               | 5.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,640   |
| T48-020S-04-50-4F   | 2.0       |              | 4.0               | 6.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,230   |
| T48-020S-06-50-4F   | 2.0       |              | 6.0               | 6.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,640   |
| T48-025S-04-50-4F   | 2.5       |              | 4.0               | 8.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,370   |
| T48-025S-06-50-4F   | 2.5       |              | 6.0               | 8.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,640   |
| T48-030S-03-50-4F   | 3.0       |              | 3.0               | 9.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,230   |
| T48-030S-04-50-4F   | 3.0       |              | 4.0               | 9.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,230   |
| T48-030S-06-50-1-4F | 3.0       |              | 6.0               | 6.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,640   |
| T48-030S-06-50-2-4F | 3.0       |              | 6.0               | 9.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,640   |
| T48-030S-75-4F      | 3.0       |              | 4.0               | 12.0                 | 75.0               |                  |                                            | +0/-0.02        | 1,640   |
| T48-031S-50-4F      | 3.1       |              | 4.0               | 9.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,230   |
| T48-035S-50-4F      | 3.5       |              | 4.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,230   |
| T48-040S-04-50-4F   | 4.0       |              | 4.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,230   |
| T48-040S-06-50-4F   | 4.0       |              | 6.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,640   |
| T48-040S-75-4F      | 4.0       |              | 4.0               | 15.0                 | 75.0               |                  |                                            | +0/-0.02        | 1,450   |
| T48-045S-50-4F      | 4.5       |              | 6.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,640   |
| T48-050S-05-50-4F   | 5.0       |              | 5.0               | 13.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,640   |
| T48-050S-06-50-1-4F | 5.0       |              | 6.0               | 8.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,640   |
| T48-050S-06-50-2-4F | 5.0       |              | 6.0               | 13.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,640   |
| T48-050S-75-4F      | 5.0       |              | 6.0               | 20.0                 | 75.0               |                  |                                            | +0/-0.02        | 1,640   |
| T48-055S-50-4F      | 5.5       |              | 6.0               | 16.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,640   |
| T48-060S-50-1-4F    | 6.0       |              | 6.0               | 16.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,640   |
| T48-060S-50-2-4F    | 6.0       |              | 6.0               | 18.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,640   |
| T48-060S-75-4F      | 6.0       |              | 6.0               | 20.0                 | 75.0               |                  |                                            | +0/-0.02        | 1,640   |
| T48-065S-60-4F      | 6.5       |              | 8.0               | 16.0                 | 60.0               |                  |                                            | +0/-0.02        | 2,590   |
| T48-070S-60-4F      | 7.0       |              | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 2,590   |
| T48-075S-60-4F      | 7.5       |              | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 2,590   |
| T48-080S-60-4F      | 8.0       |              | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 2,590   |
| T48-080S-100-4F     | 8.0       |              | 8.0               | 25.0                 | 100.0              |                  |                                            | +0/-0.02        | 3,000   |
| T48-085S-75-4F      | 8.5       |              | 10.0              | 23.0                 | 75.0               |                  |                                            | +0/-0.02        | 4,880   |
| T48-090S-75-4F      | 9.0       |              | 10.0              | 23.0                 | 75.0               |                  |                                            | +0/-0.02        | 4,880   |
| T48-095S-75-4F      | 9.5       |              | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 4,880   |
| T48-100S-75-4F      | 10.0      |              | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 3,790   |
| T48-100S-100-4F     | 10.0      |              | 10.0              | 30.0                 | 100.0              |                  |                                            | +0/-0.02        | 4,340   |
| T48-110S-75-4F      | 11.0      |              | 12.0              | 28.0                 | 75.0               |                  |                                            | +0/-0.02        | 4,800   |
| T48-120S-75-4F      | 12.0      |              | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 4,800   |
| T48-120S-100-4F     | 12.0      |              | 12.0              | 35.0                 | 100.0              |                  |                                            | +0/-0.02        | 5,410   |
| T48-130S-100-4F     | 13.0      |              | 14.0              | 32.0                 | 100.0              |                  |                                            | +0/-0.03        | 11,860  |
| T48-140S-75-4F      | 14.0      |              | 14.0              | 32.0                 | 75.0               |                  |                                            | +0/-0.03        | 8,520   |
| T48-140S-100-4F     | 14.0      |              | 14.0              | 34.0                 | 100.0              |                  |                                            | +0/-0.03        | 11,860  |
| T48-150S-100-4F     | 15.0      |              | 16.0              | 36.0                 | 100.0              |                  |                                            | +0/-0.03        | 11,820  |
| T48-160S-100-4F     | 16.0      |              | 16.0              | 36.0                 | 100.0              |                  |                                            | +0/-0.03        | 12,390  |
| T48-180S-100-4F     | 18.0      |              | 18.0              | 45.0                 | 100.0              |                  |                                            | +0/-0.03        | 17,690  |
| T48-180S-150-4F     | 18.0      |              | 18.0              | 70.0                 | 150.0              |                  |                                            | +0/-0.03        | 20,700  |
| T48-200S-100-4F     | 20.0      |              | 20.0              | 45.0                 | 100.0              |                  |                                            | +0/-0.03        | 16,670  |
| T48-200S-150-4F     | 20.0      |              | 20.0              | 70.0                 | 150.0              |                  |                                            | +0/-0.03        | 34,300  |



# 超硬35°6枚刃スクエアエンドミル【刀シリーズ】

## 刃先ギャッシュランド採用AlCrSinコーティング

GO TO THE ONLINE STORE!

48S6F Series/4 Flutes Square Carbide End Mill



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        |                                           | ○                 |                 |                                |   |

| 型番              | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|-----------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T48-060S-50-6F  | 6.0       |              | 6.0               | 15.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,540   |
| T48-080S-60-6F  | 8.0       |              | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 3,070   |
| T48-100S-75-6F  | 10.0      |              | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 4,760   |
| T48-120S-75-6F  | 12.0      |              | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 6,810   |
| T48-160S-100-6F | 16.0      |              | 16.0              | 36.0                 | 100.0              |                  |                                            | +0/-0.03        | 14,120  |
| T48-200S-100-6F | 20.0      |              | 20.0              | 45.0                 | 100.0              |                  |                                            | +0/-0.03        | 21,560  |

# 超硬35°SUS用4枚刃スクエアエンドミル【刀シリーズ】

## 刃先ギャッシュランド採用TiAlNコーティング



GO TO THE ONLINE STORE!

48M4F Series / 4 Flutes Square Carbide End Mill For Stainless Steel



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ●                        | △                                         | ○                 |                 |                                |   |

| 型番                | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|-------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T48-010M-50-4F    | 1.0       |              | 4.0               | 3.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,730   |
| T48-015M-50-4F    | 1.5       |              | 4.0               | 4.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,730   |
| T48-020M-50-4F    | 2.0       |              | 4.0               | 6.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,730   |
| T48-025M-50-4F    | 2.5       |              | 4.0               | 8.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,730   |
| T48-030M-50-4F    | 3.0       |              | 4.0               | 9.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,730   |
| T48-035M-50-4F    | 3.5       |              | 4.0               | 10.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,730   |
| T48-040M-04-50-4F | 4.0       |              | 4.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,730   |
| T48-040M-06-50-4F | 4.0       |              | 6.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,300   |
| T48-050M-50-4F    | 5.0       |              | 6.0               | 13.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,300   |
| T48-060M-50-4F    | 6.0       |              | 6.0               | 16.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,300   |
| T48-080M-60-4F    | 8.0       |              | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 3,470   |
| T48-100M-75-4F    | 10.0      |              | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 5,890   |
| T48-120M-75-4F    | 12.0      |              | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 7,480   |
| T48-160M-100-4F   | 16.0      |              | 16.0              | 36.0                 | 100.0              |                  |                                            | +0/-0.03        | 14,080  |
| T48-200M-100-4F   | 20.0      |              | 20.0              | 45.0                 | 100.0              |                  |                                            | +0/-0.03        | 21,230  |

# 超硬35°高硬度用4枚刃スクエアエンドミル【刀シリーズ】 刃先ギャッシュランド採用TiAlCrSinコーティング



GO TO THE ONLINE STORE!

60H4F Sereis/4 Flutes Square Carbide End Mill For Hardened Steel



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             | ●                                | ●                                | ●               | ○                        | △                                         | ○                 |                 |                                |   |

| 型番              | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|-----------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T60-010H-50-4F  | 1.0       |              | 4.0               | 2.5                  | 50.0               |                  |                                            | +0/-0.01        | 2,740   |
| T60-015H-50-4F  | 1.5       |              | 4.0               | 4.0                  | 50.0               |                  |                                            | +0/-0.01        | 2,740   |
| T60-020H-50-4F  | 2.0       |              | 4.0               | 5.0                  | 50.0               |                  |                                            | +0/-0.01        | 2,740   |
| T60-025H-50-4F  | 2.5       |              | 4.0               | 6.0                  | 50.0               |                  |                                            | +0/-0.01        | 2,740   |
| T60-030H-50-4F  | 3.0       |              | 4.0               | 8.0                  | 50.0               |                  |                                            | +0/-0.01        | 2,740   |
| T60-040H-50-4F  | 4.0       |              | 4.0               | 10.0                 | 50.0               |                  |                                            | +0/-0.01        | 2,740   |
| T60-050H-50-4F  | 5.0       |              | 6.0               | 13.0                 | 50.0               |                  |                                            | +0/-0.01        | 3,270   |
| T60-060H-50-4F  | 6.0       |              | 6.0               | 15.0                 | 50.0               |                  |                                            | +0/-0.01        | 3,270   |
| T60-080H-60-4F  | 8.0       |              | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 4,410   |
| T60-100H-75-4F  | 10.0      |              | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 7,100   |
| T60-120H-75-4F  | 12.0      |              | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 9,470   |
| T60-160H-100-4F | 16.0      |              | 16.0              | 40.0                 | 100.0              |                  |                                            | +0/-0.03        | 20,180  |
| T60-200H-100-4F | 20.0      |              | 20.0              | 50.0                 | 100.0              |                  |                                            | +0/-0.03        | 43,290  |

# 超硬35°高硬度用4枚刃スクエアエンドミル 刃先ギャッシュランド採用Blue Nanoコーティング

65S4F Series/4 Flutes Square Carbide End Mill For Hardened Steel



GO TO THE ONLINE STORE!



● 第一推奨/First recommendation ○第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             | ●                                | ●                                |                 |                          | ○                                         |                   |                 |                                |   |

| 型番                | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|-------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T65-010S-50-4F    | 1.0       |              | 4.0               | 3.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 1,350   |
| T65-015S-50-4F    | 1.5       |              | 4.0               | 4.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 1,350   |
| T65-020S-50-4F    | 2.0       |              | 4.0               | 5.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 1,350   |
| T65-025S-04-50-4F | 2.5       |              | 4.0               | 8.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 1,350   |
| T65-025S-06-50-4F | 2.5       |              | 6.0               | 8.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 2,420   |
| T65-030S-03-50-4F | 3.0       |              | 3.0               | 8.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 1,350   |
| T65-030S-04-50-4F | 3.0       |              | 4.0               | 8.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 1,350   |
| T65-030S-06-50-4F | 3.0       |              | 6.0               | 8.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 2,420   |
| T65-030S-75-4F    | 3.0       |              | 3.0               | 12.0                 | 75.0               |                  |                                            | -0.01/-0.02     | 1,820   |
| T65-030S-100-4F   | 3.0       |              | 3.0               | 15.0                 | 100.0              |                  |                                            | -0.01/-0.02     | 2,060   |
| T65-035S-04-50-4F | 3.5       |              | 4.0               | 10.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 1,350   |
| T65-035S-06-50-4F | 3.5       |              | 6.0               | 10.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 2,420   |
| T65-040S-04-50-4F | 4.0       |              | 4.0               | 10.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 1,350   |
| T65-040S-06-50-4F | 4.0       |              | 6.0               | 10.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 2,420   |
| T65-040S-75-4F    | 4.0       |              | 4.0               | 16.0                 | 75.0               |                  |                                            | -0.01/-0.02     | 1,820   |
| T65-040S-100-4F   | 4.0       |              | 4.0               | 20.0                 | 100.0              |                  |                                            | -0.01/-0.02     | 2,060   |
| T65-045S-50-4F    | 4.5       |              | 6.0               | 12.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 2,420   |
| T65-050S-05-50-4F | 5.0       |              | 5.0               | 13.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 2,530   |
| T65-050S-06-50-4F | 5.0       |              | 6.0               | 13.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 2,530   |
| T65-050S-75-4F    | 5.0       |              | 5.0               | 20.0                 | 75.0               |                  |                                            | -0.01/-0.02     | 3,060   |
| T65-050S-100-4F   | 5.0       |              | 5.0               | 25.0                 | 100.0              |                  |                                            | -0.01/-0.02     | 3,590   |
| T65-060S-50-4F    | 6.0       |              | 6.0               | 15.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 2,530   |
| T65-060S-75-4F    | 6.0       |              | 6.0               | 25.0                 | 75.0               |                  |                                            | -0.01/-0.02     | 3,060   |
| T65-060S-100-4F   | 6.0       |              | 6.0               | 30.0                 | 100.0              |                  |                                            | -0.01/-0.02     | 3,590   |
| T65-060S-150-4F   | 6.0       |              | 6.0               | 40.0                 | 150.0              |                  |                                            | -0.01/-0.02     | 6,180   |
| T65-070S-60-4F    | 7.0       |              | 8.0               | 18.0                 | 60.0               |                  |                                            | -0.015/-0.03    | 4,120   |
| T65-080S-60-4F    | 8.0       |              | 8.0               | 20.0                 | 60.0               |                  |                                            | -0.015/-0.03    | 4,120   |
| T65-080S-75-4F    | 8.0       |              | 8.0               | 25.0                 | 75.0               |                  |                                            | -0.015/-0.03    | 4,710   |
| T65-080S-100-4F   | 8.0       |              | 8.0               | 35.0                 | 100.0              |                  |                                            | -0.015/-0.03    | 5,890   |
| T65-080S-150-4F   | 8.0       |              | 8.0               | 50.0                 | 150.0              |                  |                                            | -0.015/-0.03    | 9,660   |
| T65-090S-75-4F    | 9.0       |              | 10.0              | 23.0                 | 75.0               |                  |                                            | -0.015/-0.03    | 6,540   |
| T65-100S-75-4F    | 10.0      |              | 10.0              | 25.0                 | 75.0               |                  |                                            | -0.015/-0.03    | 6,540   |
| T65-100S-100-4F   | 10.0      |              | 10.0              | 40.0                 | 100.0              |                  |                                            | -0.015/-0.03    | 7,480   |
| T65-100S-150-4F   | 10.0      |              | 10.0              | 50.0                 | 150.0              |                  |                                            | -0.015/-0.03    | 12,900  |
| T65-120S-75-4F    | 12.0      |              | 12.0              | 30.0                 | 75.0               |                  |                                            | -0.02/-0.04     | 8,720   |
| T65-120S-100-4F   | 12.0      |              | 12.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 11,080  |
| T65-120S-150-4F   | 12.0      |              | 12.0              | 55.0                 | 150.0              |                  |                                            | -0.02/-0.04     | 18,260  |
| T65-140S-100-4F   | 14.0      |              | 14.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 14,380  |
| T65-140S-150-4F   | 14.0      |              | 14.0              | 60.0                 | 150.0              |                  |                                            | -0.02/-0.04     | 23,680  |
| T65-160S-100-4F   | 16.0      |              | 16.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 18,560  |
| T65-160S-150-4F   | 16.0      |              | 16.0              | 60.0                 | 150.0              |                  |                                            | -0.02/-0.04     | 30,000  |
| T65-180S-100-4F   | 18.0      |              | 18.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 22,800  |
| T65-180S-150-4F   | 18.0      |              | 18.0              | 70.0                 | 150.0              |                  |                                            | -0.02/-0.04     | 37,410  |
| T65-200S-100-4F   | 20.0      |              | 20.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 27,280  |
| T65-200S-150-4F   | 20.0      |              | 20.0              | 70.0                 | 150.0              |                  |                                            | -0.02/-0.04     | 46,250  |

**GO TO THE ONLINE STORE!**



| 第1推奨/1st Recommendation                | 第2推奨/2nd Recommendation       | 第3推奨/3rd Recommendation          | 第4推奨/4th Recommendation          | 第5推奨/5th Recommendation | 第6推奨/6th Recommendation  | 第7推奨/7th Recommendation                   | 第8推奨/8th Recommendation | 第9推奨/9th Recommendation | 第10推奨/10th Recommendation      | 第11推奨/11th Recommendation | 第12推奨/12th Recommendation |
|----------------------------------------|-------------------------------|----------------------------------|----------------------------------|-------------------------|--------------------------|-------------------------------------------|-------------------------|-------------------------|--------------------------------|---------------------------|---------------------------|
| ワーク<br>炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron         | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy       | アルミ<br>Aluminum         | ナイロン<br>樹脂系<br>Synthetic Resin | -                         |                           |
| 推奨                                     | ●                             | ●                                | ●                                | ●                       |                          | ○                                         |                         |                         |                                |                           |                           |

18



# 超硬45°アルミ用3枚刃スクエアエンドミル 刃先ギャッシュランド採用ノンコート

GO TO THE ONLINE STORE!

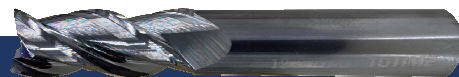
45AL3F Series/3 Flutes Square Carbide End Mill For Aluminum



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  |                                 |                               |                                  |                                  |                 |                          |                                           | ○                 | ●               | ○                              |   |

| 型番                 | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|--------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T45-010AL-50-3F    | 1.0       |              | 4.0               | 3.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 870     |
| T45-0125AL-50-3F   | 1.3       |              | 4.0               | 4.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 870     |
| T45-015AL-50-3F    | 1.5       |              | 4.0               | 5.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 870     |
| T45-020AL-50-3F    | 2.0       |              | 4.0               | 6.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 870     |
| T45-025AL-50-3F    | 2.5       |              | 4.0               | 8.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 870     |
| T45-030AL-50-3F    | 3.0       |              | 4.0               | 9.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 870     |
| T45-030AL-06-50-3F | 3.0       |              | 6.0               | 11.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 2,150   |
| T45-040AL-50-3F    | 4.0       |              | 4.0               | 12.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 870     |
| T45-040AL-06-50-3F | 4.0       |              | 6.0               | 12.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 1,690   |
| T45-040AL-75-3F    | 4.0       |              | 4.0               | 12.0                 | 75.0               |                  |                                            | -0.01/-0.02     | 1,110   |
| T45-040AL-06-75-3F | 4.0       |              | 6.0               | 14.0                 | 75.0               |                  |                                            | -0.01/-0.02     | 2,530   |
| T45-040AL-100-3F   | 4.0       |              | 4.0               | 25.0                 | 100.0              |                  |                                            | -0.01/-0.02     | 1,460   |
| T45-050AL-50-3F    | 5.0       |              | 5.0               | 15.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 1,690   |
| T45-050AL-06-50-3F | 5.0       |              | 6.0               | 15.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 1,690   |
| T45-050AL-75-3F    | 5.0       |              | 5.0               | 15.0                 | 75.0               |                  |                                            | -0.01/-0.02     | 1,850   |
| T45-050AL-06-75-3F | 5.0       |              | 6.0               | 18.0                 | 75.0               |                  |                                            | -0.01/-0.02     | 2,530   |
| T45-060AL-50-3F    | 6.0       |              | 6.0               | 18.0                 | 50.0               |                  |                                            | -0.015/-0.03    | 1,690   |
| T45-060AL-75-3F    | 6.0       |              | 6.0               | 30.0                 | 75.0               |                  |                                            | -0.015/-0.03    | 1,850   |
| T45-060AL-100-3F   | 6.0       |              | 6.0               | 30.0                 | 100.0              |                  |                                            | -0.015/-0.03    | 2,090   |
| T45-080AL-60-3F    | 8.0       |              | 8.0               | 24.0                 | 60.0               |                  |                                            | -0.015/-0.03    | 2,570   |
| T45-080AL-75-3F    | 8.0       |              | 8.0               | 35.0                 | 75.0               |                  |                                            | -0.015/-0.03    | 3,590   |
| T45-080AL-100-3F   | 8.0       |              | 8.0               | 40.0                 | 100.0              |                  |                                            | -0.015/-0.03    | 3,780   |
| T45-100AL-75-3F    | 10.0      |              | 10.0              | 30.0                 | 75.0               |                  |                                            | -0.02/-0.04     | 3,840   |
| T45-100AL-100-3F   | 10.0      |              | 10.0              | 40.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 4,390   |
| T45-100AL-150-3F   | 10.0      |              | 10.0              | 50.0                 | 150.0              |                  |                                            | -0.02/-0.04     | 9,820   |
| T45-120AL-75-3F    | 12.0      |              | 12.0              | 36.0                 | 75.0               |                  |                                            | -0.02/-0.04     | 5,460   |
| T45-120AL-100-3F   | 12.0      |              | 12.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 7,900   |
| T45-120AL-150-3F   | 12.0      |              | 12.0              | 60.0                 | 150.0              |                  |                                            | -0.02/-0.04     | 12,400  |
| T45-140AL-100-3F   | 14.0      |              | 14.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 10,550  |
| T45-140AL-150-3F   | 14.0      |              | 14.0              | 60.0                 | 150.0              |                  |                                            | -0.02/-0.04     | 17,720  |
| T45-160AL-100-3F   | 16.0      |              | 16.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 12,930  |
| T45-160AL-150-3F   | 16.0      |              | 16.0              | 60.0                 | 150.0              |                  |                                            | -0.02/-0.04     | 19,780  |
| T45-180AL-100-3F   | 18.0      |              | 18.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 16,820  |
| T45-180AL-150-3F   | 18.0      |              | 18.0              | 70.0                 | 150.0              |                  |                                            | -0.02/-0.04     | 29,200  |
| T45-200AL-100-3F   | 20.0      |              | 20.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 19,200  |
| T45-200AL-150-3F   | 20.0      |              | 20.0              | 70.0                 | 150.0              |                  |                                            | -0.02/-0.04     | 30,760  |



# 超硬40°アルミ用3枚刃スクエアエンドミル【刀シリーズ】

## 刃先ギャッシュランド採用ノンコート

GO TO THE ONLINE STORE!

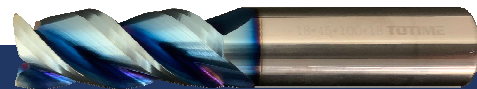
48AL3F Series/3 Flutes Square Carbide End Mill For Aluminum



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  |                                 |                               |                                  |                                  |                 |                          |                                           | ○                 | ●               | ○                              |   |

| 型番              | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|-----------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T48-020AL-50-3F | 2.0       |              | 4.0               | 6.0                  | 50.0               |                  |                                            | +0/-0.01        | 1,260   |
| T48-030AL-50-3F | 3.0       |              | 4.0               | 9.0                  | 50.0               |                  |                                            | +0/-0.01        | 1,260   |
| T48-040AL-50-3F | 4.0       |              | 4.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.01        | 1,260   |
| T48-050AL-50-3F | 5.0       |              | 6.0               | 13.0                 | 50.0               |                  |                                            | +0/-0.01        | 1,880   |
| T48-060AL-50-3F | 6.0       |              | 6.0               | 16.0                 | 50.0               |                  |                                            | +0/-0.01        | 1,850   |
| T48-080AL-60-3F | 8.0       |              | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.01        | 3,500   |
| T48-100AL-75-3F | 10.0      |              | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.01        | 5,950   |
| T48-120AL-75-3F | 12.0      |              | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 7,880   |



# 超硬45°アルミ用3枚刃スクエアエンドミル 刃先ギャッシュランド採用DLCコーティング

GO TO THE ONLINE STORE!

45AL3FDLC1 Series/3 Flutes Square Carbide End Mill with DLC Coating For Aluminum



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  |                                 |                               |                                  |                                  |                 |                          |                                           | ●                 | ●               | ●                              |   |

| 型番                      | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck+Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|-------------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|------------------------------------------|-----------------|---------|
| T45-010AL-50-3F-DLC1    | 1.0       |              | 4.0               | 3.0                  | 50.0               |                  |                                          | -0.01/-0.02     | 3,450   |
| T45-020AL-50-3F-DLC1    | 2.0       |              | 4.0               | 6.0                  | 50.0               |                  |                                          | -0.01/-0.02     | 3,450   |
| T45-030AL-50-3F-DLC1    | 3.0       |              | 4.0               | 9.0                  | 50.0               |                  |                                          | -0.01/-0.02     | 3,450   |
| T45-030AL-06-50-3F-DLC1 | 3.0       |              | 6.0               | 11.0                 | 50.0               |                  |                                          | -0.01/-0.02     | 5,150   |
| T45-040AL-50-3F-DLC1    | 4.0       |              | 4.0               | 12.0                 | 50.0               |                  |                                          | -0.01/-0.02     | 3,450   |
| T45-040AL-06-50-3F-DLC1 | 4.0       |              | 6.0               | 12.0                 | 50.0               |                  |                                          | -0.01/-0.02     | 4,700   |
| T45-040AL-75-3F-DLC1    | 4.0       |              | 4.0               | 12.0                 | 75.0               |                  |                                          | -0.01/-0.02     | 4,300   |
| T45-040AL-06-75-3F-DLC1 | 4.0       |              | 6.0               | 14.0                 | 75.0               |                  |                                          | -0.01/-0.02     | 6,530   |
| T45-050AL-50-3F-DLC1    | 5.0       |              | 5.0               | 15.0                 | 50.0               |                  |                                          | -0.01/-0.02     | 4,690   |
| T45-050AL-06-50-3F-DLC1 | 5.0       |              | 6.0               | 15.0                 | 50.0               |                  |                                          | -0.01/-0.02     | 4,800   |
| T45-050AL-75-3F-DLC1    | 5.0       |              | 5.0               | 15.0                 | 75.0               |                  |                                          | -0.01/-0.02     | 5,970   |
| T45-050AL-06-75-3F-DLC1 | 5.0       |              | 6.0               | 18.0                 | 75.0               |                  |                                          | -0.01/-0.02     | 6,690   |
| T45-060AL-50-3F-DLC1    | 6.0       |              | 6.0               | 18.0                 | 50.0               |                  |                                          | -0.015/-0.03    | 4,690   |
| T45-060AL-75-3F-DLC1    | 6.0       |              | 6.0               | 30.0                 | 75.0               |                  |                                          | -0.015/-0.03    | 5,850   |
| T45-080AL-60-3F-DLC1    | 8.0       |              | 8.0               | 24.0                 | 60.0               |                  |                                          | -0.015/-0.03    | 7,600   |
| T45-080AL-75-3F-DLC1    | 8.0       |              | 8.0               | 35.0                 | 75.0               |                  |                                          | -0.015/-0.03    | 9,440   |
| T45-100AL-75-3F-DLC1    | 10.0      |              | 10.0              | 30.0                 | 75.0               |                  |                                          | -0.02/-0.04     | 11,110  |
| T45-100AL-100-3F-DLC1   | 10.0      |              | 10.0              | 40.0                 | 100.0              |                  |                                          | -0.02/-0.04     | 11,660  |
| T45-100AL-150-3F-DLC1   | 10.0      |              | 10.0              | 50.0                 | 150.0              |                  |                                          | -0.02/-0.04     | 18,000  |
| T45-120AL-75-3F-DLC1    | 12.0      |              | 12.0              | 36.0                 | 75.0               |                  |                                          | -0.02/-0.04     | 13,040  |
| T45-120AL-100-3F-DLC1   | 12.0      |              | 12.0              | 45.0                 | 100.0              |                  |                                          | -0.02/-0.04     | 15,480  |
| T45-120AL-150-3F-DLC1   | 12.0      |              | 12.0              | 60.0                 | 150.0              |                  |                                          | -0.02/-0.04     | 20,580  |
| T45-140AL-100-3F-DLC1   | 14.0      |              | 14.0              | 45.0                 | 100.0              |                  |                                          | -0.02/-0.04     | 19,040  |
| T45-140AL-150-3F-DLC1   | 14.0      |              | 14.0              | 60.0                 | 150.0              |                  |                                          | -0.02/-0.04     | 26,210  |
| T45-160AL-100-3F-DLC1   | 16.0      |              | 16.0              | 45.0                 | 100.0              |                  |                                          | -0.02/-0.04     | 21,420  |
| T45-160AL-150-3F-DLC1   | 16.0      |              | 16.0              | 60.0                 | 150.0              |                  |                                          | -0.02/-0.04     | 28,270  |
| T45-180AL-100-3F-DLC1   | 18.0      |              | 18.0              | 45.0                 | 100.0              |                  |                                          | -0.02/-0.04     | 26,820  |
| T45-180AL-150-3F-DLC1   | 18.0      |              | 18.0              | 70.0                 | 150.0              |                  |                                          | -0.02/-0.04     | 40,410  |
| T45-200AL-100-3F-DLC1   | 20.0      |              | 20.0              | 45.0                 | 100.0              |                  |                                          | -0.02/-0.04     | 29,200  |
| T45-200AL-150-3F-DLC1   | 20.0      |              | 20.0              | 70.0                 | 150.0              |                  |                                          | -0.02/-0.04     | 41,980  |

# 超硬38/40/42°アルミ用3枚刃スクエアエンドミル【侍シリーズ】

## 不等リード/不等分割刃先ギャッシュランド採用

GO TO THE ONLINE STORE!

