## General Purpose Technical Inch

| | 2 Flute Series | | | 3 Flute Series | | 4 Flute Series | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Stub | 164 | 166 | 162/168 | 169 | | 163 | 165 | 117 | 167 | 161 |
| Standard | 121 | 150 | | 116 | 145 | 111 | 140 | 151 | | |
| Long Length/Reach | 123 | | 183/186 | | | 122 | | | 181/184 | |

Technical data provided should be considered advisory only as variations may be necessary depending on the particular application.

| Workpiece Material Group | | Examples | SFM |
|---|---|---|---|
| Steels | P | Steel - Mild (.2-.3 Carbon) 1018 | 350-500 |
| | | Steel - Mild (.4-.5 Carbon) 4140 | 250-350 |
| | | Tool Steels (1.2 carbon) A2/D2/H13/P20 | 200-250 |
| | | Forgings | 125-250 |
| Cast Irons | K | Iron - Cast (Soft) | 450-600 |
| | | Iron - Cast (Medium Hard) | 300-400 |
| | | Iron (Hard Chilled) | 250-300 |
| | | Iron (Malleable) | 225-300 |

| Workpiece Material Group | | Examples | SFM |
|---|---|---|---|
| Stainless Steels | M | Stainless Steel Free Machining | 300-400 |
| | | Austenitic Stainless 304/316 | 180-225 |
| | | Ferritic | 200-275 |
| | | Martensitic | 150-200 |
| | | PH Stainless 17-4 PH | 125-200 |
| Special Alloys | S | Titanium 6AL-4V | 175-375 |
| | | Cobalt-Based Alloys Stellite | 100-200 |
| | | Nickel-Based Alloys Inconel 625/718 | 100-200 |
| | | Iron-Based Alloys Incoloy 800-802 | 125-200 |

| Workpiece Material Group | | Examples | SFM |
|---|---|---|---|
| Hardened Steels | H | Hardened Steels 35-45 Rc | 200-250 |
| | | Hardened Steels 45-55 Rc | 150-200 |
| | | Hardened Steels 55-65 Rc | 50-100 |
| Non-Ferrous | N | Aluminum/ Aluminum Alloys | 500-700 |
| | | Brass/Bronze | 400-600 |
| | | Magnesium/ Magnesium Alloys | 700-1000 |
| | | Plastics/Bakelite | 800-1200 |

Bright Tool use low SFM.

ALtima® Coated use high SFM.

| Workpiece Material Group | | Examples | Tool Diameter 1/8 | 3/16 | 1/4 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Inches/Tooth | | | | | | | | |
| Steels | P | Steel - Mild (.2-.3 Carbon) 1018<br>Steel - Mild (.4-.5 Carbon) 4140 | .0005-.0008 | .0010-.0012 | .0015-.0020 | .0015-.0025 | .0021-.0030 | .0020-.0035 | .0023-.0040 | .0022-.0043 | .0032-.0050 |
| | | Tool Steels (1.2 carbon)<br>A2/D2/H13/P20<br>