384042AL3F Series/Anti-Vibration 3 Flutes Square Carbide End Mill for Aluminum Variable Helix Leads 38/40/42°Unequal Spacing Teeth



● 第一推奨/First recommendation ○第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  |                                 |                               |                                  |                                  |                 |                          |                                           | ○                 | ●               | ○                              |   |

| 型番                   | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|----------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T384042-050AL-50-3F  | 5.0       |              | 6.0               | 15.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,430   |
| T384042-050AL-75-3F  | 5.0       |              | 6.0               | 15.0                 | 75.0               |                  |                                            | +0/-0.02        | 2,880   |
| T384042-060AL-50-3F  | 6.0       |              | 6.0               | 18.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,430   |
| T384042-060AL-75-3F  | 6.0       |              | 6.0               | 18.0                 | 75.0               |                  |                                            | +0/-0.02        | 2,880   |
| T384042-080AL-60-3F  | 8.0       |              | 8.0               | 24.0                 | 60.0               |                  |                                            | +0/-0.02        | 3,860   |
| T384042-080AL-75-3F  | 8.0       |              | 8.0               | 24.0                 | 75.0               |                  |                                            | +0/-0.02        | 4,350   |
| T384042-100AL-75-3F  | 10.0      |              | 10.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 5,880   |
| T384042-100AL-100-3F | 10.0      |              | 10.0              | 30.0                 | 100.0              |                  |                                            | +0/-0.02        | 7,000   |
| T384042-120AL-75-3F  | 12.0      |              | 12.0              | 36.0                 | 75.0               |                  |                                            | +0/-0.02        | 7,500   |
| T384042-120AL-100-3F | 12.0      |              | 12.0              | 36.0                 | 100.0              |                  |                                            | +0/-0.02        | 9,520   |

# 超硬38/40/42°アルミ用3枚刃スクエアエンドミル【侍シリーズ】 不等リード/不等分割刃先ギャッシュランド採用DLCコーティング

GO TO THE ONLINE STORE!

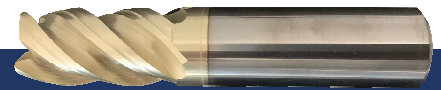
384042AL3DLC1 Series/Anti-Vibration 3 Flutes Square Carbide End Mill with DLC Coating for Aluminum Variable Helix Leads 38/40/42°Unequal Spacing Teeth



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  |                                 |                               |                                  |                                  |                 |                          |                                           | ●                 | ●               | ●                              |   |

| 型番                       | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|--------------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T384042-050AL-50-3F-DLC  | 5.0       |              | 6.0               | 15.0                 | 50.0               |                  |                                            | +0/-0.02        | 5,420   |
| T384042-050AL-75-3F-DLC  | 5.0       |              | 6.0               | 15.0                 | 75.0               |                  |                                            | +0/-0.02        | 6,880   |
| T384042-060AL-50-3F-DLC  | 6.0       |              | 6.0               | 18.0                 | 50.0               |                  |                                            | +0/-0.02        | 5,420   |
| T384042-060AL-75-3F-DLC  | 6.0       |              | 6.0               | 18.0                 | 75.0               |                  |                                            | +0/-0.02        | 6,880   |
| T384042-080AL-60-3F-DLC  | 8.0       |              | 8.0               | 24.0                 | 60.0               |                  |                                            | +0/-0.02        | 8,890   |
| T384042-080AL-75-3F-DLC  | 8.0       |              | 8.0               | 24.0                 | 75.0               |                  |                                            | +0/-0.02        | 10,200  |
| T384042-100AL-75-3F-DLC  | 10.0      |              | 10.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 13,150  |
| T384042-100AL-100-3F-DLC | 10.0      |              | 10.0              | 30.0                 | 100.0              |                  |                                            | +0/-0.02        | 14,270  |
| T384042-120AL-75-3F-DLC  | 12.0      |              | 12.0              | 36.0                 | 75.0               |                  |                                            | +0/-0.02        | 15,070  |
| T384042-120AL-100-3F-DLC | 12.0      |              | 12.0              | 36.0                 | 100.0              |                  |                                            | +0/-0.02        | 17,100  |



# 超硬40/43°防振4枚刃コーナーRエンドミル【侍シリーズ】 不等リード/不等分割刃先ギャッシュランド採用Champgne Goldコーティング

GO TO THE ONLINE STORE!

4043CR4F Series/Anti-Vibration 4 Flutes Coner Radius Carbide End Mill Variable Helix Leads 40/43°Unequal Spacing Teeth



● 第一推奨/First recommendation ○第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             | ○                                | △                                | ○               | ●                        | ●                                         | ○                 |                 |                                |   |

| 型番                   | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolarance | 定価<br>¥ |
|----------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T4043-060CR005-50-4F | 6.0       | 0.5R         | 6.0               | 13.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,660   |
| T4043-060CR010-50-4F | 6.0       | 1.0R         | 6.0               | 13.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,660   |
| T4043-080CR005-60-4F | 8.0       | 0.5R         | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 4,460   |
| T4043-080CR010-60-4F | 8.0       | 1.0R         | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 4,460   |
| T4043-100CR005-75-4F | 10.0      | 0.5R         | 10.0              | 22.0                 | 75.0               |                  |                                            | +0/-0.02        | 6,920   |
| T4043-100CR010-75-4F | 10.0      | 1.0R         | 10.0              | 22.0                 | 75.0               |                  |                                            | +0/-0.02        | 6,920   |
| T4043-100CR020-75-4F | 10.0      | 2.0R         | 10.0              | 22.0                 | 75.0               |                  |                                            | +0/-0.02        | 6,920   |
| T4043-120CR005-75-4F | 12.0      | 0.5R         | 12.0              | 26.0                 | 75.0               |                  |                                            | +0/-0.02        | 8,890   |
| T4043-120CR010-75-4F | 12.0      | 1.0R         | 12.0              | 26.0                 | 75.0               |                  |                                            | +0/-0.02        | 8,890   |
| T4043-120CR020-75-4F | 12.0      | 2.0R         | 12.0              | 26.0                 | 75.0               |                  |                                            | +0/-0.02        | 8,890   |

# 超硬35°2枚刃コーナーRエンドミル【刀シリーズ】

## 刃先ギャッシュランド採用AlCrSinコーティング



GO TO THE ONLINE STORE!

48CR2F Series/2 Flutes Coner Radius Carbide End Mill



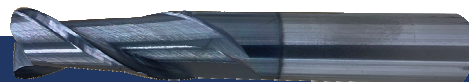
● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        |                                           | ○                 |                 |                                |   |

| 型番                    | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|-----------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T48-010CR002-50-2F    | 1.0       | 0.2R         | 4.0               | 3.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,490   |
| T48-015CR002-50-2F    | 1.5       | 0.2R         | 4.0               | 5.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,490   |
| T48-020CR002-50-2F    | 2.0       | 0.2R         | 4.0               | 6.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,490   |
| T48-030CR002-04-50-2F | 3.0       | 0.2R         | 4.0               | 9.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,490   |
| T48-030CR002-06-50-2F | 3.0       | 0.2R         | 6.0               | 9.0                  | 50.0               |                  |                                            | +0/-0.02        | 2,140   |
| T48-030CR003-04-50-2F | 3.0       | 0.3R         | 4.0               | 9.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,490   |
| T48-030CR003-06-50-2F | 3.0       | 0.3R         | 6.0               | 9.0                  | 50.0               |                  |                                            | +0/-0.02        | 2,140   |
| T48-030CR005-04-50-2F | 3.0       | 0.5R         | 4.0               | 9.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,490   |
| T48-030CR005-06-50-2F | 3.0       | 0.5R         | 6.0               | 9.0                  | 50.0               |                  |                                            | +0/-0.02        | 2,140   |
| T48-040CR002-04-50-2F | 4.0       | 0.2R         | 4.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,490   |
| T48-040CR002-06-50-2F | 4.0       | 0.2R         | 6.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,140   |
| T48-040CR003-04-50-2F | 4.0       | 0.3R         | 4.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,490   |
| T48-040CR003-06-50-2F | 4.0       | 0.3R         | 6.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,140   |
| T48-040CR005-04-50-2F | 4.0       | 0.5R         | 4.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,490   |
| T48-040CR005-06-50-2F | 4.0       | 0.5R         | 6.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,140   |
| T48-040CR010-50-2F    | 4.0       | 1R           | 4.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,490   |
| T48-050CR002-50-2F    | 5.0       | 0.2R         | 6.0               | 13.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,140   |
| T48-050CR003-50-2F    | 5.0       | 0.3R         | 6.0               | 13.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,140   |
| T48-050CR005-50-2F    | 5.0       | 0.5R         | 6.0               | 13.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,140   |
| T48-050CR010-50-2F    | 5.0       | 1R           | 6.0               | 13.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,140   |
| T48-060CR005-50-2F    | 6.0       | 0.5R         | 6.0               | 16.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,140   |
| T48-060CR010-50-2F    | 6.0       | 1R           | 6.0               | 16.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,140   |
| T48-060CR015-50-2F    | 6.0       | 1.5R         | 6.0               | 16.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,140   |
| T48-060CR020-50-2F    | 6.0       | 2R           | 6.0               | 16.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,140   |
| T48-060CR010-75-2F    | 6.0       | 1R           | 6.0               | 16.0                 | 75.0               |                  |                                            | +0/-0.02        | 2,370   |
| T48-060CR015-75-2F    | 6.0       | 1.5R         | 6.0               | 16.0                 | 75.0               |                  |                                            | +0/-0.02        | 2,370   |
| T48-080CR003-60-2F    | 8.0       | 0.3R         | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 3,550   |
| T48-080CR010-60-2F    | 8.0       | 1R           | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 3,550   |
| T48-080CR015-60-2F    | 8.0       | 1.5R         | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 3,550   |
| T48-080CR020-60-2F    | 8.0       | 2R           | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 3,550   |
| T48-080CR005-75-2F    | 8.0       | 0.5R         | 8.0               | 20.0                 | 75.0               |                  |                                            | +0/-0.02        | 3,550   |
| T48-080CR010-75-2F    | 8.0       | 1R           | 8.0               | 20.0                 | 75.0               |                  |                                            | +0/-0.02        | 3,550   |
| T48-080CR002-100-2F   | 8.0       | 0.2R         | 8.0               | 20.0                 | 100.0              |                  |                                            | +0/-0.02        | 3,900   |
| T48-080CR005-100-2F   | 8.0       | 0.5R         | 8.0               | 20.0                 | 100.0              |                  |                                            | +0/-0.02        | 3,900   |
| T48-100CR003-75-2F    | 10.0      | 0.3R         | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 5,910   |
| T48-100CR005-75-2F    | 10.0      | 0.5R         | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 5,910   |
| T48-100CR010-75-2F    | 10.0      | 1R           | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 5,910   |
| T48-100CR015-75-2F    | 10.0      | 1.5R         | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 5,910   |
| T48-100CR020-75-2F    | 10.0      | 2R           | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 5,910   |
| T48-100CR030-75-2F    | 10.0      | 3R           | 10.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 5,910   |
| T48-100CR010-100-2F   | 10.0      | 1R           | 10.0              | 25.0                 | 100.0              |                  |                                            | +0/-0.02        | 6,130   |
| T48-120CR005-75-2F    | 12.0      | 0.5R         | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 8,300   |
| T48-120CR010-75-2F    | 12.0      | 1R           | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 8,300   |
| T48-120CR015-75-2F    | 12.0      | 1.5R         | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 8,300   |
| T48-120CR020-75-2F    | 12.0      | 2R           | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 8,300   |
| T48-120CR030-75-2F    | 12.0      | 3R           | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 8,300   |

# 超硬35°2枚刃コーナーRエンドミル【刀シリーズ】

## 刃先ギャッシュランド採用AlCrSinコーティング



GO TO THE ONLINE STORE!



48CR2F Series/2 Flutes Coner Radius Carbide End Mill

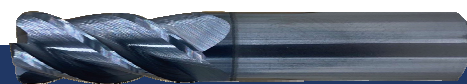
● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        |                                           | ○                 |                 |                                |   |

| 型番                  | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck+Cutting<br>Length | 公差<br>Tolarance | 定価<br>¥ |
|---------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|------------------------------------------|-----------------|---------|
| T48-160CR005-100-2F | 16.0      | 0.5R         | 16.0              | 36.0                 | 100.0              |                  |                                          | +0/-0.03        | 14,340  |
| T48-160CR010-100-2F | 16.0      | 1R           | 16.0              | 36.0                 | 100.0              |                  |                                          | +0/-0.03        | 14,340  |
| T48-160CR020-100-2F | 16.0      | 2R           | 16.0              | 36.0                 | 100.0              |                  |                                          | +0/-0.03        | 14,340  |
| T48-160CR030-100-2F | 16.0      | 3R           | 16.0              | 36.0                 | 100.0              |                  |                                          | +0/-0.03        | 14,340  |
| T48-160CR020-150-2F | 16.0      | 2R           | 16.0              | 36.0                 | 150.0              |                  |                                          | +0/-0.03        | 16,050  |

# 超硬35°4枚刃コーナ-Rエンドミル【刀シリーズ】

## 刃先ギャッシュランド採用AlCrSinコーティング



GO TO THE ONLINE STORE!

48CR4F Series/4 Flutes Coner Radius Carbide End Mill



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        |                                           | ○                 |                 |                                |   |

| 型番                    | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|-----------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T48-010CR002-50-4F    | 1.0       | 0.2R         | 4.0               | 3.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,570   |
| T48-015CR002-50-4F    | 1.5       | 0.2R         | 4.0               | 5.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,570   |
| T48-020CR002-50-4F    | 2.0       | 0.2R         | 4.0               | 6.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,570   |
| T48-030CR002-50-1-4F  | 3.0       | 0.2R         | 4.0               | 6.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,570   |
| T48-030CR002-50-2-4F  | 3.0       | 0.2R         | 4.0               | 9.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,810   |
| T48-030CR003-50-4F    | 3.0       | 0.3R         | 4.0               | 9.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,810   |
| T48-030CR005-50-4F    | 3.0       | 0.5R         | 4.0               | 9.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,810   |
| T48-030CR005-75-4F    | 3.0       | 0.5R         | 4.0               | 9.0                  | 75.0               |                  |                                            | +0/-0.02        | 2,050   |
| T48-040CR002-50-1-4F  | 4.0       | 0.2R         | 4.0               | 6.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,570   |
| T48-040CR002-50-2-4F  | 4.0       | 0.2R         | 4.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,810   |
| T48-040CR003-50-4F    | 4.0       | 0.3R         | 4.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,570   |
| T48-040CR005-50-4F    | 4.0       | 0.5R         | 4.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,570   |
| T48-040CR005-75-4F    | 4.0       | 0.5R         | 4.0               | 11.0                 | 75.0               |                  |                                            | +0/-0.02        | 2,050   |
| T48-040CR010-50-4F    | 4.0       | 1R           | 4.0               | 11.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,570   |
| T48-045CR010-50-4F    | 4.5       | 1R           | 6.0               | 12.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,050   |
| T48-050CR002-06-50-4F | 5.0       | 0.2R         | 6.0               | 13.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,050   |
| T48-050CR005-05-50-4F | 5.0       | 0.5R         | 5.0               | 13.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,050   |
| T48-050CR005-06-50-4F | 5.0       | 0.5R         | 6.0               | 13.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,050   |
| T48-050CR010-05-50-4F | 5.0       | 1R           | 5.0               | 13.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,050   |
| T48-050CR010-06-50-4F | 5.0       | 1R           | 6.0               | 13.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,050   |
| T48-050CR015-50-4F    | 5.0       | 1.5R         | 6.0               | 13.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,050   |
| T48-060CR002-50-4F    | 6.0       | 0.2R         | 6.0               | 16.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,050   |
| T48-060CR005-50-1-4F  | 6.0       | 0.5R         | 6.0               | 9.0                  | 50.0               |                  |                                            | +0/-0.02        | 2,050   |
| T48-060CR005-50-2-4F  | 6.0       | 0.5R         | 6.0               | 16.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,050   |
| T48-060CR010-50-4F    | 6.0       | 1R           | 6.0               | 16.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,050   |
| T48-060CR015-50-4F    | 6.0       | 1.5R         | 6.0               | 16.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,050   |
| T48-060CR005-75-4F    | 6.0       | 0.5R         | 6.0               | 16.0                 | 75.0               |                  |                                            | +0/-0.02        | 2,270   |
| T48-060CR010-75-4F    | 6.0       | 1R           | 6.0               | 16.0                 | 75.0               |                  |                                            | +0/-0.02        | 2,270   |
| T48-060CR015-75-4F    | 6.0       | 1.5R         | 6.0               | 16.0                 | 75.0               |                  |                                            | +0/-0.02        | 2,270   |
| T48-080CR003-60-4F    | 8.0       | 0.3R         | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 3,510   |
| T48-080CR005-60-4F    | 8.0       | 0.5R         | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 3,510   |
| T48-080CR010-60-4F    | 8.0       | 1R           | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 3,510   |
| T48-080CR015-60-4F    | 8.0       | 1.5R         | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 3,510   |
| T48-080CR020-60-4F    | 8.0       | 2R           | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 3,510   |
| T48-080CR005-75-4F    | 8.0       | 0.5R         | 8.0               | 20.0                 | 75.0               |                  |                                            | +0/-0.02        | 3,940   |
| T48-080CR010-75-4F    | 8.0       | 1R           | 8.0               | 20.0                 | 75.0               |                  |                                            | +0/-0.02        | 3,940   |
| T48-080CR005-100-4F   | 8.0       | 0.5R         | 8.0               | 20.0                 | 100.0              |                  |                                            | +0/-0.02        | 3,940   |
| T48-080CR010-100-4F   | 8.0       | 1R           | 8.0               | 20.0                 | 100.0              |                  |                                            | +0/-0.02        | 3,940   |
| T48-080CR015-100-4F   | 8.0       | 1.5R         | 8.0               | 20.0                 | 100.0              |                  |                                            | +0/-0.02        | 3,940   |
| T48-080CR020-100-4F   | 8.0       | 2R           | 8.0               | 20.0                 | 100.0              |                  |                                            | +0/-0.02        | 3,940   |
| T48-100CR002-75-4F    | 10.0      | 0.2R         | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 5,030   |
| T48-100CR003-75-4F    | 10.0      | 0.3R         | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 5,030   |
| T48-100CR005-75-4F    | 10.0      | 0.5R         | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 5,030   |
| T48-100CR010-75-4F    | 10.0      | 1R           | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 5,030   |
| T48-100CR015-75-4F    | 10.0      | 1.5R         | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 5,030   |
| T48-100CR020-75-4F    | 10.0      | 2R           | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 5,030   |
| T48-100CR025-75-4F    | 10.0      | 2.5R         | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 5,030   |
| T48-100CR030-75-4F    | 10.0      | 3R           | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 5,030   |



# 超硬35°4枚刃コーナーRエンドミル【刀シリーズ】

## 刃先ギャッシュランド採用AlCrSinコーティング

GO TO THE ONLINE STORE!

48CR4F Series/4 Flutes Coner Radius Carbide End Mill



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

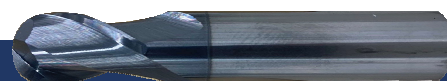
| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        |                                           | ○                 |                 |                                |   |

| 型番                  | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|---------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T48-100CR005-100-4F | 10.0      | 0.5R         | 10.0              | 25.0                 | 100.0              |                  |                                            | +0/-0.02        | 5,300   |
| T48-100CR010-100-4F | 10.0      | 1R           | 10.0              | 25.0                 | 100.0              |                  |                                            | +0/-0.02        | 5,300   |
| T48-100CR015-100-4F | 10.0      | 1.5R         | 10.0              | 25.0                 | 100.0              |                  |                                            | +0/-0.02        | 5,300   |
| T48-100CR020-100-4F | 10.0      | 2R           | 10.0              | 25.0                 | 100.0              |                  |                                            | +0/-0.02        | 5,300   |
| T48-120CR005-75-4F  | 12.0      | 0.5R         | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 6,840   |
| T48-120CR010-75-4F  | 12.0      | 1R           | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 6,840   |
| T48-120CR015-75-4F  | 12.0      | 1.5R         | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 6,840   |
| T48-120CR020-75-4F  | 12.0      | 2R           | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 6,840   |
| T48-120CR025-75-4F  | 12.0      | 2.5R         | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 6,840   |
| T48-120CR030-75-4F  | 12.0      | 3R           | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 6,840   |
| T48-120CR005-100-4F | 12.0      | 0.5R         | 12.0              | 30.0                 | 100.0              |                  |                                            | +0/-0.02        | 6,840   |
| T48-120CR010-100-4F | 12.0      | 1R           | 12.0              | 30.0                 | 100.0              |                  |                                            | +0/-0.02        | 6,840   |
| T48-120CR015-100-4F | 12.0      | 1.5R         | 12.0              | 30.0                 | 100.0              |                  |                                            | +0/-0.02        | 6,840   |
| T48-120CR020-100-4F | 12.0      | 2R           | 12.0              | 30.0                 | 100.0              |                  |                                            | +0/-0.02        | 6,840   |
| T48-120CR030-100-4F | 12.0      | 3R           | 12.0              | 30.0                 | 100.0              |                  |                                            | +0/-0.02        | 6,840   |
| T48-160CR005-100-4F | 16.0      | 0.5R         | 16.0              | 36.0                 | 100.0              |                  |                                            | +0/-0.03        | 14,340  |
| T48-160CR010-100-4F | 16.0      | 1R           | 16.0              | 36.0                 | 100.0              |                  |                                            | +0/-0.03        | 14,340  |
| T48-160CR020-100-4F | 16.0      | 2R           | 16.0              | 36.0                 | 100.0              |                  |                                            | +0/-0.03        | 14,340  |
| T48-160CR030-100-4F | 16.0      | 3R           | 16.0              | 36.0                 | 100.0              |                  |                                            | +0/-0.03        | 14,340  |
| T48-160CR005-150-4F | 16.0      | 0.5R         | 16.0              | 36.0                 | 150.0              |                  |                                            | +0/-0.03        | 16,050  |
| T48-160CR010-150-4F | 16.0      | 1R           | 16.0              | 36.0                 | 150.0              |                  |                                            | +0/-0.03        | 16,050  |
| T48-160CR015-150-4F | 16.0      | 1.5R         | 16.0              | 36.0                 | 150.0              |                  |                                            | +0/-0.03        | 16,050  |
| T48-160CR020-150-4F | 16.0      | 2R           | 16.0              | 36.0                 | 150.0              |                  |                                            | +0/-0.03        | 16,050  |
| T48-160CR030-150-4F | 16.0      | 3R           | 16.0              | 36.0                 | 150.0              |                  |                                            | +0/-0.03        | 16,050  |

# 超硬30°2枚刃ボールエンドミル【カシリーズ】

## AlCrSinコーティング

48B2F Series/2 Flutes Ball Nose Carbide End Mill For Steel



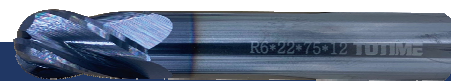
GO TO THE ONLINE STORE!



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        |                                           | ○                 |                 |                                |   |

| 型番                | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|-------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T48-008B-50-2F    | 0.8       | 0.4R         | 4.0               | 1.6                  | 50.0               |                  |                                            | +0/-0.01        | 1,460   |
| T48-009B-50-2F    | 0.9       | 0.45R        | 4.0               | 1.8                  | 50.0               |                  |                                            | +0/-0.01        | 1,460   |
| T48-010B-50-2F    | 1.0       | 0.5R         | 4.0               | 2.0                  | 50.0               |                  |                                            | +0/-0.01        | 1,460   |
| T48-015B-50-2F    | 1.5       | 0.75R        | 4.0               | 3.0                  | 50.0               |                  |                                            | +0/-0.01        | 1,640   |
| T48-020B-04-50-2F | 2.0       | 1R           | 4.0               | 4.0                  | 50.0               |                  |                                            | +0/-0.015       | 1,460   |
| T48-020B-06-50-2F | 2.0       | 1R           | 6.0               | 4.0                  | 50.0               |                  |                                            | +0/-0.015       | 2,030   |
| T48-020B-04-75-2F | 2.0       | 1R           | 4.0               | 4.0                  | 75.0               |                  |                                            | +0/-0.015       | 1,640   |
| T48-020B-06-75-2F | 2.0       | 1R           | 6.0               | 4.0                  | 75.0               |                  |                                            | +0/-0.015       | 2,030   |
| T48-025B-50-2F    | 2.5       | 1.25R        | 4.0               | 5.0                  | 50.0               |                  |                                            | +0/-0.015       | 1,370   |
| T48-030B-04-50-2F | 3.0       | 1.5R         | 4.0               | 6.0                  | 50.0               |                  |                                            | +0/-0.015       | 1,610   |
| T48-030B-06-50-2F | 3.0       | 1.5R         | 6.0               | 6.0                  | 50.0               |                  |                                            | +0/-0.015       | 2,030   |
| T48-030B-04-75-2F | 3.0       | 1.5R         | 4.0               | 6.0                  | 75.0               |                  |                                            | +0/-0.015       | 1,770   |
| T48-030B-06-75-2F | 3.0       | 1.5R         | 6.0               | 6.0                  | 75.0               |                  |                                            | +0/-0.015       | 1,930   |
| T48-040B-04-50-2F | 4.0       | 2R           | 4.0               | 8.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,370   |
| T48-040B-06-50-2F | 4.0       | 2R           | 6.0               | 8.0                  | 50.0               |                  |                                            | +0/-0.02        | 2,030   |
| T48-040B-04-75-2F | 4.0       | 2R           | 4.0               | 8.0                  | 75.0               |                  |                                            | +0/-0.02        | 1,370   |
| T48-040B-06-75-2F | 4.0       | 2R           | 6.0               | 8.0                  | 75.0               |                  |                                            | +0/-0.02        | 2,030   |
| T48-050B-50-2F    | 5.0       | 2.5R         | 6.0               | 10.0                 | 50.0               |                  |                                            | +0/-0.02        | 1,870   |
| T48-050B-75-2F    | 5.0       | 2.5R         | 6.0               | 10.0                 | 75.0               |                  |                                            | +0/-0.02        | 2,030   |
| T48-060B-50-2F    | 6.0       | 3R           | 6.0               | 12.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,030   |
| T48-060B-75-2F    | 6.0       | 3R           | 6.0               | 12.0                 | 75.0               |                  |                                            | +0/-0.02        | 2,240   |
| T48-070B-60-2F    | 7.0       | 3.5R         | 8.0               | 14.0                 | 60.0               |                  |                                            | +0/-0.02        | 3,610   |
| T48-070B-100-2F   | 7.0       | 3.5R         | 8.0               | 14.0                 | 100.0              |                  |                                            | +0/-0.02        | 4,720   |
| T48-080B-60-2F    | 8.0       | 4R           | 8.0               | 14.0                 | 60.0               |                  |                                            | +0/-0.02        | 3,610   |
| T48-080B-75-2F    | 8.0       | 4R           | 8.0               | 14.0                 | 75.0               |                  |                                            | +0/-0.02        | 4,240   |
| T48-080B-100-2F   | 8.0       | 4R           | 8.0               | 14.0                 | 100.0              |                  |                                            | +0/-0.02        | 4,720   |
| T48-090B-75-2F    | 9.0       | 4.5R         | 10.0              | 16.0                 | 75.0               |                  |                                            | +0/-0.02        | 4,960   |
| T48-090B-100-2F   | 9.0       | 4.5R         | 10.0              | 16.0                 | 100.0              |                  |                                            | +0/-0.02        | 5,280   |
| T48-100B-75-2F    | 10.0      | 5R           | 10.0              | 18.0                 | 75.0               |                  |                                            | +0/-0.02        | 4,960   |
| T48-100B-100-2F   | 10.0      | 5R           | 10.0              | 18.0                 | 100.0              |                  |                                            | +0/-0.02        | 5,280   |
| T48-110B-75-2F    | 11.0      | 5.5R         | 12.0              | 20.0                 | 75.0               |                  |                                            | +0/-0.02        | 7,090   |
| T48-110B-100-2F   | 11.0      | 5.5R         | 12.0              | 20.0                 | 100.0              |                  |                                            | +0/-0.02        | 8,590   |
| T48-120B-75-2F    | 12.0      | 6R           | 12.0              | 22.0                 | 75.0               |                  |                                            | +0/-0.02        | 7,090   |
| T48-120B-100-2F   | 12.0      | 6R           | 12.0              | 22.0                 | 100.0              |                  |                                            | +0/-0.02        | 8,590   |
| T48-130B-100-2F   | 13.0      | 6.5R         | 14.0              | 26.0                 | 100.0              |                  |                                            | +0/-0.02        | 14,360  |
| T48-140B-100-2F   | 14.0      | 7R           | 14.0              | 26.0                 | 100.0              |                  |                                            | +0/-0.02        | 14,360  |
| T48-150B-100-2F   | 15.0      | 7.5R         | 16.0              | 30.0                 | 100.0              |                  |                                            | +0/-0.02        | 15,000  |
| T48-160B-100-2F   | 16.0      | 8R           | 16.0              | 30.0                 | 100.0              |                  |                                            | +0/-0.02        | 15,000  |
| T48-200B-100-2F   | 20.0      | 10R          | 20.0              | 38.0                 | 100.0              |                  |                                            | +0/-0.02        | 22,890  |



# 超硬30°4枚刃ボールエンドミル【刀シリーズ】

## AlCrSinコーティング

GO TO THE ONLINE STORE!

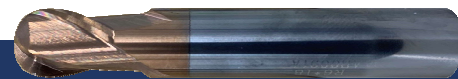
48B4F Series/4 Flutes Ball Nose Carbide End Mill For Steel



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        |                                           | ○                 |                 |                                |   |

| 型番                | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|-------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T48-020B-04-50-4F | 2.0       | 1R           | 4.0               | 4.0                  | 50.0               |                  |                                            | +0/-0.015       | 1,300   |
| T48-025B-50-4F    | 2.5       | 1.25R        | 4.0               | 5.0                  | 50.0               |                  |                                            | +0/-0.015       | 1,300   |
| T48-030B-03-50-4F | 3.0       | 1.5R         | 3.0               | 6.0                  | 50.0               |                  |                                            | +0/-0.015       | 1,300   |
| T48-030B-04-50-4F | 3.0       | 1.5R         | 4.0               | 6.0                  | 50.0               |                  |                                            | +0/-0.015       | 1,300   |
| T48-030B-06-50-4F | 3.0       | 1.5R         | 6.0               | 6.0                  | 50.0               |                  |                                            | +0/-0.015       | 2,210   |
| T48-040B-04-50-4F | 4.0       | 2R           | 4.0               | 8.0                  | 50.0               |                  |                                            | +0/-0.02        | 1,300   |
| T48-040B-06-50-4F | 4.0       | 2R           | 6.0               | 8.0                  | 50.0               |                  |                                            | +0/-0.02        | 2,210   |
| T48-050B-05-50-4F | 5.0       | 2.5R         | 5.0               | 10.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,210   |
| T48-050B-06-50-4F | 5.0       | 2.5R         | 6.0               | 10.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,210   |
| T48-060B-50-4F    | 6.0       | 3R           | 6.0               | 12.0                 | 50.0               |                  |                                            | +0/-0.02        | 2,210   |
| T48-060B-100-4F   | 6.0       | 3R           | 6.0               | 12.0                 | 100.0              |                  |                                            | +0/-0.02        | 2,620   |
| T48-060B-150-4F   | 6.0       | 3R           | 6.0               | 12.0                 | 150.0              |                  |                                            | +0/-0.02        | 3,670   |
| T48-070B-60-4F    | 7.0       | 3.5R         | 8.0               | 14.0                 | 60.0               |                  |                                            | +0/-0.02        | 3,600   |
| T48-080B-60-4F    | 8.0       | 4R           | 8.0               | 14.0                 | 60.0               |                  |                                            | +0/-0.02        | 3,600   |
| T48-080B-100-4F   | 8.0       | 4R           | 8.0               | 14.0                 | 100.0              |                  |                                            | +0/-0.02        | 4,020   |
| T48-090B-75-4F    | 9.0       | 4.5R         | 10.0              | 16.0                 | 75.0               |                  |                                            | +0/-0.02        | 5,590   |
| T48-100B-75-4F    | 10.0      | 5R           | 10.0              | 18.0                 | 75.0               |                  |                                            | +0/-0.02        | 5,590   |
| T48-110B-75-4F    | 11.0      | 5.5R         | 12.0              | 20.0                 | 75.0               |                  |                                            | +0/-0.02        | 7,860   |
| T48-120B-75-4F    | 12.0      | 6R           | 12.0              | 22.0                 | 75.0               |                  |                                            | +0/-0.02        | 7,860   |
| T48-120B-100-4F   | 12.0      | 6R           | 12.0              | 22.0                 | 100.0              |                  |                                            | +0/-0.02        | 7,880   |
| T48-120B-150-4F   | 12.0      | 6R           | 12.0              | 22.0                 | 150.0              |                  |                                            | +0/-0.02        | 11,860  |
| T48-140B-75-4F    | 14.0      | 7R           | 14.0              | 24.0                 | 75.0               |                  |                                            | +0/-0.02        | 12,370  |
| T48-160B-100-4F   | 16.0      | 8R           | 16.0              | 30.0                 | 100.0              |                  |                                            | +0/-0.02        | 15,000  |
| T48-200B-100-4F   | 20.0      | 10R          | 20.0              | 38.0                 | 100.0              |                  |                                            | +0/-0.02        | 22,890  |



# 超硬30°高硬度用2枚刃ボールエンドミル【刀シリーズ】

## TiAlCrSiコーティング

GO TO THE ONLINE STORE!

60B2F Series/2 Flutes Ball Nose Carbide End Mill for Hardened Steel



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             | ●                                | ●                                | ●               | ○                        | △                                         | ○                 |                 |                                |   |

| 型番              | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|-----------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T60-006B-50-2F  | 0.6       | 0.3R         | 4.0               | 0.9                  | 50.0               |                  |                                            | ±0.005          | 2,950   |
| T60-010B-50-2F  | 1.0       | 0.5R         | 4.0               | 1.5                  | 50.0               |                  |                                            | ±0.005          | 2,950   |
| T60-015B-50-2F  | 1.5       | 0.75R        | 4.0               | 2.5                  | 50.0               |                  |                                            | ±0.005          | 2,950   |
| T60-020B-50-2F  | 2.0       | 1R           | 4.0               | 3.0                  | 50.0               |                  |                                            | ±0.005          | 2,950   |
| T60-030B-50-2F  | 3.0       | 1.5R         | 4.0               | 4.5                  | 50.0               |                  |                                            | ±0.005          | 2,950   |
| T60-040B-50-2F  | 4.0       | 2R           | 4.0               | 6.0                  | 50.0               |                  |                                            | ±0.008          | 2,950   |
| T60-050B-50-2F  | 5.0       | 2.5R         | 6.0               | 7.5                  | 50.0               |                  |                                            | ±0.008          | 3,510   |
| T60-060B-50-2F  | 6.0       | 3R           | 6.0               | 9.0                  | 50.0               |                  |                                            | ±0.008          | 3,510   |
| T60-080B-60-2F  | 8.0       | 4R           | 8.0               | 12.0                 | 60.0               |                  |                                            | ±0.008          | 5,030   |
| T60-100B-75-2F  | 10.0      | 5R           | 10.0              | 15.0                 | 75.0               |                  |                                            | ±0.008          | 8,660   |
| T60-120B-75-2F  | 12.0      | 6R           | 12.0              | 18.0                 | 75.0               |                  |                                            | ±0.008          | 10,180  |
| T60-160B-100-2F | 16.0      | 8R           | 16.0              | 24.0                 | 100.0              |                  |                                            | ±0.008          | 39,620  |



# 超硬30°高硬度用2枚刃ボールエンドミル Blue Nanoコーティング

65B2F Series/2 Flutes Ball Nose Carbide End Mill for Hardened Steel

GO TO THE ONLINE STORE!



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             | ●                                | ●                                | ●               | ○                        | △                                         | ○                 |                 |                                |   |

| 型番                | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|-------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T65-010B-50-2F    | 1.0       | 0.5R         | 4.0               | 2.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 1,930   |
| T65-015B-50-2F    | 1.5       | 0.75R        | 4.0               | 3.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 1,930   |
| T65-020B-50-2F    | 2.0       | 1R           | 4.0               | 4.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 1,930   |
| T65-025B-50-2F    | 2.5       | 1.25R        | 4.0               | 5.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 1,930   |
| T65-030B-04-50-2F | 3.0       | 1.5R         | 4.0               | 6.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 1,930   |
| T65-030B-03-50-2F | 3.0       | 1.5R         | 3.0               | 6.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 1,930   |
| T65-030B-75-2F    | 3.0       | 1.5R         | 3.0               | 6.0                  | 75.0               |                  |                                            | -0.01/-0.02     | 2,610   |
| T65-030B-100-2F   | 3.0       | 1.5R         | 3.0               | 6.0                  | 100.0              |                  |                                            | -0.01/-0.02     | 2,940   |
| T65-035B-50-2F    | 3.5       | 1.75R        | 4.0               | 7.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 1,930   |
| T65-040B-50-2F    | 4.0       | 2R           | 4.0               | 8.0                  | 50.0               |                  |                                            | -0.01/-0.02     | 1,930   |
| T65-040B-75-2F    | 4.0       | 2R           | 4.0               | 8.0                  | 75.0               |                  |                                            | -0.01/-0.02     | 2,610   |
| T65-040B-100-2F   | 4.0       | 2R           | 4.0               | 8.0                  | 100.0              |                  |                                            | -0.01/-0.02     | 2,940   |
| T65-050B-05-50-2F | 5.0       | 2.5R         | 5.0               | 10.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 3,620   |
| T65-050B-06-50-2F | 5.0       | 2.5R         | 6.0               | 10.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 3,620   |
| T65-050B-75-2F    | 5.0       | 2.5R         | 5.0               | 10.0                 | 75.0               |                  |                                            | -0.01/-0.02     | 4,380   |
| T65-050B-100-2F   | 5.0       | 2.5R         | 5.0               | 10.0                 | 100.0              |                  |                                            | -0.01/-0.02     | 5,130   |
| T65-060B-50-2F    | 6.0       | 3R           | 6.0               | 12.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 3,620   |
| T65-060B-75-2F    | 6.0       | 3R           | 6.0               | 12.0                 | 75.0               |                  |                                            | -0.01/-0.02     | 4,380   |
| T65-060B-100-2F   | 6.0       | 3R           | 6.0               | 12.0                 | 100.0              |                  |                                            | -0.01/-0.02     | 5,130   |
| T65-060B-150-2F   | 6.0       | 3R           | 6.0               | 12.0                 | 150.0              |                  |                                            | -0.01/-0.02     | 8,840   |
| T65-070B-60-2F    | 7.0       | 3.5R         | 8.0               | 14.0                 | 60.0               |                  |                                            | -0.015/-0.03    | 5,890   |
| T65-080B-60-2F    | 8.0       | 4R           | 8.0               | 16.0                 | 60.0               |                  |                                            | -0.015/-0.03    | 5,890   |
| T65-080B-75-2F    | 8.0       | 4R           | 8.0               | 16.0                 | 75.0               |                  |                                            | -0.015/-0.03    | 6,730   |
| T65-080B-100-2F   | 8.0       | 4R           | 8.0               | 16.0                 | 100.0              |                  |                                            | -0.015/-0.03    | 8,410   |
| T65-080B-150-2F   | 8.0       | 4R           | 8.0               | 16.0                 | 150.0              |                  |                                            | -0.015/-0.03    | 13,800  |
| T65-090B-75-2F    | 9.0       | 4.5R         | 10.0              | 18.0                 | 75.0               |                  |                                            | -0.015/-0.03    | 9,340   |
| T65-100B-75-2F    | 10.0      | 5R           | 10.0              | 20.0                 | 75.0               |                  |                                            | -0.015/-0.03    | 9,340   |
| T65-100B-100-2F   | 10.0      | 5R           | 10.0              | 20.0                 | 100.0              |                  |                                            | -0.015/-0.03    | 10,690  |
| T65-100B-150-2F   | 10.0      | 5R           | 10.0              | 20.0                 | 150.0              |                  |                                            | -0.015/-0.03    | 18,430  |
| T65-110B-75-2F    | 11.0      | 5.5R         | 12.0              | 22.0                 | 75.0               |                  |                                            | -0.02/-0.04     | 12,460  |
| T65-120B-75-2F    | 12.0      | 6R           | 12.0              | 24.0                 | 75.0               |                  |                                            | -0.02/-0.04     | 12,460  |
| T65-120B-100-2F   | 12.0      | 6R           | 12.0              | 24.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 15,820  |
| T65-120B-150-2F   | 12.0      | 6R           | 12.0              | 24.0                 | 150.0              |                  |                                            | -0.02/-0.04     | 26,100  |
| T65-140B-100-2F   | 14.0      | 7R           | 14.0              | 28.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 20,540  |
| T65-140B-150-2F   | 14.0      | 7R           | 14.0              | 28.0                 | 150.0              |                  |                                            | -0.02/-0.04     | 33,840  |
| T65-160B-100-2F   | 16.0      | 8R           | 16.0              | 32.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 26,510  |
| T65-160B-150-2F   | 16.0      | 8R           | 16.0              | 32.0                 | 150.0              |                  |                                            | -0.02/-0.04     | 42,930  |
| T65-180B-100-2F   | 18.0      | 9R           | 18.0              | 36.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 32,570  |
| T65-180B-150-2F   | 18.0      | 9R           | 18.0              | 36.0                 | 150.0              |                  |                                            | -0.02/-0.04     | 53,450  |
| T65-200B-100-2F   | 20.0      | 10R          | 20.0              | 40.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 38,970  |
| T65-200B-150-2F   | 20.0      | 10R          | 20.0              | 40.0                 | 150.0              |                  |                                            | -0.02/-0.04     | 66,000  |

# 超硬43/45°防振4枚刃ラフィングエンドミル【侍シリーズ】 強ねじれファインカット不等リード/不等分割刃先R付 POWERコーティング



GO TO THE ONLINE STORE!

4345R Series/Anti-Vibration 4 Flutes Carbide Roughing End Mill Variable Helix Leads 43/45° Unequal Spacing Teeth



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             | ●                                | ●<60                             | ●               | ●                        | ○                                         | ○                 |                 |                                |   |

| 型番                | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|-------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T4345-060R-50-4F  | 6.0       | 0.5R         | 6.0               | 15.0                 | 50.0               |                  |                                            | +0/-0.02        | 5,910   |
| T4345-070R-60-4F  | 7.0       | 0.5R         | 8.0               | 18.0                 | 60.0               |                  |                                            | +0/-0.02        | 6,060   |
| T4345-080R-60-4F  | 8.0       | 0.5R         | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 6,060   |
| T4345-080R-75-4F  | 8.0       | 0.5R         | 8.0               | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 6,730   |
| T4345-090R-75-4F  | 9.0       | 0.5R         | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 7,180   |
| T4345-100R-75-4F  | 10.0      | 0.5R         | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 7,180   |
| T4345-110R-75-4F  | 11.0      | 0.5R         | 12.0              | 28.0                 | 75.0               |                  |                                            | +0/-0.02        | 9,400   |
| T4345-120R-75-4F  | 12.0      | 0.5R         | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 9,400   |
| T4345-130R-100-4F | 13.0      | 1R           | 14.0              | 35.0                 | 100.0              |                  |                                            | +0/-0.03        | 17,000  |
| T4345-140R-100-4F | 14.0      | 1R           | 14.0              | 35.0                 | 100.0              |                  |                                            | +0/-0.03        | 17,000  |
| T4345-150R-100-4F | 15.0      | 1R           | 16.0              | 38.0                 | 100.0              |                  |                                            | +0/-0.03        | 17,700  |
| T4345-160R-100-4F | 16.0      | 1R           | 16.0              | 40.0                 | 100.0              |                  |                                            | +0/-0.03        | 17,700  |
| T4345-170R-100-4F | 17.0      | 1R           | 20.0              | 43.0                 | 100.0              |                  |                                            | +0/-0.03        | 25,400  |
| T4345-180R-100-4F | 18.0      | 1R           | 20.0              | 45.0                 | 100.0              |                  |                                            | +0/-0.03        | 25,400  |
| T4345-200R-100-4F | 20.0      | 1R           | 20.0              | 50.0                 | 100.0              |                  |                                            | +0/-0.03        | 25,400  |

# 超硬37/38°防振4枚刃ラフィングエンドミル【侍シリーズ】

## 中ねじれファインカット不等リード/不等分割刃先R付 POWERコーティング



GO TO THE ONLINE STORE!

3738R Series/Anti-Vibration 4 Flutes Carbide Roughing End Mill Variable Helix Leads 37/38° Unequal Spacing Teeth



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             | ●                                | ●<60                             | ●               | ●                        | ○                                         | ○                 |                 |                                |   |

| 型番                | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|-------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T3738-060R-50-4F  | 6.0       | 0.5R         | 6.0               | 15.0                 | 50.0               |                  |                                            | +0/-0.02        | 5,910   |
| T3738-070R-60-4F  | 7.0       | 0.5R         | 8.0               | 18.0                 | 60.0               |                  |                                            | +0/-0.02        | 6,060   |
| T3738-080R-60-4F  | 8.0       | 0.5R         | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 6,060   |
| T3738-080R-75-4F  | 8.0       | 0.5R         | 8.0               | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 6,730   |
| T3738-090R-75-4F  | 9.0       | 0.5R         | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 7,180   |
| T3738-100R-75-4F  | 10.0      | 0.5R         | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 7,180   |
| T3738-110R-75-4F  | 11.0      | 0.5R         | 12.0              | 28.0                 | 75.0               |                  |                                            | +0/-0.02        | 9,400   |
| T3738-120R-75-4F  | 12.0      | 0.5R         | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 9,400   |
| T3738-130R-100-4F | 13.0      | 1R           | 14.0              | 35.0                 | 100.0              |                  |                                            | +0/-0.03        | 17,000  |
| T3738-140R-100-4F | 14.0      | 1R           | 14.0              | 35.0                 | 100.0              |                  |                                            | +0/-0.03        | 17,000  |
| T3738-150R-100-4F | 15.0      | 1R           | 16.0              | 38.0                 | 100.0              |                  |                                            | +0/-0.03        | 17,700  |
| T3738-160R-100-4F | 16.0      | 1R           | 16.0              | 40.0                 | 100.0              |                  |                                            | +0/-0.03        | 17,700  |
| T3738-170R-100-4F | 17.0      | 1R           | 20.0              | 43.0                 | 100.0              |                  |                                            | +0/-0.03        | 25,400  |
| T3738-180R-100-4F | 18.0      | 1R           | 20.0              | 45.0                 | 100.0              |                  |                                            | +0/-0.03        | 25,400  |
| T3738-200R-100-4F | 20.0      | 1R           | 20.0              | 50.0                 | 100.0              |                  |                                            | +0/-0.03        | 25,400  |

# 超硬19/21°防振4枚刃ラフィングエンドミル【侍シリーズ】 弱ねじれファインカット不等リード/不等分割刃先R付 POWERコーティング



GO TO THE ONLINE STORE!

T1921R Series/Anti-Vibration 4 Flutes Carbide Roughing End Mill Variable Helix Leads 19/21° Unequal Spacing Teeth



● 第一推奨/First recommendation ○第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             | ●                                | ●<60                             | ●               | ●                        | ○                                         | ○                 |                 |                                |   |

| 型番                | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|-------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T1921-060R-50-4F  | 6.0       | 0.5R         | 6.0               | 15.0                 | 50.0               |                  |                                            | +0/-0.02        | 5,910   |
| T1921-070R-60-4F  | 7.0       | 0.5R         | 8.0               | 18.0                 | 60.0               |                  |                                            | +0/-0.02        | 6,060   |
| T1921-080R-60-4F  | 8.0       | 0.5R         | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 6,060   |
| T1921-080R-75-4F  | 8.0       | 0.5R         | 8.0               | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 6,730   |
| T1921-090R-75-4F  | 9.0       | 0.5R         | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 7,180   |
| T1921-100R-75-4F  | 10.0      | 0.5R         | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 7,180   |
| T1921-110R-75-4F  | 11.0      | 0.5R         | 12.0              | 28.0                 | 75.0               |                  |                                            | +0/-0.02        | 9,400   |
| T1921-120R-75-4F  | 12.0      | 0.5R         | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 9,400   |
| T1921-130R-100-4F | 13.0      | 1R           | 14.0              | 35.0                 | 100.0              |                  |                                            | +0/-0.03        | 17,000  |
| T1921-140R-100-4F | 14.0      | 1R           | 14.0              | 35.0                 | 100.0              |                  |                                            | +0/-0.03        | 17,000  |
| T1921-150R-100-4F | 15.0      | 1R           | 16.0              | 38.0                 | 100.0              |                  |                                            | +0/-0.03        | 17,700  |
| T1921-160R-100-4F | 16.0      | 1R           | 16.0              | 40.0                 | 100.0              |                  |                                            | +0/-0.03        | 17,700  |
| T1921-170R-100-4F | 17.0      | 1R           | 20.0              | 43.0                 | 100.0              |                  |                                            | +0/-0.03        | 25,400  |
| T1921-180R-100-4F | 18.0      | 1R           | 20.0              | 45.0                 | 100.0              |                  |                                            | +0/-0.03        | 25,400  |
| T1921-200R-100-4F | 20.0      | 1R           | 20.0              | 50.0                 | 100.0              |                  |                                            | +0/-0.03        | 25,400  |



# 超硬43/45°防振4枚刃ラフィングエンドミル【侍シリーズ】

## 強ねじれファインカット不等リード/不等分割刃先R付Champgne Goldコーティング

GO TO THE ONLINE STORE!

4345RF Series/Anti-Vibration 4 Flutes Carbide Roughing End Mill Variable Helix Leads 43/45° Unequal Spacing Teeth



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             | ●                                | ●<60                             | ●               | ●                        | ●                                         | ○                 |                 |                                |   |

| 型番                | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|-------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T4345-060RF-50-4F | 6.0       | 0.5R         | 6.0               | 15.0                 | 50.0               |                  |                                            | +0/-0.02        | 6,210   |
| T4345-080RF-60-4F | 8.0       | 0.5R         | 8.0               | 20.0                 | 60.0               |                  |                                            | +0/-0.02        | 6,360   |
| T4345-080RF-75-4F | 8.0       | 0.5R         | 8.0               | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 7,240   |
| T4345-100RF-75-4F | 10.0      | 0.5R         | 10.0              | 25.0                 | 75.0               |                  |                                            | +0/-0.02        | 8,640   |
| T4345-120RF-75-4F | 12.0      | 0.5R         | 12.0              | 30.0                 | 75.0               |                  |                                            | +0/-0.02        | 11,280  |

# 超硬35°4枚刃ラフィングエンドミル 刃先ギャッシュランド採用Tixcoコーティング



GO TO THE ONLINE STORE!



55R4F Series/4 Flutes Roughing Carbide End Mill

● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             | ○                                |                                  | ●               | ○                        |                                           | ○                 |                 |                                |   |

| 型番            | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|---------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T55-040R-S-4F | 4.0       |              | 4.0               | 10.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 2,040   |
| T55-060R-S-4F | 6.0       |              | 6.0               | 15.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 3,240   |
| T55-080R-S-4F | 8.0       |              | 8.0               | 20.0                 | 60.0               |                  |                                            | -0.015/-0.03    | 5,090   |
| T55-100R-S-4F | 10.0      |              | 10.0              | 25.0                 | 75.0               |                  |                                            | -0.015/-0.03    | 7,820   |
| T55-120R-S-4F | 12.0      |              | 12.0              | 30.0                 | 75.0               |                  |                                            | -0.02/-0.04     | 10,320  |
| T55-140R-S-4F | 14.0      |              | 14.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 18,940  |
| T55-160R-S-4F | 16.0      |              | 16.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 23,330  |
| T55-180R-S-4F | 18.0      |              | 18.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 28,340  |
| T55-200R-S-4F | 20.0      |              | 20.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 33,590  |



# 超硬35°アルミ用3枚刃ラフィングエンドミル 刃先ギャッシュランド採用ノンコート

GO TO THE ONLINE STORE!

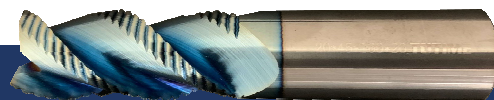
55RAL3F Series/3 Flutes Roughing Carbide End Mill For Aluminum



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  |                                 |                               |                                  |                                  |                 |                          |                                           | ○                 | ●               | ○                              |   |

| 型番            | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|---------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T55-040R-A-3F | 4.0       |              | 4.0               | 12.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 1,850   |
| T55-060R-A-3F | 6.0       |              | 6.0               | 18.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 2,920   |
| T55-080R-A-3F | 8.0       |              | 8.0               | 24.0                 | 60.0               |                  |                                            | -0.015/-0.03    | 4,640   |
| T55-100R-A-3F | 10.0      |              | 10.0              | 30.0                 | 75.0               |                  |                                            | -0.015/-0.03    | 7,280   |
| T55-120R-A-3F | 12.0      |              | 12.0              | 36.0                 | 75.0               |                  |                                            | -0.02/-0.04     | 9,650   |
| T55-140R-A-3F | 14.0      |              | 14.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 18,090  |
| T55-160R-A-3F | 16.0      |              | 16.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 22,600  |
| T55-180R-A-3F | 18.0      |              | 18.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 27,110  |
| T55-200R-A-3F | 20.0      |              | 20.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 32,490  |



# 超硬35°アルミ用3枚刃ラフィングエンドミル【刀シリーズ】 刃先ギャッシュランド採用DLCコーティング

GO TO THE ONLINE STORE!

55RAL3FDLC1 Series/3 Flutes Roughing Carbide End Mill For Aluminum



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  |                                 |                               |                                  |                                  |                 |                          |                                           | ●                 | ●               | ●                              |   |

| 型番                 | 刃径<br>Dia | 刃先<br>R or C | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | ネック径<br>Neck Dia | ネック長<br>(刃長含む)<br>Neck + Cutting<br>Length | 公差<br>Tolerance | 定価<br>¥ |
|--------------------|-----------|--------------|-------------------|----------------------|--------------------|------------------|--------------------------------------------|-----------------|---------|
| T55-040R-A-3F-DLC1 | 4.0       |              | 4.0               | 12.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 4,426   |
| T55-060R-A-3F-DLC1 | 6.0       |              | 6.0               | 18.0                 | 50.0               |                  |                                            | -0.01/-0.02     | 5,920   |
| T55-080R-A-3F-DLC1 | 8.0       |              | 8.0               | 24.0                 | 60.0               |                  |                                            | -0.015/-0.03    | 9,670   |
| T55-100R-A-3F-DLC1 | 10.0      |              | 10.0              | 30.0                 | 75.0               |                  |                                            | -0.015/-0.03    | 14,553  |
| T55-120R-A-3F-DLC1 | 12.0      |              | 12.0              | 36.0                 | 75.0               |                  |                                            | -0.02/-0.04     | 17,226  |
| T55-140R-A-3F-DLC1 | 14.0      |              | 14.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 26,575  |
| T55-160R-A-3F-DLC1 | 16.0      |              | 16.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 31,085  |
| T55-180R-A-3F-DLC1 | 18.0      |              | 18.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 37,110  |
| T55-200R-A-3F-DLC1 | 20.0      |              | 20.0              | 45.0                 | 100.0              |                  |                                            | -0.02/-0.04     | 42,490  |





# 超硬3Dタイプオイル穴無し2枚刃ドリル

## 2 Flutes Tungsten Carbide Drill 3D Type without Oil Hole

GO TO THE ONLINE STORE!



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        | ○                                         | ●                 |                 | ○                              |   |

| 型番       | 刃径<br>Dia | 刃先角度<br>Point Angle | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | - | - | 公差<br>Tolerance | 定価<br>¥ |
|----------|-----------|---------------------|-------------------|----------------------|--------------------|---|---|-----------------|---------|
| CTW030D6 | 3.0       | 140°                | 6                 | 20                   | 62                 |   |   | h6              | 4,340   |
| CTW031D6 | 3.1       | 140°                | 6                 | 20                   | 62                 |   |   | h6              | 4,340   |
| CTW032D6 | 3.2       | 140°                | 6                 | 20                   | 62                 |   |   | h6              | 4,340   |
| CTW033D6 | 3.3       | 140°                | 6                 | 20                   | 62                 |   |   | h6              | 4,340   |
| CTW034D6 | 3.4       | 140°                | 6                 | 20                   | 62                 |   |   | h6              | 4,340   |
| CTW035D6 | 3.5       | 140°                | 6                 | 20                   | 62                 |   |   | h6              | 4,340   |
| CTW036D6 | 3.6       | 140°                | 6                 | 20                   | 62                 |   |   | h6              | 4,340   |
| CTW037D6 | 3.7       | 140°                | 6                 | 20                   | 62                 |   |   | h6              | 4,340   |
| CTW038D6 | 3.8       | 140°                | 6                 | 24                   | 66                 |   |   | h6              | 4,970   |
| CTW039D6 | 3.9       | 140°                | 6                 | 24                   | 66                 |   |   | h6              | 4,970   |
| CTW040D6 | 4.0       | 140°                | 6                 | 24                   | 66                 |   |   | h6              | 4,970   |
| CTW041D6 | 4.1       | 140°                | 6                 | 24                   | 66                 |   |   | h6              | 4,970   |
| CTW042D6 | 4.2       | 140°                | 6                 | 24                   | 66                 |   |   | h6              | 4,970   |
| CTW043D6 | 4.3       | 140°                | 6                 | 24                   | 66                 |   |   | h6              | 4,970   |
| CTW044D6 | 4.4       | 140°                | 6                 | 24                   | 66                 |   |   | h6              | 4,970   |
| CTW045D6 | 4.5       | 140°                | 6                 | 24                   | 66                 |   |   | h6              | 4,970   |
| CTW046D6 | 4.6       | 140°                | 6                 | 24                   | 66                 |   |   | h6              | 4,970   |
| CTW047D6 | 4.7       | 140°                | 6                 | 24                   | 66                 |   |   | h6              | 4,970   |
| CTW048D6 | 4.8       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW049D6 | 4.9       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW050D6 | 5.0       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW051D6 | 5.1       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW052D6 | 5.2       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW053D6 | 5.3       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW054D6 | 5.4       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW055D6 | 5.5       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW056D6 | 5.6       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW057D6 | 5.7       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW058D6 | 5.8       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW059D6 | 5.9       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW060D6 | 6.0       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW061D8 | 6.1       | 140°                | 8                 | 34                   | 79                 |   |   | h6              | 7,490   |
| CTW062D8 | 6.2       | 140°                | 8                 | 34                   | 79                 |   |   | h6              | 7,490   |
| CTW063D8 | 6.3       | 140°                | 8                 | 34                   | 79                 |   |   | h6              | 7,490   |
| CTW064D8 | 6.4       | 140°                | 8                 | 34                   | 79                 |   |   | h6              | 7,490   |
| CTW065D8 | 6.5       | 140°                | 8                 | 34                   | 79                 |   |   | h6              | 7,490   |
| CTW066D8 | 6.6       | 140°                | 8                 | 34                   | 79                 |   |   | h6              | 7,490   |
| CTW067D8 | 6.7       | 140°                | 8                 | 34                   | 79                 |   |   | h6              | 7,490   |
| CTW068D8 | 6.8       | 140°                | 8                 | 34                   | 79                 |   |   | h6              | 7,490   |
| CTW069D8 | 6.9       | 140°                | 8                 | 34                   | 79                 |   |   | h6              | 7,490   |
| CTW070D8 | 7.0       | 140°                | 8                 | 34                   | 79                 |   |   | h6              | 7,490   |
| CTW071D8 | 7.1       | 140°                | 8                 | 41                   | 79                 |   |   | h6              | 7,490   |
| CTW072D8 | 7.2       | 140°                | 8                 | 41                   | 79                 |   |   | h6              | 7,490   |
| CTW073D8 | 7.3       | 140°                | 8                 | 41                   | 79                 |   |   | h6              | 7,490   |
| CTW074D8 | 7.4       | 140°                | 8                 | 41                   | 79                 |   |   | h6              | 7,490   |
| CTW075D8 | 7.5       | 140°                | 8                 | 41                   | 79                 |   |   | h6              | 7,490   |
| CTW076D8 | 7.6       | 140°                | 8                 | 41                   | 79                 |   |   | h6              | 7,490   |
| CTW077D8 | 7.7       | 140°                | 8                 | 41                   | 79                 |   |   | h6              | 7,490   |
| CTW078D8 | 7.8       | 140°                | 8                 | 41                   | 79                 |   |   | h6              | 7,490   |
| CTW079D8 | 7.9       | 140°                | 8                 | 41                   | 79                 |   |   | h6              | 7,490   |
| CTW080D8 | 8.0       | 140°                | 8                 | 41                   | 79                 |   |   | h6              | 7,490   |



# 超硬3Dタイプオイル穴無し2枚刃ドリル

## 2 Flutes Tungsten Carbide Drill 3D Type without Oil Hole

GO TO THE ONLINE STORE!



● 第一推奨/First recommendation ○第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        | ○                                         | ●                 |                 | ○                              |   |

| 型番         | 刃径<br>Dia | 刃先角度<br>Point Angle | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | - | - | 公差<br>Tolerance | 定価<br>¥ |
|------------|-----------|---------------------|-------------------|----------------------|--------------------|---|---|-----------------|---------|
| CTW081D10  | 8.1       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW082D10  | 8.2       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW083D10  | 8.3       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW084D10  | 8.4       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW085D10  | 8.5       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW086D10  | 8.6       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW087D10  | 8.7       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW088D10  | 8.8       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW089D10  | 8.9       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW090D10  | 9.0       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW091D10  | 9.1       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW092D10  | 9.2       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW0925D10 | 9.3       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW093D10  | 9.3       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW094D10  | 9.4       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW095D10  | 9.5       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW096D10  | 9.6       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW097D10  | 9.7       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW098D10  | 9.8       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW099D10  | 9.9       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW100D10  | 10.0      | 140°                | 10                | 47                   | 89                 |   |   | h6              | 10,610  |
| CTW101D12  | 10.1      | 140°                | 12                | 55                   | 102                |   |   | h6              | 14,880  |
| CTW102D12  | 10.2      | 140°                | 12                | 55                   | 102                |   |   | h6              | 14,880  |
| CTW103D12  | 10.3      | 140°                | 12                | 55                   | 102                |   |   | h6              | 14,880  |
| CTW104D12  | 10.4      | 140°                | 12                | 55                   | 102                |   |   | h6              | 14,880  |
| CTW105D12  | 10.5      | 140°                | 12                | 55                   | 102                |   |   | h6              | 14,880  |
| CTW106D12  | 10.6      | 140°                | 12                | 55                   | 102                |   |   | h6              | 14,880  |
| CTW107D12  | 10.7      | 140°                | 12                | 55                   | 102                |   |   | h6              | 14,880  |
| CTW108D12  | 10.8      | 140°                | 12                | 55                   | 102                |   |   | h6              | 14,880  |
| CTW109D12  | 10.9      | 140°                | 12                | 55                   | 102                |   |   | h6              | 14,880  |
| CTW110D12  | 11.0      | 140°                | 12                | 55                   | 102                |   |   | h6              | 14,880  |
| CTW111D12  | 11.1      | 140°                | 12                | 55                   | 102                |   |   | h6              | 14,880  |
| CTW112D12  | 11.2      | 140°                | 12                | 55                   | 102                |   |   | h6              | 14,880  |
| CTW113D12  | 11.3      | 140°                | 12                | 55                   | 102                |   |   | h6              | 14,880  |
| CTW114D12  | 11.4      | 140°                | 12                | 55                   | 102                |   |   | h6              | 14,880  |
| CTW115D12  | 11.5      | 140°                | 12                | 55                   | 102                |   |   | h6              | 14,880  |
| CTW116D12  | 11.6      | 140°                | 12                | 55                   | 102                |   |   | h6              | 14,880  |
| CTW117D12  | 11.7      | 140°                | 12                | 55                   | 102                |   |   | h6              | 14,880  |
| CTW118D12  | 11.8      | 140°                | 12                | 55                   | 102                |   |   | h6              | 14,880  |
| CTW119D12  | 11.9      | 140°                | 12                | 55                   | 102                |   |   | h6              | 14,880  |
| CTW120D12  | 12.0      | 140°                | 12                | 55                   | 102                |   |   | h6              | 14,880  |
| CTW125D14  | 12.5      | 140°                | 14                | 60                   | 107                |   |   | h6              | 19,580  |
| CTW128D14  | 12.8      | 140°                | 14                | 60                   | 107                |   |   | h6              | 19,580  |
| CTW130D14  | 13.0      | 140°                | 14                | 60                   | 107                |   |   | h6              | 19,580  |
| CTW135D14  | 13.5      | 140°                | 14                | 60                   | 107                |   |   | h6              | 19,580  |
| CTW138D14  | 13.8      | 140°                | 14                | 60                   | 107                |   |   | h6              | 19,580  |
| CTW140D14  | 14.0      | 140°                | 14                | 60                   | 107                |   |   | h6              | 19,580  |
| CTW145D16  | 14.5      | 140°                | 16                | 65                   | 115                |   |   | h6              | 25,250  |
| CTW148D16  | 14.8      | 140°                | 16                | 65                   | 115                |   |   | h6              | 25,250  |
| CTW150D16  | 15.0      | 140°                | 16                | 65                   | 115                |   |   | h6              | 25,250  |
| CTW155D16  | 15.5      | 140°                | 16                | 65                   | 115                |   |   | h6              | 25,250  |



# 超硬3Dタイプオイル穴無し2枚刃ドリル

## 2 Flutes Tungsten Carbide Drill 3D Type without Oil Hole

GO TO THE ONLINE STORE!



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        | ○                                         | ●                 |                 | ○                              |   |

| 型番        | 刃径<br>Dia | 刃先角度<br>Point Angle | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | - | - | 公差<br>Tolerance | 定価<br>¥ |
|-----------|-----------|---------------------|-------------------|----------------------|--------------------|---|---|-----------------|---------|
| CTW158D16 | 15.8      | 140°                | 16                | 65                   | 115                |   |   | h6              | 25,250  |
| CTW160D16 | 16.0      | 140°                | 16                | 65                   | 115                |   |   | h6              | 25,250  |
| CTW165D18 | 16.5      | 140°                | 18                | 73                   | 123                |   |   | h6              | 33,520  |
| CTW168D16 | 16.8      | 140°                | 18                | 73                   | 123                |   |   | h6              | 33,520  |
| CTW170D18 | 17.0      | 140°                | 18                | 73                   | 123                |   |   | h6              | 33,520  |
| CTW175D18 | 17.5      | 140°                | 18                | 73                   | 123                |   |   | h6              | 33,520  |
| CTW178D18 | 17.8      | 140°                | 18                | 73                   | 123                |   |   | h6              | 33,520  |
| CTW180D18 | 18.0      | 140°                | 18                | 73                   | 123                |   |   | h6              | 33,520  |
| CTW185D20 | 18.5      | 140°                | 20                | 79                   | 131                |   |   | h6              | 40,580  |
| CTW188D20 | 18.8      | 140°                | 20                | 79                   | 131                |   |   | h6              | 40,580  |
| CTW190D20 | 19.0      | 140°                | 20                | 79                   | 131                |   |   | h6              | 40,580  |
| CTW195D20 | 19.5      | 140°                | 20                | 79                   | 131                |   |   | h6              | 40,580  |
| CTW198D20 | 19.8      | 140°                | 20                | 79                   | 131                |   |   | h6              | 40,580  |
| CTW200D20 | 20.0      | 140°                | 20                | 79                   | 131                |   |   | h6              | 40,580  |



# 超硬5Dタイプオイル穴無し2枚刃ドリル

## 2 Flutes Tungsten Carbide Drill 5D Type without Oil Hole

GO TO THE ONLINE STORE!



● 第一推奨/First recommendation ○第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        | ○                                         | ●                 |                 | ○                              |   |

| 型番          | 刃径<br>Dia | 刃先角度<br>Point Angle | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | - | - | 公差<br>Tolerance | 定価<br>¥ |
|-------------|-----------|---------------------|-------------------|----------------------|--------------------|---|---|-----------------|---------|
| CTW05030D6  | 3.0       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW05031D6  | 3.1       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW05032D6  | 3.2       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW05033D6  | 3.3       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW05034D6  | 3.4       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW05035D6  | 3.5       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW05036D6  | 3.6       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW05037D6  | 3.7       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 4,970   |
| CTW05038D6  | 3.8       | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 5,370   |
| CTW05039D6  | 3.9       | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 5,370   |
| CTW05040D6  | 4.0       | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 5,370   |
| CTW05041D6  | 4.1       | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 5,370   |
| CTW05042D6  | 4.2       | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 5,370   |
| CTW05043D6  | 4.3       | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 5,370   |
| CTW05044D6  | 4.4       | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 5,370   |
| CTW05045D6  | 4.5       | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 5,370   |
| CTW05046D6  | 4.6       | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 5,370   |
| CTW050465D6 | 4.7       | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 5,370   |
| CTW05047D6  | 4.7       | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 5,370   |
| CTW05048D6  | 4.8       | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 5,700   |
| CTW05049D6  | 4.9       | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 5,700   |
| CTW05050D6  | 5.0       | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 5,700   |
| CTW05051D6  | 5.1       | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 5,700   |
| CTW05052D6  | 5.2       | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 5,700   |
| CTW05053D6  | 5.3       | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 5,700   |
| CTW05054D6  | 5.4       | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 5,700   |
| CTW05055D6  | 5.5       | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 5,700   |
| CTW050555D6 | 5.6       | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 5,700   |
| CTW05056D6  | 5.6       | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 5,700   |
| CTW05057D6  | 5.7       | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 5,700   |
| CTW05058D6  | 5.8       | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 5,700   |
| CTW05059D6  | 5.9       | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 5,700   |
| CTW05060D6  | 6.0       | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 5,700   |
| CTW05061D8  | 6.1       | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 8,130   |
| CTW05062D8  | 6.2       | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 8,130   |
| CTW05063D8  | 6.3       | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 8,130   |
| CTW05064D8  | 6.4       | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 8,130   |
| CTW05065D8  | 6.5       | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 8,130   |
| CTW05066D8  | 6.6       | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 8,130   |
| CTW05067D8  | 6.7       | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 8,130   |
| CTW05068D8  | 6.8       | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 8,130   |
| CTW05069D8  | 6.9       | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 8,130   |
| CTW05070D8  | 7.0       | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 8,130   |
| CTW05071D8  | 7.1       | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 8,130   |
| CTW05072D8  | 7.2       | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 8,130   |
| CTW05073D8  | 7.3       | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 8,130   |
| CTW05074D8  | 7.4       | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 8,130   |
| CTW05075D8  | 7.5       | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 8,130   |
| CTW05076D8  | 7.6       | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 8,130   |
| CTW05077D8  | 7.7       | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 8,130   |
| CTW05078D8  | 7.8       | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 8,130   |



# 超硬5Dタイプオイル穴無し2枚刃ドリル

## 2 Flutes Tungsten Carbide Drill 5D Type without Oil Hole

GO TO THE ONLINE STORE!



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        | ○                                         | ●                 |                 | ○                              |   |

| 型番           | 刃径<br>Dia | 刃先角度<br>Point Angle | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | - | - | 公差<br>Tolerance | 定価<br>¥ |
|--------------|-----------|---------------------|-------------------|----------------------|--------------------|---|---|-----------------|---------|
| CTW05079D8   | 7.9       | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 8,130   |
| CTW05080D8   | 8.0       | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 8,130   |
| CTW05081D10  | 8.1       | 140°                | 10                | 61                   | 103                |   |   | h6              | 11,550  |
| CTW05082D10  | 8.2       | 140°                | 10                | 61                   | 103                |   |   | h6              | 11,550  |
| CTW05083D10  | 8.3       | 140°                | 10                | 61                   | 103                |   |   | h6              | 11,550  |
| CTW05084D10  | 8.4       | 140°                | 10                | 61                   | 103                |   |   | h6              | 11,550  |
| CTW05085D10  | 8.5       | 140°                | 10                | 61                   | 103                |   |   | h6              | 11,550  |
| CTW05086D10  | 8.6       | 140°                | 10                | 61                   | 103                |   |   | h6              | 11,550  |
| CTW05087D10  | 8.7       | 140°                | 10                | 61                   | 103                |   |   | h6              | 11,550  |
| CTW05088D10  | 8.8       | 140°                | 10                | 61                   | 103                |   |   | h6              | 11,550  |
| CTW05089D10  | 8.9       | 140°                | 10                | 61                   | 103                |   |   | h6              | 11,550  |
| CTW05090D10  | 9.0       | 140°                | 10                | 61                   | 103                |   |   | h6              | 11,550  |
| CTW05091D10  | 9.1       | 140°                | 10                | 61                   | 103                |   |   | h6              | 11,550  |
| CTW05092D10  | 9.2       | 140°                | 10                | 61                   | 103                |   |   | h6              | 11,550  |
| CTW05093D10  | 9.3       | 140°                | 10                | 61                   | 103                |   |   | h6              | 11,550  |
| CTW05094D10  | 9.4       | 140°                | 10                | 61                   | 103                |   |   | h6              | 11,550  |
| CTW05095D10  | 9.5       | 140°                | 10                | 61                   | 103                |   |   | h6              | 11,550  |
| CTW05096D10  | 9.6       | 140°                | 10                | 61                   | 103                |   |   | h6              | 11,550  |
| CTW05097D10  | 9.7       | 140°                | 10                | 61                   | 103                |   |   | h6              | 11,550  |
| CTW05098D10  | 9.8       | 140°                | 10                | 61                   | 103                |   |   | h6              | 11,550  |
| CTW05099D10  | 9.9       | 140°                | 10                | 61                   | 103                |   |   | h6              | 11,550  |
| CTW05100D10  | 10.0      | 140°                | 10                | 61                   | 103                |   |   | h6              | 11,550  |
| CTW05101D12  | 10.1      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW05102D12  | 10.2      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW051025D12 | 10.3      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW05103D12  | 10.3      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW05104D12  | 10.4      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW05105D12  | 10.5      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW05106D12  | 10.6      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW05107D12  | 10.7      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW05108D12  | 10.8      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW05109D12  | 10.9      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW05110D12  | 11.0      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW05111D12  | 11.1      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW05112D12  | 11.2      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW05113D12  | 11.3      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW05114D12  | 11.4      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW05115D12  | 11.5      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW05116D12  | 11.6      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW05117D12  | 11.7      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW05118D12  | 11.8      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW05119D12  | 11.9      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW05120D12  | 12.0      | 140°                | 12                | 71                   | 118                |   |   | h6              | 16,190  |
| CTW05122D12  | 12.2      | 140°                | 14                | 77                   | 124                |   |   | h6              | 21,340  |
| CTW05123D12  | 12.3      | 140°                | 14                | 77                   | 124                |   |   | h6              | 21,340  |
| CTW05124D14  | 12.4      | 140°                | 14                | 77                   | 124                |   |   | h6              | 21,340  |
| CTW05125D14  | 12.5      | 140°                | 14                | 77                   | 124                |   |   | h6              | 21,340  |
| CTW05128D14  | 12.8      | 140°                | 14                | 77                   | 124                |   |   | h6              | 21,340  |
| CTW05130D14  | 13.0      | 140°                | 14                | 77                   | 124                |   |   | h6              | 21,340  |
| CTW05135D14  | 13.5      | 140°                | 14                | 77                   | 124                |   |   | h6              | 21,340  |
| CTW05138D14  | 13.8      | 140°                | 14                | 77                   | 124                |   |   | h6              | 21,340  |



# 超硬5Dタイプオイル穴無し2枚刃ドリル

## 2 Flutes Tungsten Carbide Drill 5D Type without Oil Hole

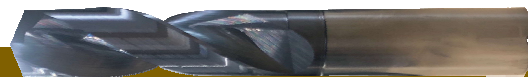
GO TO THE ONLINE STORE!



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        | ○                                         | ●                 |                 | ○                              |   |

| 型番          | 刃径<br>Dia | 刃先角度<br>Point Angle | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | - | - | 公差<br>Tolerance | 定価<br>¥ |
|-------------|-----------|---------------------|-------------------|----------------------|--------------------|---|---|-----------------|---------|
| CTW05140D14 | 14.0      | 140°                | 14                | 77                   | 124                |   |   | h6              | 21,340  |
| CTW05143D16 | 14.3      | 140°                | 16                | 83                   | 133                |   |   | h6              | 28,160  |
| CTW05145D16 | 14.5      | 140°                | 16                | 83                   | 133                |   |   | h6              | 28,160  |
| CTW05146D16 | 14.6      | 140°                | 16                | 83                   | 133                |   |   | h6              | 28,160  |
| CTW05148D16 | 14.8      | 140°                | 16                | 83                   | 133                |   |   | h6              | 28,160  |
| CTW05150D16 | 15.0      | 140°                | 16                | 83                   | 133                |   |   | h6              | 28,160  |
| CTW05155D16 | 15.5      | 140°                | 16                | 83                   | 133                |   |   | h6              | 28,160  |
| CTW05158D16 | 15.8      | 140°                | 16                | 83                   | 133                |   |   | h6              | 28,160  |
| CTW05160D16 | 16.0      | 140°                | 16                | 83                   | 133                |   |   | h6              | 28,160  |
| CTW05165D18 | 16.5      | 140°                | 18                | 93                   | 143                |   |   | h6              | 37,430  |
| CTW05166D18 | 16.6      | 140°                | 18                | 93                   | 143                |   |   | h6              | 37,430  |
| CTW05168D18 | 16.8      | 140°                | 18                | 93                   | 143                |   |   | h6              | 37,430  |
| CTW05170D18 | 17.0      | 140°                | 18                | 93                   | 143                |   |   | h6              | 37,430  |
| CTW05175D18 | 17.5      | 140°                | 18                | 93                   | 143                |   |   | h6              | 37,430  |
| CTW05178D18 | 17.8      | 140°                | 18                | 93                   | 143                |   |   | h6              | 37,430  |
| CTW05180D20 | 18.0      | 140°                | 18                | 93                   | 143                |   |   | h6              | 37,430  |
| CTW05185D20 | 18.5      | 140°                | 20                | 101                  | 153                |   |   | h6              | 46,550  |
| CTW05190D20 | 19.0      | 140°                | 20                | 101                  | 153                |   |   | h6              | 46,550  |
| CTW05195D20 | 19.5      | 140°                | 20                | 101                  | 153                |   |   | h6              | 46,550  |
| CTW05200D20 | 20.0      | 140°                | 20                | 101                  | 153                |   |   | h6              | 46,550  |



# 超硬3Dタイプオイル穴有り2枚刃ドリル

## 2 Flutes Tungsten Carbide Drill 3D Type with Oil Hole

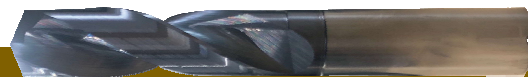
GO TO THE ONLINE STORE!



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        | ○                                         | ●                 |                 | ○                              |   |

| 型番       | 刃径<br>Dia | 刃先角度<br>Point Angle | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | - | - | 公差<br>Tolerance | 定価<br>¥ |
|----------|-----------|---------------------|-------------------|----------------------|--------------------|---|---|-----------------|---------|
| CTS030D6 | 3.0       | 140°                | 6                 | 20                   | 62                 |   |   | h6              | 6,120   |
| CTS031D6 | 3.1       | 140°                | 6                 | 20                   | 62                 |   |   | h6              | 6,120   |
| CTS032D6 | 3.2       | 140°                | 6                 | 20                   | 62                 |   |   | h6              | 6,120   |
| CTS033D6 | 3.3       | 140°                | 6                 | 20                   | 62                 |   |   | h6              | 6,120   |
| CTS034D6 | 3.4       | 140°                | 6                 | 20                   | 62                 |   |   | h6              | 6,120   |
| CTS035D6 | 3.5       | 140°                | 6                 | 20                   | 62                 |   |   | h6              | 6,120   |
| CTS036D6 | 3.6       | 140°                | 6                 | 20                   | 62                 |   |   | h6              | 6,120   |
| CTS037D6 | 3.7       | 140°                | 6                 | 20                   | 62                 |   |   | h6              | 6,120   |
| CTS038D6 | 3.8       | 140°                | 6                 | 24                   | 66                 |   |   | h6              | 6,120   |
| CTS039D6 | 3.9       | 140°                | 6                 | 24                   | 66                 |   |   | h6              | 6,120   |
| CTS040D6 | 4.0       | 140°                | 6                 | 24                   | 66                 |   |   | h6              | 6,120   |
| CTS041D6 | 4.1       | 140°                | 6                 | 24                   | 66                 |   |   | h6              | 6,120   |
| CTS042D6 | 4.2       | 140°                | 6                 | 24                   | 66                 |   |   | h6              | 6,120   |
| CTS043D6 | 4.3       | 140°                | 6                 | 24                   | 66                 |   |   | h6              | 6,120   |
| CTS044D6 | 4.4       | 140°                | 6                 | 24                   | 66                 |   |   | h6              | 6,120   |
| CTS045D6 | 4.5       | 140°                | 6                 | 24                   | 66                 |   |   | h6              | 6,120   |
| CTS046D6 | 4.6       | 140°                | 6                 | 24                   | 66                 |   |   | h6              | 6,120   |
| CTS047D6 | 4.7       | 140°                | 6                 | 24                   | 66                 |   |   | h6              | 6,120   |
| CTS048D6 | 4.8       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,120   |
| CTS049D6 | 4.9       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,120   |
| CTS050D6 | 5.0       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,120   |
| CTS051D6 | 5.1       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,120   |
| CTS052D6 | 5.2       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,120   |
| CTS053D6 | 5.3       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,120   |
| CTS054D6 | 5.4       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,120   |
| CTS055D6 | 5.5       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,120   |
| CTS056D6 | 5.6       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,120   |
| CTS057D6 | 5.7       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,120   |
| CTS058D6 | 5.8       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,120   |
| CTS059D6 | 5.9       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,120   |
| CTS060D6 | 6.0       | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,120   |
| CTS061D8 | 6.1       | 140°                | 8                 | 34                   | 79                 |   |   | h6              | 11,880  |
| CTS062D8 | 6.2       | 140°                | 8                 | 34                   | 79                 |   |   | h6              | 11,880  |
| CTS063D8 | 6.3       | 140°                | 8                 | 34                   | 79                 |   |   | h6              | 11,880  |
| CTS064D8 | 6.4       | 140°                | 8                 | 34                   | 79                 |   |   | h6              | 11,880  |
| CTS065D8 | 6.5       | 140°                | 8                 | 34                   | 79                 |   |   | h6              | 11,880  |
| CTS066D8 | 6.6       | 140°                | 8                 | 34                   | 79                 |   |   | h6              | 11,880  |
| CTS067D8 | 6.7       | 140°                | 8                 | 34                   | 79                 |   |   | h6              | 11,880  |
| CTS068D8 | 6.8       | 140°                | 8                 | 34                   | 79                 |   |   | h6              | 11,880  |
| CTS069D8 | 6.9       | 140°                | 8                 | 34                   | 79                 |   |   | h6              | 11,880  |
| CTS070D8 | 7.0       | 140°                | 8                 | 34                   | 79                 |   |   | h6              | 11,880  |
| CTS071D8 | 7.1       | 140°                | 8                 | 41                   | 79                 |   |   | h6              | 11,880  |
| CTS072D8 | 7.2       | 140°                | 8                 | 41                   | 79                 |   |   | h6              | 11,880  |
| CTS073D8 | 7.3       | 140°                | 8                 | 41                   | 79                 |   |   | h6              | 11,880  |
| CTS074D8 | 7.4       | 140°                | 8                 | 41                   | 79                 |   |   | h6              | 11,880  |
| CTS075D8 | 7.5       | 140°                | 8                 | 41                   | 79                 |   |   | h6              | 11,880  |
| CTS076D8 | 7.6       | 140°                | 8                 | 41                   | 79                 |   |   | h6              | 11,880  |
| CTS077D8 | 7.7       | 140°                | 8                 | 41                   | 79                 |   |   | h6              | 11,880  |
| CTS078D8 | 7.8       | 140°                | 8                 | 41                   | 79                 |   |   | h6              | 11,880  |
| CTS079D8 | 7.9       | 140°                | 8                 | 41                   | 79                 |   |   | h6              | 11,880  |
| CTS080D8 | 8.0       | 140°                | 8                 | 41                   | 79                 |   |   | h6              | 11,880  |



# 超硬3Dタイプオイル穴有り2枚刃ドリル

## 2 Flutes Tungsten Carbide Drill 3D Type with Oil Hole

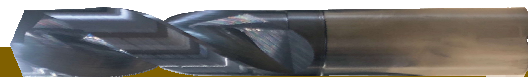
GO TO THE ONLINE STORE!



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        | ○                                         | ●                 |                 | ○                              |   |

| 型番        | 刃径<br>Dia | 刃先角度<br>Point Angle | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | - | - | 公差<br>Tolerance | 定価<br>¥ |
|-----------|-----------|---------------------|-------------------|----------------------|--------------------|---|---|-----------------|---------|
| CTS081D10 | 8.1       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 14,400  |
| CTS082D10 | 8.2       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 14,400  |
| CTS083D10 | 8.3       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 14,400  |
| CTS084D10 | 8.4       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 14,400  |
| CTS085D10 | 8.5       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 14,400  |
| CTS086D10 | 8.6       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 14,400  |
| CTS087D10 | 8.7       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 14,400  |
| CTS088D10 | 8.8       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 14,400  |
| CTS089D10 | 8.9       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 14,400  |
| CTS090D10 | 9.0       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 14,400  |
| CTS091D10 | 9.1       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 14,400  |
| CTS092D10 | 9.2       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 14,400  |
| CTS093D10 | 9.3       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 14,400  |
| CTS094D10 | 9.4       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 14,400  |
| CTS095D10 | 9.5       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 14,400  |
| CTS096D10 | 9.6       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 14,400  |
| CTS097D10 | 9.7       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 14,400  |
| CTS098D10 | 9.8       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 14,400  |
| CTS099D10 | 9.9       | 140°                | 10                | 47                   | 89                 |   |   | h6              | 14,400  |
| CTS100D10 | 10.0      | 140°                | 10                | 47                   | 89                 |   |   | h6              | 14,400  |
| CTS101D12 | 10.1      | 140°                | 12                | 55                   | 102                |   |   | h6              | 20,320  |
| CTS102D12 | 10.2      | 140°                | 12                | 55                   | 102                |   |   | h6              | 20,320  |
| CTS103D12 | 10.3      | 140°                | 12                | 55                   | 102                |   |   | h6              | 20,320  |
| CTS104D12 | 10.4      | 140°                | 12                | 55                   | 102                |   |   | h6              | 20,320  |
| CTS105D12 | 10.5      | 140°                | 12                | 55                   | 102                |   |   | h6              | 20,320  |
| CTS106D12 | 10.6      | 140°                | 12                | 55                   | 102                |   |   | h6              | 20,320  |
| CTS107D12 | 10.7      | 140°                | 12                | 55                   | 102                |   |   | h6              | 20,320  |
| CTS108D12 | 10.8      | 140°                | 12                | 55                   | 102                |   |   | h6              | 20,320  |
| CTS109D12 | 10.9      | 140°                | 12                | 55                   | 102                |   |   | h6              | 20,320  |
| CTS110D12 | 11.0      | 140°                | 12                | 55                   | 102                |   |   | h6              | 20,320  |
| CTS111D12 | 11.1      | 140°                | 12                | 55                   | 102                |   |   | h6              | 20,320  |
| CTS112D12 | 11.2      | 140°                | 12                | 55                   | 102                |   |   | h6              | 20,320  |
| CTS113D12 | 11.3      | 140°                | 12                | 55                   | 102                |   |   | h6              | 20,320  |
| CTS114D12 | 11.4      | 140°                | 12                | 55                   | 102                |   |   | h6              | 20,320  |
| CTS115D12 | 11.5      | 140°                | 12                | 55                   | 102                |   |   | h6              | 20,320  |
| CTS116D12 | 11.6      | 140°                | 12                | 55                   | 102                |   |   | h6              | 20,320  |
| CTS117D12 | 11.7      | 140°                | 12                | 55                   | 102                |   |   | h6              | 20,320  |
| CTS118D12 | 11.8      | 140°                | 12                | 55                   | 102                |   |   | h6              | 20,320  |
| CTS119D12 | 11.9      | 140°                | 12                | 55                   | 102                |   |   | h6              | 20,320  |
| CTS120D12 | 12.0      | 140°                | 12                | 55                   | 102                |   |   | h6              | 20,320  |
| CTS125D14 | 12.5      | 140°                | 14                | 60                   | 107                |   |   | h6              | 26,740  |
| CTS128D14 | 12.8      | 140°                | 14                | 60                   | 107                |   |   | h6              | 26,740  |
| CTS130D14 | 13.0      | 140°                | 14                | 60                   | 107                |   |   | h6              | 26,740  |
| CTS135D14 | 13.5      | 140°                | 14                | 60                   | 107                |   |   | h6              | 26,740  |
| CTS138D14 | 13.8      | 140°                | 14                | 60                   | 107                |   |   | h6              | 26,740  |
| CTS140D14 | 14.0      | 140°                | 14                | 60                   | 107                |   |   | h6              | 26,740  |
| CTS145D16 | 14.5      | 140°                | 16                | 65                   | 115                |   |   | h6              | 33,820  |
| CTS148D16 | 14.8      | 140°                | 16                | 65                   | 115                |   |   | h6              | 33,820  |
| CTS150D16 | 15.0      | 140°                | 16                | 65                   | 115                |   |   | h6              | 33,820  |
| CTS155D16 | 15.5      | 140°                | 16                | 65                   | 115                |   |   | h6              | 33,820  |
| CTS158D16 | 15.8      | 140°                | 16                | 65                   | 115                |   |   | h6              | 33,820  |



# 超硬3Dタイプオイル穴有り2枚刃ドリル

## 2 Flutes Tungsten Carbide Drill 3D Type with Oil Hole

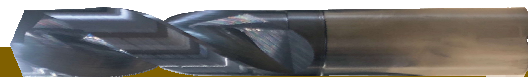
GO TO THE ONLINE STORE!



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        | ○                                         | ●                 |                 | ○                              |   |

| 型番        | 刃径<br>Dia | 刃先角度<br>Point Angle | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | - | - | 公差<br>Tolerance | 定価<br>¥ |
|-----------|-----------|---------------------|-------------------|----------------------|--------------------|---|---|-----------------|---------|
| CTS160D16 | 16.0      | 140°                | 16                | 65                   | 115                |   |   | h6              | 33,820  |
| CTS165D18 | 16.5      | 140°                | 18                | 73                   | 123                |   |   | h6              | 47,830  |
| CTS168D18 | 16.8      | 140°                | 18                | 73                   | 123                |   |   | h6              | 47,830  |
| CTS170D18 | 17.0      | 140°                | 18                | 73                   | 123                |   |   | h6              | 47,830  |
| CTS175D18 | 17.5      | 140°                | 18                | 73                   | 123                |   |   | h6              | 47,830  |
| CTS178D18 | 17.8      | 140°                | 18                | 73                   | 123                |   |   | h6              | 47,830  |
| CTS180D18 | 18.0      | 140°                | 18                | 73                   | 123                |   |   | h6              | 47,830  |
| CTS185D20 | 18.5      | 140°                | 20                | 79                   | 131                |   |   | h6              | 58,370  |
| CTS188D20 | 18.8      | 140°                | 20                | 79                   | 131                |   |   | h6              | 58,370  |
| CTS190D20 | 19.0      | 140°                | 20                | 79                   | 131                |   |   | h6              | 58,370  |
| CTS195D20 | 19.5      | 140°                | 20                | 79                   | 131                |   |   | h6              | 58,370  |
| CTS198D20 | 19.8      | 140°                | 20                | 79                   | 131                |   |   | h6              | 58,370  |
| CTS200D20 | 20.0      | 140°                | 20                | 79                   | 131                |   |   | h6              | 58,370  |



# 超硬5Dタイプオイル穴有り2枚刃ドリル

## 2 Flutes Tungsten Carbide Drill 5D Type with Oil Hole

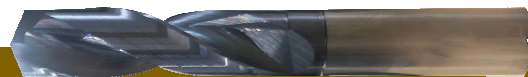
GO TO THE ONLINE STORE!



● 第一推奨/First recommendation ○ 第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        | ○                                         | ●                 |                 | ○                              |   |

| 型番          | 刃径<br>Dia | 刃先角度<br>Point Angle | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | - | - | 公差<br>Tolerance | 定価<br>¥ |
|-------------|-----------|---------------------|-------------------|----------------------|--------------------|---|---|-----------------|---------|
| CTS05030D6  | 3.00      | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,580   |
| CTS05031D6  | 3.10      | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,580   |
| CTS05032D6  | 3.20      | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,580   |
| CTS05033D6  | 3.30      | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,580   |
| CTS05034D6  | 3.40      | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,580   |
| CTS05035D6  | 3.50      | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,580   |
| CTS05036D6  | 3.60      | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,580   |
| CTS05037D6  | 3.70      | 140°                | 6                 | 28                   | 66                 |   |   | h6              | 6,580   |
| CTS05038D6  | 3.80      | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 7,000   |
| CTS05039D6  | 3.90      | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 7,000   |
| CTS05040D6  | 4.00      | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 7,000   |
| CTS05041D6  | 4.10      | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 7,000   |
| CTS05042D6  | 4.20      | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 7,000   |
| CTS05043D6  | 4.30      | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 7,000   |
| CTS05044D6  | 4.40      | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 7,000   |
| CTS05045D6  | 4.50      | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 7,000   |
| CTS05046D6  | 4.60      | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 7,000   |
| CTS050465D6 | 4.65      | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 7,000   |
| CTS05047D6  | 4.70      | 140°                | 6                 | 36                   | 74                 |   |   | h6              | 7,000   |
| CTS05048D6  | 4.80      | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 7,520   |
| CTS05049D6  | 4.90      | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 7,520   |
| CTS05050D6  | 5.00      | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 7,520   |
| CTS05051D6  | 5.10      | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 7,520   |
| CTS05052D6  | 5.20      | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 7,520   |
| CTS05053D6  | 5.30      | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 7,520   |
| CTS05054D6  | 5.40      | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 7,520   |
| CTS05055D6  | 5.50      | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 7,520   |
| CTS050555D6 | 5.55      | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 7,520   |
| CTS05056D6  | 5.60      | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 7,520   |
| CTS05057D6  | 5.70      | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 7,520   |
| CTS05058D6  | 5.80      | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 7,520   |
| CTS05059D6  | 5.90      | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 7,520   |
| CTS05060D6  | 6.00      | 140°                | 6                 | 44                   | 82                 |   |   | h6              | 7,520   |
| CTS05061D8  | 6.10      | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 13,090  |
| CTS05062D8  | 6.20      | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 13,090  |
| CTS05063D8  | 6.30      | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 13,090  |
| CTS05064D8  | 6.40      | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 13,090  |
| CTS05065D8  | 6.50      | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 13,090  |
| CTS05066D8  | 6.60      | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 13,090  |
| CTS05067D8  | 6.70      | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 13,090  |
| CTS05068D8  | 6.80      | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 13,090  |
| CTS05069D8  | 6.90      | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 13,090  |
| CTS05070D8  | 7.00      | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 13,090  |
| CTS05071D8  | 7.10      | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 13,090  |
| CTS05072D8  | 7.20      | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 13,090  |
| CTS05073D8  | 7.30      | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 13,090  |
| CTS05074D8  | 7.40      | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 13,090  |
| CTS05075D8  | 7.50      | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 13,090  |
| CTS05076D8  | 7.60      | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 13,090  |
| CTS05077D8  | 7.70      | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 13,090  |
| CTS05078D8  | 7.80      | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 13,090  |



# 超硬5Dタイプオイル穴有り2枚刃ドリル

## 2 Flutes Tungsten Carbide Drill 5D Type with Oil Hole

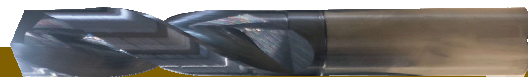
GO TO THE ONLINE STORE!



● 第一推奨/First recommendation ○第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        | ○                                         | ●                 |                 | ○                              |   |

| 型番           | 刃径<br>Dia | 刃先角度<br>Point Angle | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | - | - | 公差<br>Tolerance | 定価<br>¥ |
|--------------|-----------|---------------------|-------------------|----------------------|--------------------|---|---|-----------------|---------|
| CTS05079D8   | 7.90      | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 13,090  |
| CTS05080D8   | 8.00      | 140°                | 8                 | 53                   | 91                 |   |   | h6              | 13,090  |
| CTS05081D10  | 8.10      | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS05082D10  | 8.20      | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS05083D10  | 8.30      | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS05084D10  | 8.40      | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS05085D10  | 8.50      | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS05086D10  | 8.60      | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS05087D10  | 8.70      | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS05088D10  | 8.80      | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS05089D10  | 8.90      | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS05090D10  | 9.00      | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS05091D10  | 9.10      | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS05092D10  | 9.20      | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS05093D10  | 9.30      | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS050935D10 | 9.35      | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS05094D10  | 9.40      | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS05095D10  | 9.50      | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS05096D10  | 9.60      | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS05097D10  | 9.70      | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS05098D10  | 9.80      | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS05099D10  | 9.90      | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS05100D10  | 10.00     | 140°                | 10                | 61                   | 103                |   |   | h6              | 15,010  |
| CTS05101D12  | 10.10     | 140°                | 12                | 71                   | 118                |   |   | h6              | 21,870  |
| CTS05102D12  | 10.20     | 140°                | 12                | 71                   | 118                |   |   | h6              | 21,870  |
| CTS05103D12  | 10.30     | 140°                | 12                | 71                   | 118                |   |   | h6              | 21,870  |
| CTS05104D12  | 10.40     | 140°                | 12                | 71                   | 118                |   |   | h6              | 21,870  |
| CTS05105D12  | 10.50     | 140°                | 12                | 71                   | 118                |   |   | h6              | 21,870  |
| CTS05106D12  | 10.60     | 140°                | 12                | 71                   | 118                |   |   | h6              | 21,870  |
| CTS05107D12  | 10.70     | 140°                | 12                | 71                   | 118                |   |   | h6              | 21,870  |
| CTS05108D12  | 10.80     | 140°                | 12                | 71                   | 118                |   |   | h6              | 21,870  |
| CTS05109D12  | 10.90     | 140°                | 12                | 71                   | 118                |   |   | h6              | 21,870  |
| CTS05110D12  | 11.00     | 140°                | 12                | 71                   | 118                |   |   | h6              | 21,870  |
| CTS05111D12  | 11.10     | 140°                | 12                | 71                   | 118                |   |   | h6              | 21,870  |
| CTS05112D12  | 11.20     | 140°                | 12                | 71                   | 118                |   |   | h6              | 21,870  |
| CTS05113D12  | 11.30     | 140°                | 12                | 71                   | 118                |   |   | h6              | 21,870  |
| CTS05114D12  | 11.40     | 140°                | 12                | 71                   | 118                |   |   | h6              | 21,870  |
| CTS05115D12  | 11.50     | 140°                | 12                | 71                   | 118                |   |   | h6              | 21,870  |
| CTS05116D12  | 11.60     | 140°                | 12                | 71                   | 118                |   |   | h6              | 21,870  |
| CTS05117D12  | 11.70     | 140°                | 12                | 71                   | 118                |   |   | h6              | 21,870  |
| CTS05118D12  | 11.80     | 140°                | 12                | 71                   | 118                |   |   | h6              | 21,870  |
| CTS05119D12  | 11.90     | 140°                | 12                | 71                   | 118                |   |   | h6              | 21,870  |
| CTS05120D12  | 12.00     | 140°                | 12                | 71                   | 118                |   |   | h6              | 21,870  |
| CTS05122D12  | 12.20     | 140°                | 14                | 77                   | 124                |   |   | h6              | 28,780  |
| CTS05123D12  | 12.30     | 140°                | 14                | 77                   | 124                |   |   | h6              | 28,780  |
| CTS05124D12  | 12.40     | 140°                | 14                | 77                   | 124                |   |   | h6              | 28,780  |
| CTS05125D14  | 12.50     | 140°                | 14                | 77                   | 124                |   |   | h6              | 28,780  |
| CTS05128D14  | 12.80     | 140°                | 14                | 77                   | 124                |   |   | h6              | 28,780  |
| CTS05130D14  | 13.00     | 140°                | 14                | 77                   | 124                |   |   | h6              | 28,780  |
| CTS05135D14  | 13.50     | 140°                | 14                | 77                   | 124                |   |   | h6              | 28,780  |
| CTS05138D14  | 13.80     | 140°                | 14                | 77                   | 124                |   |   | h6              | 28,780  |



# 超硬5Dタイプオイル穴有り2枚刃ドリル

## 2 Flutes Tungsten Carbide Drill 5D Type with Oil Hole

GO TO THE ONLINE STORE!



● 第一推奨/First recommendation ○第二推奨/Second recommendation △ 第三推奨/Last recommendation

| ワーク | 炭素鋼等<br>HRC35以下<br>Carbon Steel | 合金鋼<br>HRC45辺り<br>Alloy Steel | 焼入鋼<br>HRC50辺り<br>Hardened Steel | 焼入鋼<br>HRC55以上<br>Hardened Steel | 鋳物<br>Cast Iron | ステンレス<br>Stainless Steel | チタン<br>耐熱合金<br>Heat Resistant<br>Material | 銅<br>Copper Alloy | アルミ<br>Aluminum | ナイロン<br>樹脂系<br>Synthetic Resin | - |
|-----|---------------------------------|-------------------------------|----------------------------------|----------------------------------|-----------------|--------------------------|-------------------------------------------|-------------------|-----------------|--------------------------------|---|
| 推奨  | ●                               | ●                             |                                  |                                  | ●               | ○                        | ○                                         | ●                 |                 | ○                              |   |

| 型番          | 刃径<br>Dia | 刃先角度<br>Point Angle | シャンク<br>Shank Dia | 刃長<br>Cutting Length | 全長<br>Total Length | - | - | 公差<br>Tolerance | 定価<br>¥ |
|-------------|-----------|---------------------|-------------------|----------------------|--------------------|---|---|-----------------|---------|
| CTS05140D14 | 14.00     | 140°                | 14                | 77                   | 124                |   |   | h6              | 28,780  |
| CTS05143D16 | 14.30     | 140°                | 16                | 83                   | 133                |   |   | h6              | 37,140  |
| CTS05145D16 | 14.50     | 140°                | 16                | 83                   | 133                |   |   | h6              | 37,140  |
| CTS05146D16 | 14.60     | 140°                | 16                | 83                   | 133                |   |   | h6              | 37,140  |
| CTS05148D16 | 14.80     | 140°                | 16                | 83                   | 133                |   |   | h6              | 37,140  |
| CTS05150D16 | 15.00     | 140°                | 16                | 83                   | 133                |   |   | h6              | 37,140  |
| CTS05155D16 | 15.50     | 140°                | 16                | 83                   | 133                |   |   | h6              | 37,140  |
| CTS05158D16 | 15.80     | 140°                | 16                | 83                   | 133                |   |   | h6              | 37,140  |
| CTS05160D16 | 16.00     | 140°                | 16                | 83                   | 133                |   |   | h6              | 37,140  |
| CTS05165D18 | 16.50     | 140°                | 18                | 93                   | 143                |   |   | h6              | 49,090  |
| CTS05166D18 | 16.60     | 140°                | 18                | 93                   | 143                |   |   | h6              | 49,090  |
| CTS05168D18 | 16.80     | 140°                | 18                | 93                   | 143                |   |   | h6              | 49,090  |
| CTS05170D18 | 17.00     | 140°                | 18                | 93                   | 143                |   |   | h6              | 49,090  |
| CTS05175D18 | 17.50     | 140°                | 18                | 93                   | 143                |   |   | h6              | 49,090  |
| CTS05178D18 | 17.80     | 140°                | 18                | 93                   | 143                |   |   | h6              | 49,090  |
| CTS05180D20 | 18.00     | 140°                | 18                | 93                   | 143                |   |   | h6              | 49,090  |
| CTS05185D20 | 18.50     | 140°                | 20                | 101                  | 153                |   |   | h6              | 62,980  |
| CTS05190D20 | 19.00     | 140°                | 20                | 101                  | 153                |   |   | h6              | 62,980  |
| CTS05195D20 | 19.50     | 140°                | 20                | 101                  | 153                |   |   | h6              | 62,980  |
| CTS05200D20 | 20.00     | 140°                | 20                | 101                  | 153                |   |   | h6              | 62,980  |

# 超硬43/46°防振4枚刃スクエアエンドミル 超硬40/43°4枚刃コーナーRエンドミル 不等リード/不等分割刃先ギャッシュランド採用Champagne Goldコーティング

4346MT / 4043CR4F Series/Anti-Vibration 4 Flutes Square(Coner Radius) Carbide End Mill Variable Helix Leads 43/46°(40/43°)Unequal Spacing Teeth

## ■ 切削条件目安 溝加工 Recommendation of cutting conditions for slotting

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel  |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|-----------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br><HRC35 |                        | (SCM 低合金鋼等)<br>HRC30~38 |                        | (SKD NAK等)<br>HRC35~45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)       | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                    | 30,255                      | 160                    | 25,478                  | 120                    | 19,745                     | 70                     | 25,478                    | 110                    |
| 1.5                  | 20,170                      | 185                    | 16,985                  | 130                    | 13,163                     | 75                     | 16,985                    | 125                    |
| 2                    | 15,127                      | 210                    | 12,739                  | 145                    | 9,873                      | 80                     | 12,739                    | 135                    |
| 2.5                  | 12,102                      | 220                    | 9,554                   | 160                    | 7,898                      | 85                     | 10,191                    | 145                    |
| 3                    | 10,085                      | 240                    | 9,023                   | 175                    | 7,113                      | 90                     | 9,023                     | 165                    |
| 4                    | 7,962                       | 290                    | 6,768                   | 210                    | 5,334                      | 130                    | 6,768                     | 200                    |
| 5                    | 6,369                       | 320                    | 5,414                   | 230                    | 4,268                      | 135                    | 5,414                     | 250                    |
| 6                    | 5,308                       | 400                    | 4,512                   | 280                    | 3,556                      | 145                    | 4,512                     | 290                    |
| 8                    | 4,180                       | 510                    | 3,384                   | 360                    | 2,667                      | 190                    | 3,384                     | 330                    |
| 10                   | 3,344                       | 610                    | 3,025                   | 430                    | 2,293                      | 240                    | 2,707                     | 490                    |
| 12                   | 2,787                       | 620                    | 2,521                   | 440                    | 1,911                      | 230                    | 2,256                     | 480                    |
| 14                   | 2,389                       | 570                    | 2,161                   | 405                    | 1,638                      | 225                    | 1,934                     | 440                    |
| 16                   | 2,090                       | 540                    | 1,891                   | 390                    | 1,433                      | 210                    | 1,692                     | 400                    |
| 20                   | 1,672                       | 530                    | 1,513                   | 380                    | 1,146                      | 200                    | 1,354                     | 390                    |
| ap=0.5D              |                             |                        |                         |                        |                            |                        |                           |                        |
| ae=1.0D              |                             |                        |                         |                        |                            |                        |                           |                        |

## ■ 切削条件目安 側面加工 Recommendation of cutting conditions for side milling

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel  |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|-----------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br><HRC35 |                        | (SCM 低合金鋼等)<br>HRC30~38 |                        | (SKD NAK等)<br>HRC35~45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)       | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                    | 36,624                      | 160                    | 25,478                  | 110                    | 19,745                     | 70                     | 9,554                     | 100                    |
| 1.5                  | 24,416                      | 180                    | 16,985                  | 115                    | 13,163                     | 75                     | 6,369                     | 110                    |
| 2                    | 18,312                      | 190                    | 12,739                  | 130                    | 9,873                      | 80                     | 5,573                     | 110                    |
| 2.5                  | 14,650                      | 215                    | 9,554                   | 145                    | 7,898                      | 85                     | 4,459                     | 120                    |
| 3                    | 13,800                      | 220                    | 9,023                   | 170                    | 7,113                      | 90                     | 3,715                     | 140                    |
| 4                    | 10,350                      | 270                    | 6,768                   | 200                    | 5,334                      | 130                    | 3,185                     | 220                    |
| 5                    | 8,280                       | 290                    | 5,414                   | 210                    | 4,268                      | 135                    | 2,548                     | 250                    |
| 6                    | 6,900                       | 360                    | 4,512                   | 265                    | 3,556                      | 145                    | 2,389                     | 265                    |
| 8                    | 5,175                       | 480                    | 3,384                   | 330                    | 2,667                      | 190                    | 1,791                     | 290                    |
| 10                   | 4,459                       | 610                    | 3,025                   | 415                    | 2,293                      | 240                    | 1,433                     | 250                    |
| 12                   | 3,715                       | 620                    | 2,521                   | 425                    | 1,911                      | 230                    | 1,062                     | 200                    |
| 14                   | 3,185                       | 550                    | 2,161                   | 385                    | 1,638                      | 215                    | 910                       | 170                    |
| 16                   | 2,787                       | 520                    | 1,891                   | 365                    | 1,433                      | 220                    | 896                       | 165                    |
| 20                   | 2,229                       | 515                    | 1,513                   | 345                    | 1,146                      | 210                    | 717                       | 130                    |
| ap=1.0D              |                             |                        |                         |                        |                            |                        |                           |                        |
| ae=0.5D              |                             |                        |                         |                        |                            |                        |                           |                        |

※この加工条件は全長が標準サイズ、刃長が2.5Dもしくは3Dの工具の使用を想定とした条件です。

もしお使いの工具がそれよりもロングサイズであるのであれば、加工条件の設定を緩めに調整してください。

The above cutting condition is supposed to be used with standard end mills, flute length around 2.5D or 3.0D, not long flute length or long shanks.

If you work with longer types of the end mills, please adjust the feed speed to be slower than the above condition.

※チャンピオンデータを表示しているわけでは御座いませんので、基本的にはお客様の仕事に合う加工条件でご使用下さい。

We don't display a champion data, so please basically use cutting processing conditions that suit your work.

# 超硬43/45°防振4枚刃スクエアエンドミル

## 不等リード/不等分割刃先ギャッシュランド採用 POWERコーティング / AlTiNコーティング

4345PT/4345ST Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 43/45°Unequal Spacing Teeth

### ■ 切削条件目安 溝加工 Recommendation of cutting conditions for slotting

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel  |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|-----------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br><HRC35 |                        | (SCM 低合金鋼等)<br>HRC30~38 |                        | (SKD NAK等)<br>HRC35~45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)       | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                    | 30,255                      | 160                    | 25,478                  | 120                    | 19,745                     | 70                     | 25,478                    | 110                    |
| 1.5                  | 20,170                      | 185                    | 16,985                  | 130                    | 13,163                     | 75                     | 16,985                    | 125                    |
| 2                    | 15,127                      | 210                    | 12,739                  | 145                    | 9,873                      | 80                     | 12,739                    | 135                    |
| 2.5                  | 12,102                      | 220                    | 9,554                   | 160                    | 7,898                      | 85                     | 10,191                    | 145                    |
| 3                    | 10,085                      | 240                    | 9,023                   | 175                    | 7,113                      | 90                     | 9,023                     | 165                    |
| 4                    | 7,962                       | 290                    | 6,768                   | 210                    | 5,334                      | 130                    | 6,768                     | 200                    |
| 5                    | 6,369                       | 320                    | 5,414                   | 230                    | 4,268                      | 135                    | 5,414                     | 250                    |
| 6                    | 5,308                       | 400                    | 4,512                   | 280                    | 3,556                      | 145                    | 4,512                     | 290                    |
| 8                    | 4,180                       | 510                    | 3,384                   | 360                    | 2,667                      | 190                    | 3,384                     | 330                    |
| 10                   | 3,344                       | 610                    | 3,025                   | 430                    | 2,293                      | 240                    | 2,707                     | 490                    |
| 12                   | 2,787                       | 620                    | 2,521                   | 440                    | 1,911                      | 230                    | 2,256                     | 480                    |
| 14                   | 2,389                       | 570                    | 2,161                   | 405                    | 1,638                      | 225                    | 1,934                     | 440                    |
| 16                   | 2,090                       | 540                    | 1,891                   | 390                    | 1,433                      | 210                    | 1,692                     | 400                    |
| 20                   | 1,672                       | 530                    | 1,513                   | 380                    | 1,146                      | 200                    | 1,354                     | 390                    |
| ap=0.5D              |                             |                        |                         |                        |                            |                        |                           |                        |
| ae=1.0D              |                             |                        |                         |                        |                            |                        |                           |                        |

### ■ 切削条件目安 側面加工 Recommendation of cutting conditions for side milling

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel  |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|-----------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br><HRC35 |                        | (SCM 低合金鋼等)<br>HRC30~38 |                        | (SKD NAK等)<br>HRC35~45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)       | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                    | 36,624                      | 160                    | 25,478                  | 110                    | 19,745                     | 70                     | 9,554                     | 100                    |
| 1.5                  | 24,416                      | 180                    | 16,985                  | 115                    | 13,163                     | 75                     | 6,369                     | 110                    |
| 2                    | 18,312                      | 190                    | 12,739                  | 130                    | 9,873                      | 80                     | 5,573                     | 110                    |
| 2.5                  | 14,650                      | 215                    | 9,554                   | 145                    | 7,898                      | 85                     | 4,459                     | 120                    |
| 3                    | 13,800                      | 220                    | 9,023                   | 170                    | 7,113                      | 90                     | 3,715                     | 140                    |
| 4                    | 10,350                      | 270                    | 6,768                   | 200                    | 5,334                      | 130                    | 3,185                     | 220                    |
| 5                    | 8,280                       | 290                    | 5,414                   | 210                    | 4,268                      | 135                    | 2,548                     | 250                    |
| 6                    | 6,900                       | 360                    | 4,512                   | 265                    | 3,556                      | 145                    | 2,389                     | 265                    |
| 8                    | 5,175                       | 480                    | 3,384                   | 330                    | 2,667                      | 190                    | 1,791                     | 290                    |
| 10                   | 4,459                       | 610                    | 3,025                   | 415                    | 2,293                      | 240                    | 1,433                     | 250                    |
| 12                   | 3,715                       | 620                    | 2,521                   | 425                    | 1,911                      | 230                    | 1,062                     | 200                    |
| 14                   | 3,185                       | 550                    | 2,161                   | 385                    | 1,638                      | 215                    | 910                       | 170                    |
| 16                   | 2,787                       | 520                    | 1,891                   | 365                    | 1,433                      | 220                    | 896                       | 165                    |
| 20                   | 2,229                       | 515                    | 1,513                   | 345                    | 1,146                      | 210                    | 717                       | 130                    |
| ap=1.0D              |                             |                        |                         |                        |                            |                        |                           |                        |
| ae=0.5D              |                             |                        |                         |                        |                            |                        |                           |                        |

※この加工条件は全長が標準サイズ、刃長が2.5Dもしくは3Dの工具の使用を想定とした条件です。

もしお使いの工具がそれよりもロングサイズであるのであれば、加工条件の設定を緩めに調整してください。

4345STシリーズはHRC40以下を目安とし、炭素鋼、調質鋼等にご使用されることを推奨いたします。

より高硬度の被削材を加工する場合はPOWERコーティングのご使用をお勧めいたします。(耐熱性と磨耗性に優れております)

The above cutting condition is supposed to be used with standard end mills, flute length around 2.5D or 3.0D, not long flute length or long shanks.

If you work with longer types of the end mills, please adjust the feed speed to be slower than the above condition.

※チャンピオンデータを表示しているわけでは御座いませんので、基本的にはお客様の仕事に合う加工条件でご使用下さい。

We don't display a champion data, so please basically use cutting processing conditions that suit your work.

# 超硬35/38°防振4枚刃スクエアエンドミル

## 不等リード不等分割刃先ギャッシュランド採用AlCrNコーティング

[※3538Sは不等リードのみ]

3538MT/3538PT/3538S Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 35/38°

### ■切削条件目安 溝加工 Recommendation of cutting conditions for slotting

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel   |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|------------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br>< HRC35 |                        | (SCM 低合金鋼等)<br>HRC30~38 |                        | (SKD NAK等)<br>HRC35~45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)        | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                    | 28,662                       | 150                    | 23,885                  | 110                    | 19,108                     | 60                     | 25,478                    | 110                    |
| 1.5                  | 19,108                       | 175                    | 15,924                  | 120                    | 12,739                     | 65                     | 16,985                    | 125                    |
| 2                    | 14,331                       | 200                    | 11,943                  | 135                    | 9,554                      | 70                     | 12,739                    | 135                    |
| 2.5                  | 11,465                       | 210                    | 9,554                   | 150                    | 7,643                      | 75                     | 10,191                    | 145                    |
| 3                    | 9,554                        | 240                    | 8,493                   | 165                    | 6,900                      | 80                     | 9,023                     | 165                    |
| 4                    | 7,564                        | 280                    | 6,369                   | 200                    | 5,175                      | 120                    | 6,768                     | 200                    |
| 5                    | 6,051                        | 310                    | 5,096                   | 220                    | 4,140                      | 125                    | 5,414                     | 250                    |
| 6                    | 5,042                        | 390                    | 4,246                   | 265                    | 3,450                      | 135                    | 4,512                     | 290                    |
| 8                    | 3,981                        | 500                    | 3,185                   | 340                    | 2,588                      | 180                    | 3,384                     | 330                    |
| 10                   | 3,185                        | 600                    | 2,866                   | 420                    | 2,229                      | 230                    | 2,707                     | 490                    |
| 12                   | 2,654                        | 610                    | 2,389                   | 425                    | 1,858                      | 220                    | 2,256                     | 480                    |
| 14                   | 2,275                        | 560                    | 2,047                   | 385                    | 1,592                      | 215                    | 1,934                     | 440                    |
| 16                   | 1,990                        | 530                    | 1,791                   | 370                    | 1,393                      | 200                    | 1,692                     | 400                    |
| 20                   | 1,592                        | 520                    | 1,433                   | 360                    | 1,115                      | 190                    | 1,354                     | 390                    |
| ap=0.5D              |                              |                        |                         |                        |                            |                        |                           |                        |
| ae=1.0D              |                              |                        |                         |                        |                            |                        |                           |                        |

### ■切削条件目安 側面加工 Recommendation of cutting conditions for side milling

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel   |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|------------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br>< HRC35 |                        | (SCM 低合金鋼等)<br>HRC30~38 |                        | (SKD NAK等)<br>HRC35~45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)        | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                    | 33,439                       | 140                    | 23,885                  | 100                    | 19,108                     | 60                     | 9,554                     | 100                    |
| 1.5                  | 22,293                       | 160                    | 15,924                  | 105                    | 12,739                     | 65                     | 6,369                     | 110                    |
| 2                    | 16,720                       | 180                    | 11,943                  | 120                    | 9,554                      | 70                     | 5,573                     | 110                    |
| 2.5                  | 13,376                       | 195                    | 9,554                   | 135                    | 7,643                      | 75                     | 4,459                     | 120                    |
| 3                    | 12,739                       | 210                    | 8,493                   | 160                    | 6,900                      | 80                     | 3,715                     | 140                    |
| 4                    | 9,554                        | 260                    | 6,369                   | 190                    | 5,175                      | 120                    | 3,185                     | 220                    |
| 5                    | 7,643                        | 280                    | 5,096                   | 200                    | 4,140                      | 125                    | 2,548                     | 250                    |
| 6                    | 6,369                        | 350                    | 4,246                   | 255                    | 3,450                      | 135                    | 2,389                     | 265                    |
| 8                    | 4,777                        | 460                    | 3,185                   | 320                    | 2,588                      | 180                    | 1,791                     | 290                    |
| 10                   | 4,140                        | 590                    | 2,866                   | 400                    | 2,229                      | 230                    | 1,433                     | 250                    |
| 12                   | 3,450                        | 600                    | 2,389                   | 410                    | 1,858                      | 220                    | 1,062                     | 200                    |
| 14                   | 2,957                        | 530                    | 2,047                   | 370                    | 1,592                      | 215                    | 910                       | 170                    |
| 16                   | 2,588                        | 500                    | 1,791                   | 350                    | 1,393                      | 200                    | 896                       | 165                    |
| 20                   | 2,070                        | 495                    | 1,433                   | 330                    | 1,115                      | 190                    | 717                       | 130                    |
| ap=1.0D              |                              |                        |                         |                        |                            |                        |                           |                        |
| ae=0.5D              |                              |                        |                         |                        |                            |                        |                           |                        |

※この加工条件は全長が標準サイズ、刃長が2.5Dもしくは3Dの工具の使用を想定とした条件です。

もしお使いの工具がそれよりもロングサイズであるのであれば、加工条件の設定を緩めに調整してください。

The above cutting condition is supposed to be used with standard end mills, flute length around 2.5D or 3.0D, not long flute length or long shanks.

If you work with longer types of the end mills, please adjust the feed speed to be slower than the above condition.

**3538Sシリーズに関してはHRC40までを目安とし、使用の基準にして下さい。**

※チャンピオンデータを表示しているわけでは御座いませんので、基本的にはお客様の仕事に合う加工条件でご使用下さい。

We don't display a champion data, so please basically use cutting processing conditions that suit your work.

## 超硬23/26°防振4枚刃スクエアエンドミル

## 不等リード/不等分割刃先ギャッシュランド採用Amberコーティング

## 2326MT2 Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 23/26°

### ■切削条件目安 溝加工 Recommendation of cutting conditions for slotting

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel  |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|-----------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br>＜HRC35 |                        | (SCM 低合金鋼等)<br>HRC30～38 |                        | (SKD NAK等)<br>HRC35～45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)       | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 3                    | 7,958                       | 260                    | 8,488                   | 550                    | 6,897                      | 300                    | 4,244                     | 150                    |
| 4                    | 5,968                       | 260                    | 6,366                   | 600                    | 5,173                      | 320                    | 3,183                     | 155                    |
| 5                    | 4,775                       | 390                    | 5,093                   | 650                    | 4,138                      | 330                    | 2,546                     | 170                    |
| 6                    | 3,979                       | 370                    | 4,244                   | 670                    | 3,448                      | 340                    | 2,122                     | 165                    |
| 8                    | 2,984                       | 340                    | 3,183                   | 670                    | 2,586                      | 320                    | 1,592                     | 160                    |
| 10                   | 2,387                       | 310                    | 2,546                   | 650                    | 2,069                      | 320                    | 1,273                     | 160                    |
| 12                   | 1,989                       | 290                    | 2,122                   | 630                    | 1,724                      | 300                    | 1,061                     | 155                    |
| 16                   | 1,492                       | 260                    | 1,592                   | 530                    | 1,293                      | 260                    | 796                       | 140                    |
|                      |                             |                        |                         |                        |                            |                        |                           |                        |
|                      |                             |                        |                         |                        |                            |                        |                           |                        |
|                      |                             |                        |                         |                        |                            |                        |                           |                        |
|                      |                             |                        |                         |                        |                            |                        |                           |                        |
|                      |                             |                        |                         |                        |                            |                        |                           |                        |
| ap=0.5D              |                             |                        |                         |                        |                            |                        |                           |                        |
| ae=1.0D              |                             |                        |                         |                        |                            |                        |                           |                        |

### ■切削条件目安 側面加工 Recommendation of cutting conditions for side milling

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel  |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|-----------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br>＜HRC35 |                        | (SCM 低合金鋼等)<br>HRC30～38 |                        | (SKD NAK等)<br>HRC35～45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)       | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 3                    | 9,550                       | 312                    | 12,223                  | 792                    | 9,932                      | 432                    | 6,111                     | 216                    |
| 4                    | 7,162                       | 312                    | 7,639                   | 720                    | 6,208                      | 384                    | 3,820                     | 186                    |
| 5                    | 5,730                       | 468                    | 6,112                   | 780                    | 4,966                      | 396                    | 3,055                     | 204                    |
| 6                    | 4,775                       | 444                    | 5,093                   | 804                    | 4,138                      | 408                    | 2,546                     | 198                    |
| 8                    | 3,581                       | 408                    | 3,820                   | 804                    | 3,103                      | 384                    | 1,910                     | 192                    |
| 10                   | 2,864                       | 372                    | 3,055                   | 780                    | 2,483                      | 384                    | 1,528                     | 192                    |
| 12                   | 2,387                       | 348                    | 2,546                   | 756                    | 2,069                      | 360                    | 1,273                     | 186                    |
| 16                   | 1,790                       | 312                    | 1,910                   | 636                    | 1,552                      | 312                    | 955                       | 168                    |
|                      |                             |                        |                         |                        |                            |                        |                           |                        |
|                      |                             |                        |                         |                        |                            |                        |                           |                        |
|                      |                             |                        |                         |                        |                            |                        |                           |                        |
|                      |                             |                        |                         |                        |                            |                        |                           |                        |
|                      |                             |                        |                         |                        |                            |                        |                           |                        |
| ap=1.0D              |                             |                        |                         |                        |                            |                        |                           |                        |
| ae=0.5D              |                             |                        |                         |                        |                            |                        |                           |                        |

※この加工条件は全長が標準サイズ、刃長が2.5Dもしくは3Dの工具の使用を想定とした条件です。

もしお使いの工具がそれよりもロングサイズであるのであれば、加工条件の設定を緩めに調整してください。

The above cutting condition is supposed to be used with standard end mills, flute length around 2.5D or 3.0D, not long flute length or long shanks.

If you work with longer types of the end mills, please adjust the feed speed to be slower than the above condition.

※チャンピオンデーターを表示しているわけでは御座いませんので、基本的にはお客様の仕事に合う加工条件でご使用下さい。

**We don't display a champion data, so please basically use cutting processing conditions that suit your work.**

# 超硬40/42°防振4枚刃スクエアエンドミル

## ネック付不等リード/不等分割刃先ギャッシュランド採用Champagne Goldコーティング

※042N Series/Anti-Vibration 4 Flutes Square Carbide End Mill Variable Helix Leads 40/42°Unequal Spacing Teeth With Neck For Rib Processing

### ■切削条件目安 溝加工 Recommendation of cutting conditions for slotting

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel   |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|------------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br>< HRC35 |                        | (SCM 低合金鋼等)<br>HRC30~38 |                        | (SKD NAK等)<br>HRC35~45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)        | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                    | 30,255                       | 160                    | 25,478                  | 120                    | 19,745                     | 70                     | 25,478                    | 110                    |
| 1.5                  | 20,170                       | 185                    | 16,985                  | 130                    | 13,163                     | 75                     | 16,985                    | 125                    |
| 2                    | 15,127                       | 210                    | 12,739                  | 145                    | 9,873                      | 80                     | 12,739                    | 135                    |
| 2.5                  | 12,102                       | 220                    | 9,554                   | 160                    | 7,898                      | 85                     | 10,191                    | 145                    |
| 3                    | 10,085                       | 240                    | 9,023                   | 175                    | 7,113                      | 90                     | 9,023                     | 165                    |
| 4                    | 7,962                        | 290                    | 6,768                   | 210                    | 5,334                      | 130                    | 6,768                     | 200                    |
| 5                    | 6,369                        | 320                    | 5,414                   | 230                    | 4,268                      | 135                    | 5,414                     | 250                    |
| 6                    | 5,308                        | 400                    | 4,512                   | 280                    | 3,556                      | 145                    | 4,512                     | 290                    |
| 8                    | 4,180                        | 510                    | 3,384                   | 360                    | 2,667                      | 190                    | 3,384                     | 330                    |
| 10                   | 3,344                        | 610                    | 3,025                   | 430                    | 2,293                      | 240                    | 2,707                     | 490                    |
| 12                   | 2,787                        | 620                    | 2,521                   | 440                    | 1,911                      | 230                    | 2,256                     | 480                    |
| 14                   | 2,389                        | 570                    | 2,161                   | 405                    | 1,638                      | 225                    | 1,934                     | 440                    |
| 16                   | 2,090                        | 540                    | 1,891                   | 390                    | 1,433                      | 210                    | 1,692                     | 400                    |
| 20                   | 1,672                        | 530                    | 1,513                   | 380                    | 1,146                      | 200                    | 1,354                     | 390                    |
| ap=0.5D              |                              |                        |                         |                        |                            |                        |                           |                        |
| ae=1.0D              |                              |                        |                         |                        |                            |                        |                           |                        |

### ■切削条件目安 側面加工 Recommendation of cutting conditions for side milling

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel   |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|------------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br>< HRC35 |                        | (SCM 低合金鋼等)<br>HRC30~38 |                        | (SKD NAK等)<br>HRC35~45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)        | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                    | 36,624                       | 160                    | 25,478                  | 110                    | 19,745                     | 70                     | 9,554                     | 100                    |
| 1.5                  | 24,416                       | 180                    | 16,985                  | 115                    | 13,163                     | 75                     | 6,369                     | 110                    |
| 2                    | 18,312                       | 190                    | 12,739                  | 130                    | 9,873                      | 80                     | 5,573                     | 110                    |
| 2.5                  | 14,650                       | 215                    | 9,554                   | 145                    | 7,898                      | 85                     | 4,459                     | 120                    |
| 3                    | 13,800                       | 220                    | 9,023                   | 170                    | 7,113                      | 90                     | 3,715                     | 140                    |
| 4                    | 10,350                       | 270                    | 6,768                   | 200                    | 5,334                      | 130                    | 3,185                     | 220                    |
| 5                    | 8,280                        | 290                    | 5,414                   | 210                    | 4,268                      | 135                    | 2,548                     | 250                    |
| 6                    | 6,900                        | 360                    | 4,512                   | 265                    | 3,556                      | 145                    | 2,389                     | 265                    |
| 8                    | 5,175                        | 480                    | 3,384                   | 330                    | 2,667                      | 190                    | 1,791                     | 290                    |
| 10                   | 4,459                        | 610                    | 3,025                   | 415                    | 2,293                      | 240                    | 1,433                     | 250                    |
| 12                   | 3,715                        | 620                    | 2,521                   | 425                    | 1,911                      | 230                    | 1,062                     | 200                    |
| 14                   | 3,185                        | 550                    | 2,161                   | 385                    | 1,638                      | 215                    | 910                       | 170                    |
| 16                   | 2,787                        | 520                    | 1,891                   | 365                    | 1,433                      | 220                    | 896                       | 165                    |
| 20                   | 2,229                        | 515                    | 1,513                   | 345                    | 1,146                      | 210                    | 717                       | 130                    |
| ap=1.0D              |                              |                        |                         |                        |                            |                        |                           |                        |
| ae=0.5D              |                              |                        |                         |                        |                            |                        |                           |                        |

※この加工条件は全長が標準サイズ、刃長が2.5Dもしくは3Dの工具の使用を想定とした条件です。

もしお使いの工具がそれよりもロングサイズであるのであれば、加工条件の設定を緩めに調整してください。

The above cutting condition is supposed to be used with standard end mills, flute length around 2.5D or 3.0D, not long flute length or long shanks.

If you work with longer types of the end mills, please adjust the feed speed to be slower than the above condition.

※チャンピオンデータを表示しているわけではありませんので、基本的にはお客様の仕事に合う加工条件でご使用下さい。

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# 超硬35°2枚刃スクエアエンドミル/超硬35°2枚刃コーナーRエンドミル 刃先ギャッシュランド採用AlCrSiNコーティング

48S2F Series/2 Flutes Square Carbide End Mill / 48CR2F Series/2 Flutes Coner Radius Carbide End Mill

## ■切削条件目安 溝加工 Recommendation of cutting conditions for slotting

| 被削材<br>WORK METAL                | 一般構造用鋼 炭素鋼<br>Carbon Steel   |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------------------|------------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                                  | (S45C/SS/FC/FCD等)<br>< HRC35 |                        | (SCM 低合金鋼等)<br>HRC30~38 |                        | (SKD NAK等)<br>HRC35~45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter             | 回転数(RPM)<br>(rev/min)        | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                                | 15,287                       | 122                    | 11,783                  | 71                     | 11,194                     | 64                     | 8,917                     | 178                    |
| 1.5                              | 11,677                       | 234                    | 6,582                   | 66                     | 6,253                      | 60                     | 5,732                     | 115                    |
| 2                                | 9,554                        | 191                    | 4,936                   | 99                     | 4,689                      | 89                     | 4,140                     | 83                     |
| 2.5                              | 7,516                        | 180                    | 4,076                   | 106                    | 3,873                      | 96                     | 3,312                     | 86                     |
| 3                                | 6,688                        | 201                    | 3,609                   | 108                    | 3,429                      | 98                     | 2,972                     | 95                     |
| 4                                | 5,175                        | 259                    | 2,866                   | 143                    | 2,723                      | 130                    | 2,389                     | 115                    |
| 5                                | 4,268                        | 273                    | 2,420                   | 145                    | 2,299                      | 131                    | 1,975                     | 130                    |
| 6                                | 3,450                        | 269                    | 2,123                   | 183                    | 2,017                      | 165                    | 1,805                     | 141                    |
| 8                                | 2,627                        | 294                    | 1,672                   | 167                    | 1,588                      | 151                    | 1,393                     | 148                    |
| 10                               | 2,070                        | 261                    | 1,274                   | 132                    | 1,210                      | 120                    | 1,115                     | 132                    |
| 12                               | 1,725                        | 210                    | 1,115                   | 105                    | 1,059                      | 95                     | 902                       | 103                    |
| 14                               | 1,547                        | 192                    | 978                     | 102                    | 929                        | 92                     | 773                       | 101                    |
| 16                               | 1,393                        | 178                    | 876                     | 91                     | 832                        | 82                     | 697                       | 91                     |
| 20                               | 1,083                        | 141                    | 685                     | 59                     | 650                        | 53                     | 557                       | 61                     |
| 1φ~3φ ap=0.1D / 3.1φ~20φ ap=0.5D |                              |                        |                         |                        |                            |                        |                           |                        |
| ae=1D                            |                              |                        |                         |                        |                            |                        |                           |                        |

## ■切削条件目安 側面加工 Recommendation of cutting conditions for side milling

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel   |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|------------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br>< HRC35 |                        | (SCM 低合金鋼等)<br>HRC30~38 |                        | (SKD NAK等)<br>HRC35~45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)        | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                    | 17,834                       | 285                    | 14,968                  | 171                    | 12,484                     | 136                    | 10,000                    | 120                    |
| 1.5                  | 11,890                       | 290                    | 9,987                   | 174                    | 8,323                      | 138                    | 9,800                     | 179                    |
| 2                    | 11,465                       | 300                    | 9,631                   | 180                    | 8,025                      | 143                    | 7,300                     | 143                    |
| 2.5                  | 9,936                        | 335                    | 8,346                   | 201                    | 6,955                      | 160                    | 6,400                     | 162                    |
| 3                    | 8,493                        | 340                    | 7,134                   | 204                    | 5,945                      | 162                    | 5,200                     | 156                    |
| 4                    | 6,369                        | 360                    | 5,350                   | 216                    | 4,459                      | 171                    | 4,000                     | 170                    |
| 5                    | 5,096                        | 430                    | 4,280                   | 258                    | 3,567                      | 205                    | 3,500                     | 222                    |
| 6                    | 4,246                        | 430                    | 3,567                   | 258                    | 2,972                      | 205                    | 2,980                     | 226                    |
| 8                    | 3,185                        | 380                    | 2,675                   | 228                    | 2,229                      | 181                    | 2,200                     | 197                    |
| 10                   | 2,548                        | 360                    | 2,140                   | 216                    | 1,783                      | 171                    | 1,750                     | 185                    |
| 12                   | 2,123                        | 360                    | 1,783                   | 216                    | 1,486                      | 171                    | 1,450                     | 184                    |
| 14                   | 1,934                        | 350                    | 1,624                   | 210                    | 1,354                      | 167                    | 1,250                     | 170                    |
| 16                   | 1,791                        | 350                    | 1,505                   | 210                    | 1,254                      | 167                    | 1,130                     | 166                    |
| 20                   | 1,433                        | 350                    | 1,204                   | 210                    | 1,003                      | 167                    | 900                       | 165                    |
| ap=1.5D              |                              |                        |                         |                        |                            |                        |                           |                        |
| ae=0.02D             |                              |                        |                         |                        |                            |                        |                           |                        |

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もしお使いの工具がそれよりもロングサイズであるのであれば、加工条件の設定を緩めに調整してください。

The above cutting condition is supposed to be used with standard end mills, flute length around 2.5D or 3.0D, not long flute length or long shanks.

If you work with longer types of the end mills, please adjust the feed speed to be slower than the above condition.

※チャンピオンデータを表示しているわけではありませんので、基本的にはお客様の仕事に合う加工条件でご使用下さい。

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# 超硬35°4枚刃スクエアエンドミル/超硬35°4枚刃コーナーRエンドミル 刃先ギャッシュランド採用AlCrSiNコーティング

48S4F Series/4 Flutes Square Carbide End Mill / 48CR4F Series/4 Flutes Coner Radius Carbide End Mill

## ■切削条件目安 溝加工 Recommendation of cutting conditions for slotting

| 被削材<br>WORK METAL                  | 一般構造用鋼 炭素鋼<br>Carbon Steel   |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|------------------------------------|------------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                                    | (S45C/SS/FC/FCD等)<br>< HRC35 |                        | (SCM 低合金鋼等)<br>HRC30~38 |                        | (SKD NAK等)<br>HRC35~45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter               | 回転数(RPM)<br>(rev/min)        | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                                  | 19,108                       | 300                    | 15,669                  | 202                    | 12,848                     | 157                    | 12,739                    | 158                    |
| 1.5                                | 12,739                       | 310                    | 10,446                  | 208                    | 8,566                      | 162                    | 8,493                     | 160                    |
| 2                                  | 9,554                        | 320                    | 7,834                   | 215                    | 6,424                      | 168                    | 6,369                     | 166                    |
| 2.5                                | 7,643                        | 330                    | 6,268                   | 222                    | 5,139                      | 173                    | 5,096                     | 171                    |
| 3                                  | 6,369                        | 340                    | 5,223                   | 229                    | 4,283                      | 178                    | 4,246                     | 177                    |
| 4                                  | 4,777                        | 360                    | 3,917                   | 242                    | 3,212                      | 189                    | 3,185                     | 187                    |
| 5                                  | 3,822                        | 450                    | 3,134                   | 303                    | 2,570                      | 236                    | 2,548                     | 233                    |
| 6                                  | 4,246                        | 450                    | 3,482                   | 303                    | 2,855                      | 236                    | 2,866                     | 236                    |
| 8                                  | 3,185                        | 430                    | 2,611                   | 289                    | 2,141                      | 225                    | 2,150                     | 226                    |
| 10                                 | 2,548                        | 420                    | 2,089                   | 282                    | 1,713                      | 220                    | 1,720                     | 221                    |
| 12                                 | 2,123                        | 420                    | 1,741                   | 282                    | 1,428                      | 220                    | 1,433                     | 221                    |
| 14                                 | 1,820                        | 420                    | 1,492                   | 282                    | 1,224                      | 220                    | 1,228                     | 221                    |
| 16                                 | 1,592                        | 420                    | 1,306                   | 282                    | 1,071                      | 220                    | 1,075                     | 221                    |
| 20                                 | 1,274                        | 420                    | 1,045                   | 282                    | 857                        | 220                    | 860                       | 221                    |
| 1φ~3φ ap=0.15D / 3.1φ~20φ ap=0.25D |                              |                        |                         |                        |                            |                        |                           |                        |
| ae=1D                              |                              |                        |                         |                        |                            |                        |                           |                        |

## ■切削条件目安 側面加工 Recommendation of cutting conditions for side milling

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel   |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|------------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br>< HRC35 |                        | (SCM 低合金鋼等)<br>HRC30~38 |                        | (SKD NAK等)<br>HRC35~45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)        | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                    | 16,561                       | 200                    | 11,465                  | 140                    | 9,516                      | 98                     | 9,554                     | 100                    |
| 1.5                  | 11,465                       | 210                    | 7,856                   | 140                    | 6,520                      | 98                     | 6,369                     | 110                    |
| 2                    | 9,236                        | 220                    | 6,051                   | 140                    | 5,022                      | 98                     | 5,573                     | 110                    |
| 2.5                  | 7,898                        | 240                    | 5,096                   | 140                    | 4,229                      | 98                     | 4,459                     | 120                    |
| 3                    | 7,113                        | 250                    | 4,352                   | 155                    | 3,613                      | 109                    | 3,715                     | 140                    |
| 4                    | 6,051                        | 470                    | 3,822                   | 290                    | 3,172                      | 203                    | 3,185                     | 220                    |
| 5                    | 5,096                        | 480                    | 3,121                   | 290                    | 2,590                      | 203                    | 2,548                     | 250                    |
| 6                    | 4,406                        | 520                    | 2,654                   | 320                    | 2,203                      | 224                    | 2,389                     | 265                    |
| 8                    | 3,304                        | 560                    | 2,070                   | 300                    | 1,718                      | 210                    | 1,791                     | 290                    |
| 10                   | 2,580                        | 500                    | 1,592                   | 230                    | 1,322                      | 161                    | 1,433                     | 250                    |
| 12                   | 2,176                        | 430                    | 1,380                   | 210                    | 1,145                      | 147                    | 1,062                     | 200                    |
| 14                   | 1,934                        | 360                    | 1,228                   | 185                    | 1,020                      | 130                    | 910                       | 170                    |
| 16                   | 1,791                        | 320                    | 1,095                   | 160                    | 909                        | 112                    | 896                       | 165                    |
| 20                   | 1,354                        | 270                    | 876                     | 130                    | 727                        | 91                     | 717                       | 130                    |
| ap=1.5D              |                              |                        |                         |                        |                            |                        |                           |                        |
| ae=0.02D             |                              |                        |                         |                        |                            |                        |                           |                        |

※この加工条件は全長が標準サイズ、刃長が2.5Dもしくは3Dの工具の使用を想定とした条件です。

もしお使いの工具がそれよりもロングサイズであるのであれば、加工条件の設定を緩めに調整してください。

The above cutting condition is supposed to be used with standard end mills, flute length around 2.5D or 3.0D, not long flute length or long shanks.

If you work with longer types of the end mills, please adjust the feed speed to be slower than the above condition.

※チャンピオンデータを表示しているわけではありませんので、基本的にはお客様の仕事に合う加工条件でご使用下さい。

We don't display a champion data, so please basically use cutting processing conditions that suit your work.

# 超硬35°6枚刃スクエアエンドミル

## 刃先ギャッシュランド採用AlCrSiコーティング

48S6F Series/6 Flutes Square Carbide End Mill

### ■ 切削条件目安 溝加工 Recommendation of cutting conditions for slotting

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel  |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|-----------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br><HRC35 |                        | (SCM 低合金鋼等)<br>HRC30~38 |                        | (SKD NAK等)<br>HRC35~45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)       | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                    |                             |                        |                         |                        |                            |                        |                           |                        |
| 1.5                  |                             |                        |                         |                        |                            |                        |                           |                        |
| 2                    |                             |                        |                         |                        |                            |                        |                           |                        |
| 2.5                  |                             |                        |                         |                        |                            |                        |                           |                        |
| 3                    |                             |                        |                         |                        |                            |                        |                           |                        |
| 4                    |                             |                        |                         |                        |                            |                        |                           |                        |
| 5                    |                             |                        |                         |                        |                            |                        |                           |                        |
| 6                    |                             |                        |                         |                        |                            |                        |                           |                        |
| 8                    |                             |                        |                         |                        |                            |                        |                           |                        |
| 10                   |                             |                        |                         |                        |                            |                        |                           |                        |
| 12                   |                             |                        |                         |                        |                            |                        |                           |                        |
| 14                   |                             |                        |                         |                        |                            |                        |                           |                        |
| 16                   |                             |                        |                         |                        |                            |                        |                           |                        |
| 20                   |                             |                        |                         |                        |                            |                        |                           |                        |

### ■ 切削条件目安 側面加工 Recommendation of cutting conditions for side milling

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel  |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|-----------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br><HRC35 |                        | (SCM 低合金鋼等)<br>HRC30~38 |                        | (SKD NAK等)<br>HRC35~45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)       | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                    | 16,561                      | 250                    | 11,465                  | 175                    | 9,516                      | 123                    | 9,554                     | 125                    |
| 1.5                  | 11,465                      | 263                    | 7,856                   | 175                    | 6,520                      | 123                    | 6,369                     | 138                    |
| 2                    | 9,236                       | 275                    | 6,051                   | 175                    | 5,022                      | 123                    | 5,573                     | 138                    |
| 2.5                  | 7,898                       | 300                    | 5,096                   | 175                    | 4,229                      | 123                    | 4,459                     | 150                    |
| 3                    | 7,113                       | 313                    | 4,352                   | 194                    | 3,613                      | 136                    | 3,715                     | 175                    |
| 4                    | 6,051                       | 588                    | 3,822                   | 363                    | 3,172                      | 254                    | 3,185                     | 275                    |
| 5                    | 5,096                       | 600                    | 3,121                   | 363                    | 2,590                      | 254                    | 2,548                     | 313                    |
| 6                    | 4,406                       | 650                    | 2,654                   | 400                    | 2,203                      | 280                    | 2,389                     | 331                    |
| 8                    | 3,304                       | 700                    | 2,070                   | 375                    | 1,718                      | 263                    | 1,791                     | 363                    |
| 10                   | 2,580                       | 625                    | 1,592                   | 288                    | 1,322                      | 201                    | 1,433                     | 313                    |
| 12                   | 2,176                       | 538                    | 1,380                   | 263                    | 1,145                      | 184                    | 1,062                     | 250                    |
| 14                   | 1,934                       | 450                    | 1,228                   | 231                    | 1,020                      | 162                    | 910                       | 213                    |
| 16                   | 1,791                       | 400                    | 1,095                   | 200                    | 909                        | 140                    | 896                       | 206                    |
| 20                   | 1,354                       | 338                    | 876                     | 163                    | 727                        | 114                    | 717                       | 163                    |
| ap=1.5D              |                             |                        |                         |                        |                            |                        |                           |                        |
| ae=0.02D             |                             |                        |                         |                        |                            |                        |                           |                        |

※この加工条件は全長が標準サイズ、刃長が2.5Dもしくは3Dの工具の使用を想定とした条件です。

もしお使いの工具がそれよりもロングサイズであるのであれば、加工条件の設定を緩めに調整してください。

The above cutting condition is supposed to be used with standard end mills, flute length around 2.5D or 3.0D, not long flute length or long shanks.

If you work with longer types of the end mills, please adjust the feed speed to be slower than the above condition.

※チャンピオンデータを表示しているわけではありませんので、基本的にはお客様の仕事に合う加工条件でご使用下さい。

We don't display a champion data, so please basically use cutting processing conditions that suit your work.

# 超硬35°SUS用4枚刃スクエアエンドミル 刃先ギャッシュランド採用TiANコーティング

48M4F Series/4 Flutes Square Carbide End Mill For Stainless Steel

## ■切削条件目安 溝加工 Recommendation of cutting conditions for slotting

| 被削材<br>WORK METAL                  | 一般構造用鋼 炭素鋼<br>Carbon Steel   |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|------------------------------------|------------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                                    | (S45C/SS/FC/FCD等)<br>< HRC35 |                        | (SCM 低合金鋼等)<br>HRC30~38 |                        | (SKD NAK等)<br>HRC35~45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter               | 回転数(RPM)<br>(rev/min)        | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                                  | 19,108                       | 300                    | 15,669                  | 202                    | -                          | -                      | 12,739                    | 158                    |
| 1.5                                | 12,739                       | 310                    | 10,446                  | 208                    | -                          | -                      | 8,493                     | 160                    |
| 2                                  | 9,554                        | 320                    | 7,834                   | 215                    | -                          | -                      | 6,369                     | 166                    |
| 2.5                                | 7,643                        | 330                    | 6,268                   | 222                    | -                          | -                      | 5,096                     | 171                    |
| 3                                  | 6,369                        | 340                    | 5,223                   | 229                    | -                          | -                      | 4,246                     | 177                    |
| 4                                  | 4,777                        | 360                    | 3,917                   | 242                    | -                          | -                      | 3,185                     | 187                    |
| 5                                  | 3,822                        | 450                    | 3,134                   | 303                    | -                          | -                      | 2,548                     | 233                    |
| 6                                  | 4,246                        | 450                    | 3,482                   | 303                    | -                          | -                      | 2,866                     | 236                    |
| 8                                  | 3,185                        | 430                    | 2,611                   | 289                    | -                          | -                      | 2,150                     | 226                    |
| 10                                 | 2,548                        | 420                    | 2,089                   | 282                    | -                          | -                      | 1,720                     | 221                    |
| 12                                 | 2,123                        | 420                    | 1,741                   | 282                    | -                          | -                      | 1,433                     | 221                    |
| 14                                 | 1,820                        | 420                    | 1,492                   | 282                    | -                          | -                      | 1,228                     | 221                    |
| 16                                 | 1,592                        | 420                    | 1,306                   | 282                    | -                          | -                      | 1,075                     | 221                    |
| 20                                 | 1,274                        | 420                    | 1,045                   | 282                    | -                          | -                      | 860                       | 221                    |
| 1φ~3φ ap=0.15D / 3.1φ~20φ ap=0.25D |                              |                        |                         |                        |                            |                        |                           |                        |
| ae=1D                              |                              |                        |                         |                        |                            |                        |                           |                        |

## ■切削条件目安 側面加工 Recommendation of cutting conditions for side milling

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel   |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|------------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br>< HRC35 |                        | (SCM 低合金鋼等)<br>HRC30~38 |                        | (SKD NAK等)<br>HRC35~45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)        | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                    | 16,561                       | 200                    | 11,465                  | 140                    | -                          | -                      | 9,554                     | 100                    |
| 1.5                  | 11,465                       | 210                    | 7,856                   | 140                    | -                          | -                      | 6,369                     | 110                    |
| 2                    | 9,236                        | 220                    | 6,051                   | 140                    | -                          | -                      | 5,573                     | 110                    |
| 2.5                  | 7,898                        | 240                    | 5,096                   | 140                    | -                          | -                      | 4,459                     | 120                    |
| 3                    | 7,113                        | 250                    | 4,352                   | 155                    | -                          | -                      | 3,715                     | 140                    |
| 4                    | 6,051                        | 470                    | 3,822                   | 290                    | -                          | -                      | 3,185                     | 220                    |
| 5                    | 5,096                        | 480                    | 3,121                   | 290                    | -                          | -                      | 2,548                     | 250                    |
| 6                    | 4,406                        | 520                    | 2,654                   | 320                    | -                          | -                      | 2,389                     | 265                    |
| 8                    | 3,304                        | 560                    | 2,070                   | 300                    | -                          | -                      | 1,791                     | 290                    |
| 10                   | 2,580                        | 500                    | 1,592                   | 230                    | -                          | -                      | 1,433                     | 250                    |
| 12                   | 2,176                        | 430                    | 1,380                   | 210                    | -                          | -                      | 1,062                     | 200                    |
| 14                   | 1,934                        | 360                    | 1,228                   | 185                    | -                          | -                      | 910                       | 170                    |
| 16                   | 1,791                        | 320                    | 1,095                   | 160                    | -                          | -                      | 896                       | 165                    |
| 20                   | 1,354                        | 270                    | 876                     | 130                    | -                          | -                      | 717                       | 130                    |
| ap=1.5D              |                              |                        |                         |                        |                            |                        |                           |                        |
| ae=0.02D             |                              |                        |                         |                        |                            |                        |                           |                        |

※この加工条件は全長が標準サイズ、刃長が2.5Dもしくは3Dの工具の使用を想定とした条件です。

もしお使いの工具がそれよりもロングサイズであるのであれば、加工条件の設定を緩めに調整してください。

The above cutting condition is supposed to be used with standard end mills, flute length around 2.5D or 3.0D, not long flute length or long shanks.

If you work with longer types of the end mills, please adjust the feed speed to be slower than the above condition.

※チャンピオンデータを表示しているわけではありませんので、基本的にはお客様の仕事に合う加工条件でご使用下さい。

We don't display a champion data, so please basically use cutting processing conditions that suit your work.

# 超硬35°高硬度用4枚刃スクエアエンドミル 刃先ギャッシュランド採用TiAlCrSiNコーティング/Blue Nanoコーティング

60H4F/65S4F Series/4 Flutes Square Carbide End Mill For Hardened Steel

## ■切削条件目安 溝加工 Recommendation of cutting conditions for slotting

| 被削材<br>WORK METAL                                               | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | 焼入鋼<br>Harden Steel             |                        | ステンレス鋼<br>Stainless Steel |                        |
|-----------------------------------------------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------------|------------------------|---------------------------|------------------------|
|                                                                 | (SCM 低合金鋼等)<br>HRC30~38 |                        | (SKD NAK等)<br>HRC35~45     |                        | (SKD NAK STAVAX)<br>HRC45-50HRC |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter                                            | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)           | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                                                               | 15,669                  | 202                    | 12,848                     | 157                    | 9,636                           | 165                    | 12,739                    | 158                    |
| 1.5                                                             | 10,446                  | 208                    | 8,566                      | 162                    | 6,424                           | 170                    | 8,493                     | 160                    |
| 2                                                               | 7,834                   | 215                    | 6,424                      | 168                    | 4,818                           | 176                    | 6,369                     | 166                    |
| 2.5                                                             | 6,268                   | 222                    | 5,139                      | 173                    | 3,855                           | 181                    | 5,096                     | 171                    |
| 3                                                               | 5,223                   | 229                    | 4,283                      | 178                    | 3,212                           | 187                    | 4,246                     | 177                    |
| 4                                                               | 3,917                   | 242                    | 3,212                      | 189                    | 2,409                           | 198                    | 3,185                     | 187                    |
| 5                                                               | 3,134                   | 303                    | 2,570                      | 236                    | 1,927                           | 247                    | 2,548                     | 233                    |
| 6                                                               | 3,482                   | 303                    | 2,855                      | 236                    | 2,141                           | 247                    | 2,866                     | 236                    |
| 8                                                               | 2,611                   | 289                    | 2,141                      | 225                    | 1,606                           | 236                    | 2,150                     | 226                    |
| 10                                                              | 2,089                   | 282                    | 1,713                      | 220                    | 1,285                           | 231                    | 1,720                     | 221                    |
| 12                                                              | 1,741                   | 282                    | 1,428                      | 220                    | 1,071                           | 231                    | 1,433                     | 221                    |
| 14                                                              | 1,492                   | 282                    | 1,224                      | 220                    | 918                             | 231                    | 1,228                     | 221                    |
| 16                                                              | 1,306                   | 282                    | 1,071                      | 220                    | 803                             | 231                    | 1,075                     | 221                    |
| 20                                                              | 1,045                   | 282                    | 857                        | 220                    | 642                             | 231                    | 860                       | 221                    |
| 1φ~3φ ap=0.15D / 3.1φ~20φ ap=0.25D [焼入鋼 Hardened Steel ap=0.05] |                         |                        |                            |                        |                                 |                        |                           |                        |
| ae=1D                                                           |                         |                        |                            |                        |                                 |                        |                           |                        |

## ■切削条件目安 側面加工 Recommendation of cutting conditions for side milling

| 被削材<br>WORK METAL    | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | 焼入鋼<br>Harden Steel             |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------------|------------------------|---------------------------|------------------------|
|                      | (SCM 低合金鋼等)<br>HRC30~38 |                        | (SKD NAK等)<br>HRC35~45     |                        | (SKD NAK STAVAX)<br>HRC45-50HRC |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)           | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                    | 11,465                  | 140                    | 9,516                      | 98                     | 6,369                           | 20                     | 9,554                     | 100                    |
| 1.5                  | 7,856                   | 140                    | 6,520                      | 98                     | 4,671                           | 30                     | 6,369                     | 110                    |
| 2                    | 6,051                   | 140                    | 5,022                      | 98                     | 3,981                           | 35                     | 5,573                     | 110                    |
| 2.5                  | 5,096                   | 140                    | 4,229                      | 98                     | 3,185                           | 40                     | 4,459                     | 120                    |
| 3                    | 4,352                   | 155                    | 3,613                      | 109                    | 2,654                           | 50                     | 3,715                     | 140                    |
| 4                    | 3,822                   | 290                    | 3,172                      | 203                    | 2,389                           | 50                     | 3,185                     | 220                    |
| 5                    | 3,121                   | 290                    | 2,590                      | 203                    | 1,911                           | 55                     | 2,548                     | 250                    |
| 6                    | 2,654                   | 320                    | 2,203                      | 224                    | 1,592                           | 55                     | 2,389                     | 265                    |
| 8                    | 2,070                   | 300                    | 1,718                      | 210                    | 1,393                           | 95                     | 1,791                     | 290                    |
| 10                   | 1,592                   | 230                    | 1,322                      | 161                    | 1,115                           | 70                     | 1,433                     | 250                    |
| 12                   | 1,380                   | 210                    | 1,145                      | 147                    | 929                             | 65                     | 1,062                     | 200                    |
| 14                   | 1,228                   | 185                    | 1,020                      | 130                    | 796                             | 63                     | 910                       | 170                    |
| 16                   | 1,095                   | 160                    | 909                        | 112                    | 697                             | 50                     | 896                       | 165                    |
| 20                   | 876                     | 130                    | 727                        | 91                     | 557                             | 35                     | 717                       | 130                    |
| ap=1.5D              |                         |                        |                            |                        |                                 |                        |                           |                        |
| ae=0.02D             |                         |                        |                            |                        |                                 |                        |                           |                        |

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もしお使いの工具がそれよりもロングサイズであるのであれば、加工条件の設定を緩めに調整してください。

The above cutting condition is supposed to be used with standard end mills, flute length around 2.5D or 3.0D, not long flute length or long shanks.

If you work with longer types of the end mills, please adjust the feed speed to be slower than the above condition.

※チャンピオンデータを表示しているわけではありませんので、基本的にはお客様の仕事に合う加工条件でご使用下さい。

We don't display a champion data, so please basically use cutting processing conditions that suit your work.

超硬45°高硬度用6枚刃スクエアエンドミル  
刃先ギャッシュランド採用Blue Nano II コーティング

## 60HT6F Series/6 Flutes Square Carbide End Mill For Hardened Steel

### ■切削条件目安 溝加工 Recommendation of cutting conditions for slotting

[illegible]

### ■切削条件目安 側面加工 Recommendation of cutting conditions for side milling

| 被削材<br>WORK METAL    | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | 焼入鋼<br>Harden Steel             |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------------|------------------------|---------------------------|------------------------|
|                      | (SCM 低合金鋼等)<br>HRC30～38 |                        | (SKD NAK等)<br>HRC35～45     |                        | (SKD NAK STAVAX)<br>HRC45-50HRC |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)           | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 6                    | 6,100                   | 1,400                  | 6,100                      | 1,400                  | 4,030                           | 730                    |                           |                        |
| 8                    | 4,500                   | 1,400                  | 4,500                      | 1,400                  | 2,940                           | 730                    |                           |                        |
| 10                   | 3,650                   | 1,370                  | 3,650                      | 1,370                  | 2,330                           | 700                    |                           |                        |
| 12                   | 3,100                   | 1,250                  | 3,100                      | 1,250                  | 1,960                           | 660                    |                           |                        |
| 14                   | 2,600                   | 1,250                  | 2,600                      | 1,250                  | 1,640                           | 645                    |                           |                        |
| 16                   | 2,280                   | 1,240                  | 2,280                      | 1,240                  | 1,470                           | 635                    |                           |                        |
|                      |                         |                        |                            |                        |                                 |                        |                           |                        |
|                      |                         |                        |                            |                        |                                 |                        |                           |                        |
|                      |                         |                        |                            |                        |                                 |                        |                           |                        |
|                      |                         |                        |                            |                        |                                 |                        |                           |                        |
|                      |                         |                        |                            |                        |                                 |                        |                           |                        |
|                      |                         |                        |                            |                        |                                 |                        |                           |                        |
|                      |                         |                        |                            |                        |                                 |                        |                           |                        |
| ap=1.5D              |                         |                        |                            |                        |                                 |                        |                           |                        |
| ae=0.04 D            |                         |                        |                            |                        |                                 |                        |                           |                        |

※この加工条件は刃長が3Dの工具の使用を想定とした条件です。

もしお使いの工具がそれよりもロングサイズであるのであれば、加工条件の設定を緩めに調整してください。

The above cutting condition is supposed to be used with standard end mills, flute lengths  $3.0D$ , not long flute lengths or long shanks.

If you work with longer types of the end mills, please adjust the feed speed to be slower than the above condition.

※チャンピオンデーターを表示しているわけでは御座いませんので、基本的にはお客様の仕事に合う加工条件でご使用下さい。

**We don't display a champion data, so please basically use cutting processing conditions that suit your work.**

# 超硬45°アルミ用3枚刃スクエアエンドミル 超硬40°アルミ用3枚刃スクエアエンドミル 刃先ギャッシュランド採用ノンコート and DLCコーティング付

45AL3F(DLC1) / 48AL3F Series/3 Flutes Square Carbide End Mill For Aluminum

## ■切削条件目安 溝加工 Recommendation of cutting conditions for slotting

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel  |                        | アルミニウム A7075<br>Aluminum Alloy |                        | アルミニウム A5052<br>Aluminum Alloy |                        | 銅 C1100<br>Copper Alloy |                        |
|----------------------|-----------------------------|------------------------|--------------------------------|------------------------|--------------------------------|------------------------|-------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br><HRC35 |                        | 回転数(RPM)<br>(rev/min)          |                        | 回転数(RPM)<br>(rev/min)          |                        | 回転数(RPM)<br>(rev/min)   |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)       | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)          | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)          | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) |
| 1                    | -                           | -                      | 38,217                         | 330                    | 57,325                         | 495                    | 28,662                  | 225                    |
| 1.25                 | -                           | -                      | 30,573                         | 375                    | 45,860                         | 563                    | 22,930                  | 270                    |
| 1.5                  | -                           | -                      | 31,847                         | 450                    | 47,771                         | 675                    | 22,293                  | 330                    |
| 2                    | -                           | -                      | 28,662                         | 600                    | 42,994                         | 900                    | 16,720                  | 480                    |
| 2.5                  | -                           | -                      | 22,930                         | 1,080                  | 34,395                         | 1,620                  | 13,376                  | 488                    |
| 3                    | -                           | -                      | 19,108                         | 1,133                  | 28,662                         | 1,699                  | 11,146                  | 488                    |
| 4                    | -                           | -                      | 14,331                         | 1,175                  | 21,497                         | 1,762                  | 8,360                   | 540                    |
| 5                    | -                           | -                      | 11,465                         | 1,193                  | 17,197                         | 1,789                  | 6,688                   | 570                    |
| 6                    | -                           | -                      | 9,554                          | 1,205                  | 14,331                         | 1,807                  | 5,573                   | 600                    |
| 8                    | -                           | -                      | 7,166                          | 1,215                  | 10,748                         | 1,823                  | 4,180                   | 675                    |
| 10                   | -                           | -                      | 5,732                          | 1,215                  | 8,599                          | 1,823                  | 3,344                   | 705                    |
| 12                   | -                           | -                      | 4,777                          | 1,197                  | 7,166                          | 1,796                  | 2,787                   | 750                    |
| 14                   | -                           | -                      | 4,095                          | 1,080                  | 6,142                          | 1,620                  | 2,389                   | 780                    |
| 16                   | -                           | -                      | 3,583                          | 975                    | 5,374                          | 1,463                  | 2,090                   | 765                    |
| 18                   | -                           | -                      | 3,185                          | 915                    | 4,777                          | 1,373                  | 1,858                   | 750                    |
| 20                   | -                           | -                      | 2,866                          | 795                    | 4,299                          | 1,193                  | 1,672                   | 750                    |
| ap=0.5D              |                             |                        |                                |                        |                                |                        |                         |                        |
| ae=1D                |                             |                        |                                |                        |                                |                        |                         |                        |

## ■切削条件目安 側面加工 Recommendation of cutting conditions for side milling

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel  |                        | アルミニウム A7075<br>Aluminum Alloy |                        | アルミニウム A5052<br>Aluminum Alloy |                        | 銅 C1100<br>Copper Alloy |                        |
|----------------------|-----------------------------|------------------------|--------------------------------|------------------------|--------------------------------|------------------------|-------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br><HRC35 |                        | 回転数(RPM)<br>(rev/min)          |                        | 回転数(RPM)<br>(rev/min)          |                        | 回転数(RPM)<br>(rev/min)   |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)       | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)          | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)          | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) |
| 1                    | -                           | -                      | 38,217                         | 462                    | 57,325                         | 693                    | 28,662                  | 315                    |
| 1.25                 | -                           | -                      | 30,573                         | 525                    | 45,860                         | 788                    | 22,930                  | 378                    |
| 1.5                  | -                           | -                      | 31,847                         | 630                    | 47,771                         | 945                    | 22,293                  | 462                    |
| 2                    | -                           | -                      | 28,662                         | 840                    | 42,994                         | 1,260                  | 16,720                  | 672                    |
| 2.5                  | -                           | -                      | 22,930                         | 1,512                  | 34,395                         | 2,268                  | 13,376                  | 683                    |
| 3                    | -                           | -                      | 19,108                         | 1,586                  | 28,662                         | 2,378                  | 11,146                  | 683                    |
| 4                    | -                           | -                      | 14,331                         | 1,644                  | 21,497                         | 2,466                  | 8,360                   | 756                    |
| 5                    | -                           | -                      | 11,465                         | 1,670                  | 17,197                         | 2,504                  | 6,688                   | 798                    |
| 6                    | -                           | -                      | 9,554                          | 1,686                  | 14,331                         | 2,529                  | 5,573                   | 840                    |
| 8                    | -                           | -                      | 7,166                          | 1,701                  | 10,748                         | 2,552                  | 4,180                   | 945                    |
| 10                   | -                           | -                      | 5,732                          | 1,701                  | 8,599                          | 2,552                  | 3,344                   | 987                    |
| 12                   | -                           | -                      | 4,777                          | 1,676                  | 7,166                          | 2,514                  | 2,787                   | 1,050                  |
| 14                   | -                           | -                      | 4,095                          | 1,512                  | 6,142                          | 2,268                  | 2,389                   | 1,092                  |
| 16                   | -                           | -                      | 3,583                          | 1,365                  | 5,374                          | 2,048                  | 2,090                   | 1,071                  |
| 18                   | -                           | -                      | 3,185                          | 1,281                  | 4,777                          | 1,922                  | 1,858                   | 1,050                  |
| 20                   | -                           | -                      | 2,866                          | 1,113                  | 4,299                          | 1,670                  | 1,672                   | 1,050                  |
| ap=1.5D              |                             |                        |                                |                        |                                |                        |                         |                        |
| ae=0.2D              |                             |                        |                                |                        |                                |                        |                         |                        |

※この加工条件は全長が標準サイズ、刃長が2.5Dもしくは3Dの工具の使用を想定とした条件です。

もしお使いの工具がそれよりもロングサイズであるのであれば、加工条件の設定を緩めに調整してください。

カタログ値以上に送り速度を上げる場合にはDLCコーティングを施したエンドミルを推奨いたします。(耐熱性と工具の表面硬度が上がります)

The above cutting condition is supposed to be used with standard end mills, flute length around 2.5D or 3.0D, not long flute length or long shanks.

If you work with longer types of the end mills, please adjust the feed speed to be slower than the above condition.

※チャンピオンデータを表示しているわけでは御座いませんので、基本的にはお客様の仕事に合う加工条件でご使用下さい。

We don't display a champion data, so please basically use cutting processing conditions that suit your work.

## 超硬30°2枚刃ボールエンドミル

## AlCrSiコーティング

## 48B2F Series/2 Flutes Ball Nose Carbide End Mill For Steel

## ■切削条件目安 プロファイリング加工 Recommendation of profiling cutting

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel  |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|-----------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br>＜HRC35 |                        | (SCM 低合金鋼等)<br>HRC30～38 |                        | (SKD NAK等)<br>HRC35～45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)       | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                    | 31,847                      | 635                    | 25,478                  | 397                    | 25,478                     | 290                    | 25,478                    | 397                    |
| 1.5                  | 21,231                      | 510                    | 16,985                  | 333                    | 16,985                     | 296                    | 16,985                    | 333                    |
| 2                    | 17,516                      | 631                    | 12,739                  | 408                    | 12,739                     | 306                    | 12,739                    | 408                    |
| 2.5                  | 14,013                      | 645                    | 10,191                  | 408                    | 10,191                     | 306                    | 10,191                    | 408                    |
| 3                    | 11,677                      | 654                    | 8,493                   | 408                    | 8,493                      | 306                    | 8,493                     | 408                    |
| 4                    | 8,758                       | 666                    | 6,369                   | 446                    | 6,369                      | 382                    | 6,369                     | 446                    |
| 5                    | 7,006                       | 673                    | 5,096                   | 459                    | 5,096                      | 387                    | 5,096                     | 459                    |
| 6                    | 5,839                       | 677                    | 4,246                   | 467                    | 4,246                      | 382                    | 4,246                     | 467                    |
| 8                    | 4,379                       | 744                    | 3,185                   | 573                    | 3,185                      | 446                    | 3,185                     | 573                    |
| 10                   | 3,503                       | 771                    | 2,548                   | 510                    | 2,548                      | 448                    | 2,548                     | 510                    |
| 12                   | 2,919                       | 701                    | 2,123                   | 467                    | 2,123                      | 425                    | 2,123                     | 467                    |
| 14                   | 2,502                       | 690                    | 1,820                   | 425                    | 1,820                      | 390                    | 1,820                     | 425                    |
| 16                   | 2,189                       | 525                    | 1,592                   | 382                    | 1,592                      | 318                    | 1,592                     | 382                    |
| 20                   | 1,752                       | 438                    | 1,274                   | 280                    | 1,274                      | 255                    | 1,274                     | 280                    |
| ap=0.05D             |                             |                        |                         |                        |                            |                        |                           |                        |
| ae=0.4D              |                             |                        |                         |                        |                            |                        |                           |                        |

### ■切削条件目安 側面加工 Recommendation of cutting conditions for side milling

[illegible]

※この加工条件は全長が標準サイズの工具の使用を想定とした条件です。

もしお使いの工具がそれよりもロングサイズであるのであれば、加工条件の設定を緩めに調整してください。

The above cutting condition is supposed to be used with standard end mills, not long flute length or long shanks.

If you work with longer types of the end mills, please adjust the feed speed to be slower than the above condition.

※チャンピオンデーターを表示しているわけでは御座いませんので、基本的にはお客様の仕事に合う加工条件でご使用下さい。

**We don't display a champion data, so please basically use cutting processing conditions that suit your work.**

## 超硬30°4枚刃ボールエンドミル

## AlCrSiコーティング

## 48B4F Series/4 Flutes Ball Nose Carbide End Mill For Steel

## ■切削条件目安 プロファイリング加工 Recommendation of profiling cutting

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel  |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|-----------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br>＜HRC35 |                        | (SCM 低合金鋼等)<br>HRC30～38 |                        | (SKD NAK等)<br>HRC35～45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)       | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                    | 31,847                      | 1,016                  | 25,478                  | 635                    | 25,478                     | 435                    | 25,478                    | 635                    |
| 1.5                  | 21,231                      | 816                    | 16,985                  | 533                    | 16,985                     | 444                    | 16,985                    | 533                    |
| 2                    | 17,516                      | 1,010                  | 12,739                  | 653                    | 12,739                     | 459                    | 12,739                    | 653                    |
| 2.5                  | 14,013                      | 1,032                  | 10,191                  | 653                    | 10,191                     | 459                    | 10,191                    | 653                    |
| 3                    | 11,677                      | 1,046                  | 8,493                   | 653                    | 8,493                      | 459                    | 8,493                     | 653                    |
| 4                    | 8,758                       | 1,066                  | 6,369                   | 714                    | 6,369                      | 573                    | 6,369                     | 714                    |
| 5                    | 7,006                       | 1,077                  | 5,096                   | 734                    | 5,096                      | 581                    | 5,096                     | 734                    |
| 6                    | 5,839                       | 1,083                  | 4,246                   | 747                    | 4,246                      | 573                    | 4,246                     | 747                    |
| 8                    | 4,379                       | 1,190                  | 3,185                   | 917                    | 3,185                      | 669                    | 3,185                     | 917                    |
| 10                   | 3,503                       | 1,234                  | 2,548                   | 816                    | 2,548                      | 672                    | 2,548                     | 816                    |
| 12                   | 2,919                       | 1,122                  | 2,123                   | 747                    | 2,123                      | 638                    | 2,123                     | 747                    |
| 14                   | 2,502                       | 1,104                  | 1,820                   | 680                    | 1,820                      | 585                    | 1,820                     | 680                    |
| 16                   | 2,189                       | 840                    | 1,592                   | 611                    | 1,592                      | 477                    | 1,592                     | 611                    |
| 20                   | 1,752                       | 701                    | 1,274                   | 448                    | 1,274                      | 383                    | 1,274                     | 448                    |
| ap=0.05D             |                             |                        |                         |                        |                            |                        |                           |                        |
| ae=0.4D              |                             |                        |                         |                        |                            |                        |                           |                        |

### ■切削条件目安 側面加工 Recommendation of cutting conditions for side milling

[illegible]

※この加工条件は全長が標準サイズの工具の使用を想定とした条件です。

もしお使いの工具がそれよりもロングサイズであるのであれば、加工条件の設定を緩めに調整してください。

The above cutting condition is supposed to be used with standard end mills, not long flute length or long shanks.

If you work with longer types of the end mills, please adjust the feed speed to be slower than the above condition.

※チャンピオンデーターを表示しているわけでは御座いませんので、基本的にはお客様の仕事に合う加工条件でご使用下さい。

**We don't display a champion data, so please basically use cutting processing conditions that suit your work.**

## 超硬30°高硬度用2枚刃ボールエンドミル

## TiAlCrSinコーティング/Blue Nano コーティング

## 60B2F/65B2F Series/2 Flutes Ball Nose Carbide End Mill for Hardened Steel

## ■切削条件目安 プロファイリング加工 Recommendation of profiling cutting

| 被削材<br>WORK METAL    | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | 焼入鋼<br>Harden Steel             |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------------|------------------------|---------------------------|------------------------|
|                      | (SCM 低合金鋼等)<br>HRC30～38 |                        | (SKD NAK等)<br>HRC35～45     |                        | (SKD NAK STAVAX)<br>HRC45-50HRC |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)           | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                    | 25,478                  | 397                    | 25,478                     | 290                    | 19,108                          | 232                    | 25,478                    | 397                    |
| 1.5                  | 16,985                  | 333                    | 16,985                     | 296                    | 12,739                          | 237                    | 16,985                    | 333                    |
| 2                    | 12,739                  | 408                    | 12,739                     | 306                    | 9,554                           | 245                    | 12,739                    | 408                    |
| 2.5                  | 10,191                  | 408                    | 10,191                     | 306                    | 7,643                           | 245                    | 10,191                    | 408                    |
| 3                    | 8,493                   | 408                    | 8,493                      | 306                    | 6,369                           | 245                    | 8,493                     | 408                    |
| 4                    | 6,369                   | 446                    | 6,369                      | 382                    | 4,777                           | 306                    | 6,369                     | 446                    |
| 5                    | 5,096                   | 459                    | 5,096                      | 387                    | 3,822                           | 310                    | 5,096                     | 459                    |
| 6                    | 4,246                   | 467                    | 4,246                      | 382                    | 3,185                           | 306                    | 4,246                     | 467                    |
| 8                    | 3,185                   | 573                    | 3,185                      | 446                    | 2,389                           | 357                    | 3,185                     | 573                    |
| 10                   | 2,548                   | 510                    | 2,548                      | 448                    | 1,911                           | 358                    | 2,548                     | 510                    |
| 12                   | 2,123                   | 467                    | 2,123                      | 425                    | 1,592                           | 340                    | 2,123                     | 467                    |
| 14                   | 1,820                   | 425                    | 1,820                      | 390                    | 1,365                           | 312                    | 1,820                     | 425                    |
| 16                   | 1,592                   | 382                    | 1,592                      | 318                    | 1,194                           | 254                    | 1,592                     | 382                    |
| 20                   | 1,274                   | 280                    | 1,274                      | 255                    | 955                             | 204                    | 1,274                     | 280                    |
| ap=0.05D             |                         |                        |                            |                        |                                 |                        |                           |                        |
| ae=0.4D              |                         |                        |                            |                        |                                 |                        |                           |                        |

### ■切削条件目安 側面加工 Recommendation of cutting conditions for side milling

[illegible]

※この加工条件は全長が標準サイズの工具の使用を想定とした条件です。

もしお使いの工具がそれよりもロングサイズであるのであれば、加工条件の設定を緩めに調整してください。

The above cutting condition is supposed to be used with standard end mills, not long flute length or long shanks.

If you work with longer types of the end mills, please adjust the feed speed to be slower than the above condition.

※チャンピオンデーターを表示しているわけでは御座いませんので、基本的にはお客様の仕事に合う加工条件でご使用下さい。

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# 超硬〔43/45°〕〔37/38°〕〔19/21°〕防振4枚刃ラフィングエンドミル 不等リード/不等分割刃先R付 CG/POWERコーティング

1921R/3738R /4345R(F) Series/Anti-Vibration 4 Flutes Carbide Roughing End Mill Variable Helix Leads 43/45° Unequal Spacing Teeth

1921° に関しては送り速度を5～8%ダウンを推奨します。

## ■切削条件目安 溝加工 Recommendation of cutting conditions for slotting

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel  |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|-----------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br><HRC35 |                        | (SCM 低合金鋼等)<br>HRC30～38 |                        | (SKD NAK等)<br>HRC35～45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)       | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 6                    | 7,431                       | 600                    | 5,308                   | 420                    | 3,450                      | 189                    | 5,042                     | 348                    |
| 7                    | 6,155                       | 720                    | 4,550                   | 510                    | 2,957                      | 237                    | 4,322                     | 380                    |
| 8                    | 5,573                       | 765                    | 3,981                   | 540                    | 2,588                      | 247                    | 3,782                     | 396                    |
| 9                    | 4,947                       | 800                    | 3,539                   | 566                    | 2,300                      | 248                    | 3,362                     | 471                    |
| 10                   | 4,459                       | 915                    | 3,503                   | 645                    | 2,548                      | 312                    | 3,025                     | 588                    |
| 11                   | 4,060                       | 920                    | 3,185                   | 662                    | 2,316                      | 306                    | 2,750                     | 583                    |
| 12                   | 3,715                       | 930                    | 2,919                   | 660                    | 2,123                      | 299                    | 2,521                     | 576                    |
| 13                   | 3,431                       | 890                    | 2,695                   | 636                    | 1,960                      | 298                    | 2,327                     | 549                    |
| 14                   | 3,185                       | 855                    | 2,502                   | 608                    | 1,820                      | 293                    | 2,161                     | 528                    |
| 15                   | 2,970                       | 830                    | 2,335                   | 607                    | 1,699                      | 282                    | 2,017                     | 500                    |
| 16                   | 2,787                       | 810                    | 2,189                   | 585                    | 1,592                      | 273                    | 1,891                     | 480                    |
| 17                   | 2,627                       | 803                    | 2,061                   | 593                    | 1,499                      | 276                    | 1,780                     | 484                    |
| 18                   | 2,478                       | 800                    | 1,946                   | 584                    | 1,415                      | 275                    | 1,681                     | 484                    |
| 20                   | 2,229                       | 795                    | 1,752                   | 570                    | 1,274                      | 260                    | 1,513                     | 468                    |
| ap=0.5D              |                             |                        |                         |                        |                            |                        |                           |                        |
| ae=1.0D              |                             |                        |                         |                        |                            |                        |                           |                        |

1921° に関しては送り速度を5～8%ダウンを推奨します

## ■切削条件目安 側面加工 Recommendation of cutting conditions for side milling

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel  |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|-----------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br><HRC35 |                        | (SCM 低合金鋼等)<br>HRC30～38 |                        | (SKD NAK等)<br>HRC35～45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)       | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 6                    | 8,174                       | 720                    | 5,839                   | 504                    | 3,450                      | 198                    | 5,042                     | 365                    |
| 7                    | 7,006                       | 841                    | 5,005                   | 540                    | 2,957                      | 237                    | 4,322                     | 380                    |
| 8                    | 6,131                       | 918                    | 4,379                   | 648                    | 2,588                      | 259                    | 3,782                     | 416                    |
| 9                    | 5,449                       | 981                    | 3,892                   | 669                    | 2,831                      | 317                    | 3,362                     | 538                    |
| 10                   | 4,904                       | 1,098                  | 3,854                   | 774                    | 2,548                      | 328                    | 3,025                     | 617                    |
| 11                   | 4,459                       | 1,106                  | 3,503                   | 771                    | 2,316                      | 324                    | 2,750                     | 616                    |
| 12                   | 4,087                       | 1,116                  | 3,211                   | 792                    | 2,123                      | 314                    | 2,521                     | 605                    |
| 13                   | 3,773                       | 1,079                  | 2,964                   | 759                    | 1,960                      | 310                    | 2,327                     | 577                    |
| 14                   | 3,503                       | 1,026                  | 2,753                   | 729                    | 1,820                      | 307                    | 2,161                     | 554                    |
| 15                   | 3,270                       | 1,001                  | 2,569                   | 709                    | 1,699                      | 297                    | 2,017                     | 528                    |
| 16                   | 3,065                       | 972                    | 2,408                   | 702                    | 1,592                      | 287                    | 1,891                     | 504                    |
| 17                   | 2,885                       | 981                    | 2,267                   | 716                    | 1,499                      | 294                    | 1,780                     | 513                    |
| 18                   | 2,725                       | 981                    | 2,141                   | 711                    | 1,415                      | 294                    | 1,681                     | 531                    |
| 20                   | 2,452                       | 954                    | 1,927                   | 684                    | 1,274                      | 273                    | 1,513                     | 491                    |
| ap=1.0D              |                             |                        |                         |                        |                            |                        |                           |                        |
| ae=0.5D              |                             |                        |                         |                        |                            |                        |                           |                        |

※この加工条件は全長が標準サイズ、刃長が2.5Dもしくは3Dの工具の使用を想定とした条件です。

もしお使いの工具がそれよりもロングサイズであるのであれば、加工条件の設定を緩めに調整してください。

The above cutting condition is supposed to be used with standard end mills, flute length around 2.5D or 3.0D, not long flute length or long shanks.

If you work with longer types of the end mills, please adjust the feed speed to be slower than the above condition.

カタログ値よりXY方向の送り速度を更に上げる必要がある場合は4345R(F)を推奨します。Z方向に切込加工する場合は3738R or 1921Rを推奨します。

薄板の切削加工においてZ方向に被削材にビビリが生じやすい場合、ねじれ工具の溝角度が弱ねじれものを推奨します。

※チャンピオンデータを表示しているわけでは御座いませんので、基本的にはお客様の仕事に合う加工条件でご使用下さい。

We don't display a champion data, so please basically use cutting processing conditions that suit your work.

# 超硬35°4枚刃ラフィングエンドミル 刃先ギャッシュランド採用Tixcoコーティング

55R4F Series/4 Flutes Roughing Carbide End Mill

## ■ 切削条件目安 溝加工 Recommendation of cutting conditions for slotting

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel  |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|-----------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br><HRC35 |                        | (SCM 低合金鋼等)<br>HRC30~38 |                        | (SKD NAK等)<br>HRC35~45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)       | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                    | 42,994                      | 240                    | 31,847                  | 180                    | 20,701                     | 91                     | 28,662                    | 132                    |
| 1.5                  | 28,662                      | 278                    | 21,231                  | 195                    | 13,800                     | 98                     | 19,108                    | 150                    |
| 2                    | 21,497                      | 315                    | 15,924                  | 218                    | 10,350                     | 104                    | 14,331                    | 162                    |
| 2.5                  | 17,197                      | 330                    | 12,739                  | 240                    | 8,280                      | 111                    | 11,465                    | 174                    |
| 3                    | 14,331                      | 360                    | 10,616                  | 263                    | 6,900                      | 117                    | 10,085                    | 198                    |
| 4                    | 11,146                      | 435                    | 7,962                   | 315                    | 5,175                      | 169                    | 7,564                     | 240                    |
| 5                    | 8,917                       | 480                    | 6,369                   | 345                    | 4,140                      | 176                    | 6,051                     | 300                    |
| 6                    | 7,431                       | 600                    | 5,308                   | 420                    | 3,450                      | 189                    | 5,042                     | 348                    |
| 8                    | 5,573                       | 765                    | 3,981                   | 540                    | 2,588                      | 247                    | 3,782                     | 396                    |
| 10                   | 4,459                       | 915                    | 3,503                   | 645                    | 2,548                      | 312                    | 3,025                     | 588                    |
| 12                   | 3,715                       | 930                    | 2,919                   | 660                    | 2,123                      | 299                    | 2,521                     | 576                    |
| 14                   | 3,185                       | 855                    | 2,502                   | 608                    | 1,820                      | 293                    | 2,161                     | 528                    |
| 16                   | 2,787                       | 810                    | 2,189                   | 585                    | 1,592                      | 273                    | 1,891                     | 480                    |
| 20                   | 2,229                       | 795                    | 1,752                   | 570                    | 1,274                      | 260                    | 1,513                     | 468                    |
| ap=0.5D              |                             |                        |                         |                        |                            |                        |                           |                        |
| ae=1.0D              |                             |                        |                         |                        |                            |                        |                           |                        |

## ■ 切削条件目安 側面加工 Recommendation of cutting conditions for side milling

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel  |                        | 合金鋼<br>Alloy Steel      |                        | プリハードン鋼<br>Preharden Steel |                        | ステンレス鋼<br>Stainless Steel |                        |
|----------------------|-----------------------------|------------------------|-------------------------|------------------------|----------------------------|------------------------|---------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br><HRC35 |                        | (SCM 低合金鋼等)<br>HRC30~38 |                        | (SKD NAK等)<br>HRC35~45     |                        | (SUS304 SUS316等)          |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)       | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)      | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)     | 送り速度(FEED)<br>(mm/min) |
| 1                    | 47,293                      | 288                    | 35,032                  | 216                    | 20,701                     | 96                     | 28,662                    | 139                    |
| 1.5                  | 31,529                      | 333                    | 23,355                  | 234                    | 13,800                     | 102                    | 19,108                    | 158                    |
| 2                    | 23,646                      | 378                    | 17,516                  | 261                    | 10,350                     | 109                    | 14,331                    | 170                    |
| 2.5                  | 18,917                      | 396                    | 14,013                  | 288                    | 8,280                      | 116                    | 11,465                    | 183                    |
| 3                    | 15,764                      | 432                    | 11,677                  | 315                    | 6,900                      | 123                    | 10,085                    | 208                    |
| 4                    | 12,261                      | 522                    | 8,758                   | 378                    | 5,175                      | 177                    | 7,564                     | 252                    |
| 5                    | 9,809                       | 576                    | 7,006                   | 414                    | 4,140                      | 184                    | 6,051                     | 315                    |
| 6                    | 8,174                       | 720                    | 5,839                   | 504                    | 3,450                      | 198                    | 5,042                     | 365                    |
| 8                    | 6,131                       | 918                    | 4,379                   | 648                    | 2,588                      | 259                    | 3,782                     | 416                    |
| 10                   | 4,904                       | 1,098                  | 3,854                   | 774                    | 2,548                      | 328                    | 3,025                     | 617                    |
| 12                   | 4,087                       | 1,116                  | 3,211                   | 792                    | 2,123                      | 314                    | 2,521                     | 605                    |
| 14                   | 3,503                       | 1,026                  | 2,753                   | 729                    | 1,820                      | 307                    | 2,161                     | 554                    |
| 16                   | 3,065                       | 972                    | 2,408                   | 702                    | 1,592                      | 287                    | 1,891                     | 504                    |
| 20                   | 2,452                       | 954                    | 1,927                   | 684                    | 1,274                      | 273                    | 1,513                     | 491                    |
| ap=1.0D              |                             |                        |                         |                        |                            |                        |                           |                        |
| ae=0.5D              |                             |                        |                         |                        |                            |                        |                           |                        |

※この加工条件は全長が標準サイズ、刃長が2.5Dもしくは3Dの工具の使用を想定とした条件です。

もしお使いの工具がそれよりもロングサイズであるのであれば、加工条件の設定を緩めに調整してください。

The above cutting condition is supposed to be used with standard end mills, flute length around 2.5D or 3.0D, not long flute length or long shanks.

If you work with longer types of the end mills, please adjust the feed speed to be slower than the above condition.

※チャンピオンデータを表示しているわけではありませんので、基本的にはお客様の仕事に合う加工条件でご使用下さい。

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## 超硬35°アルミ用3枚刃ラフィングエンドミル

## 刃先ギャッシュランド採用ノンコート and DLCコーティング付

55RAL3F(DLC1) Series/3 Flutes Roughing Carbide End Mill For Aluminum

## ■切削条件目安 溝加工 Recommendation of cutting conditions for slotting

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel  |                        | アルミニウム A7075<br>Aluminum Alloy |                        | アルミニウム A5052<br>Aluminum Alloy |                        | 銅 C1100<br>Copper Alloy |                        |
|----------------------|-----------------------------|------------------------|--------------------------------|------------------------|--------------------------------|------------------------|-------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br><HRC35 |                        | 回転数(RPM)<br>(rev/min)          |                        | 回転数(RPM)<br>(rev/min)          |                        | 回転数(RPM)<br>(rev/min)   |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)       | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)          | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)          | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) |
| 1                    | -                           | -                      | 38,217                         | 396                    | 57,325                         | 594                    | 28,662                  | 270                    |
| 1.25                 | -                           | -                      | 30,573                         | 450                    | 45,860                         | 675                    | 22,930                  | 324                    |
| 1.5                  | -                           | -                      | 31,847                         | 540                    | 47,771                         | 810                    | 22,293                  | 396                    |
| 2                    | -                           | -                      | 28,662                         | 720                    | 42,994                         | 1,080                  | 16,720                  | 576                    |
| 2.5                  | -                           | -                      | 22,930                         | 1,296                  | 34,395                         | 1,944                  | 13,376                  | 585                    |
| 3                    | -                           | -                      | 19,108                         | 1,359                  | 28,662                         | 2,039                  | 11,146                  | 585                    |
| 4                    | -                           | -                      | 14,331                         | 1,409                  | 21,497                         | 2,114                  | 8,360                   | 648                    |
| 5                    | -                           | -                      | 11,465                         | 1,431                  | 17,197                         | 2,147                  | 6,688                   | 684                    |
| 6                    | -                           | -                      | 9,554                          | 1,445                  | 14,331                         | 2,168                  | 5,573                   | 720                    |
| 8                    | -                           | -                      | 7,166                          | 1,458                  | 10,748                         | 2,187                  | 4,180                   | 810                    |
| 10                   | -                           | -                      | 5,732                          | 1,458                  | 8,599                          | 2,187                  | 3,344                   | 846                    |
| 12                   | -                           | -                      | 4,777                          | 1,436                  | 7,166                          | 2,155                  | 2,787                   | 900                    |
| 14                   | -                           | -                      | 4,095                          | 1,296                  | 6,142                          | 1,944                  | 2,389                   | 936                    |
| 16                   | -                           | -                      | 3,583                          | 1,170                  | 5,374                          | 1,755                  | 2,090                   | 918                    |
| 18                   | -                           | -                      | 3,185                          | 1,098                  | 4,777                          | 1,647                  | 1,858                   | 900                    |
| 20                   | -                           | -                      | 2,866                          | 954                    | 4,299                          | 1,431                  | 1,672                   | 900                    |
| ap=0.5D              |                             |                        |                                |                        |                                |                        |                         |                        |
| ae=1D                |                             |                        |                                |                        |                                |                        |                         |                        |

## ■切削条件目安 側面加工 Recommendation of cutting conditions for side milling

| 被削材<br>WORK METAL    | 一般構造用鋼 炭素鋼<br>Carbon Steel  |                        | アルミニウム A7075<br>Aluminum Alloy |                        | アルミニウム A5052<br>Aluminum Alloy |                        | 銅 C1100<br>Copper Alloy |                        |
|----------------------|-----------------------------|------------------------|--------------------------------|------------------------|--------------------------------|------------------------|-------------------------|------------------------|
|                      | (S45C/SS/FC/FCD等)<br><HRC35 |                        | 回転数(RPM)<br>(rev/min)          |                        | 回転数(RPM)<br>(rev/min)          |                        | 回転数(RPM)<br>(rev/min)   |                        |
| 工具径<br>Tool Diameter | 回転数(RPM)<br>(rev/min)       | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)          | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)          | 送り速度(FEED)<br>(mm/min) | 回転数(RPM)<br>(rev/min)   | 送り速度(FEED)<br>(mm/min) |
| 1                    | -                           | -                      | 38,217                         | 462                    | 57,325                         | 693                    | 28,662                  | 315                    |
| 1.25                 | -                           | -                      | 30,573                         | 525                    | 45,860                         | 788                    | 22,930                  | 378                    |
| 1.5                  | -                           | -                      | 31,847                         | 630                    | 47,771                         | 945                    | 22,293                  | 462                    |
| 2                    | -                           | -                      | 28,662                         | 840                    | 42,994                         | 1,260                  | 16,720                  | 672                    |
| 2.5                  | -                           | -                      | 22,930                         | 1,512                  | 34,395                         | 2,268                  | 13,376                  | 683                    |
| 3                    | -                           | -                      | 19,108                         | 1,586                  | 28,662                         | 2,378                  | 11,146                  | 683                    |
| 4                    | -                           | -                      | 14,331                         | 1,644                  | 21,497                         | 2,466                  | 8,360                   | 756                    |
| 5                    | -                           | -                      | 11,465                         | 1,670                  | 17,197                         | 2,504                  | 6,688                   | 798                    |
| 6                    | -                           | -                      | 9,554                          | 1,686                  | 14,331                         | 2,529                  | 5,573                   | 840                    |
| 8                    | -                           | -                      | 7,166                          | 1,701                  | 10,748                         | 2,552                  | 4,180                   | 945                    |
| 10                   | -                           | -                      | 5,732                          | 1,701                  | 8,599                          | 2,552                  | 3,344                   | 987                    |
| 12                   | -                           | -                      | 4,777                          | 1,676                  | 7,166                          | 2,514                  | 2,787                   | 1,050                  |
| 14                   | -                           | -                      | 4,095                          | 1,512                  | 6,142                          | 2,268                  | 2,389                   | 1,092                  |
| 16                   | -                           | -                      | 3,583                          | 1,365                  | 5,374                          | 2,048                  | 2,090                   | 1,071                  |
| 18                   | -                           | -                      | 3,185                          | 1,281                  | 4,777                          | 1,922                  | 1,858                   | 1,050                  |
| 20                   | -                           | -                      | 2,866                          | 1,113                  | 4,299                          | 1,670                  | 1,672                   | 1,050                  |
| ap=1.0D              |                             |                        |                                |                        |                                |                        |                         |                        |
| ae=0.4D              |                             |                        |                                |                        |                                |                        |                         |                        |

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もしお使いの工具がそれよりもロングサイズであるのであれば、加工条件の設定を緩めに調整してください。

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If you work with longer types of the end mills, please adjust the feed speed to be slower than the above condition.

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# 超硬2枚刃ドリル

## 2 Flutes Tungsten Carbide Drill

P

K

| Workpiece Material<br>ワーク                                         |           | Low carbon steels<br>低炭素鋼<br>(C < 0.3)<br>C15E4, E275A, E355D,<br>etc. | Carbon steels<br>炭素鋼<br>(C > 0.3)<br>C45, C55, etc. | High alloy steels<br>高合金鋼<br>42CrMo4, etc. | Grey cast irons<br>普通鑄鉄<br>250, etc. | Ductile cast irons<br>延性鑄鉄(ダクタイル)<br>450-10S, etc |
|-------------------------------------------------------------------|-----------|------------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------|--------------------------------------|---------------------------------------------------|
| Brinell Hardness (HB)<br>ブリネル硬度                                   |           | ~125                                                                   | 125 ~ 300                                           | 250 ~ 350                                  | ~ 200                                | ~ 300                                             |
| Cutting Speed: Vc (m/min)<br>切削速度<br>For External Coolant<br>外部給油 |           | 120-80-50                                                              | 120-70-45                                           | 100-60-35                                  | 140-100-60                           | 120-80-60                                         |
| Cutting Speed: Vc (m/min)<br>切削速度<br>For Internal Coolant<br>内部給油 |           | 140-100-60                                                             | 120-80-60                                           | 110-80-60                                  | 160-120-60                           | 140-100-60                                        |
| Feed<br>f (mm/rev)<br>送りスピード                                      | ø3- ~ ø4  | 0.10-0.20                                                              | 0.10-0.20                                           | 0.09-0.16                                  | 0.13-0.20                            | 0.11-0.18                                         |
|                                                                   | ø4~ ø6    | 0.14-0.25                                                              | 0.14-0.25                                           | 0.12-0.23                                  | 0.17-0.30                            | 0.13-0.20                                         |
|                                                                   | ø6 ~ ø8   | 0.16-0.32                                                              | 0.16-0.32                                           | 0.14-0.28                                  | 0.20-0.35                            | 0.15-0.25                                         |
|                                                                   | ø8 ~ ø10  | 0.16-0.35                                                              | 0.16-0.35                                           | 0.14-0.30                                  | 0.23-0.40                            | 0.17-0.32                                         |
|                                                                   | ø10 ~ ø12 | 0.18-0.40                                                              | 0.18-0.40                                           | 0.18-0.38                                  | 0.25-0.45                            | 0.20-0.36                                         |
|                                                                   | ø12 ~ ø16 | 0.22-0.45                                                              | 0.22-0.45                                           | 0.22-0.45                                  | 0.28-0.48                            | 0.24-0.45                                         |
|                                                                   | ø16~ ø20  | 0.25-0.50                                                              | 0.25-0.50                                           | 0.25-0.50                                  | 0.32-0.52                            | 0.28-0.48                                         |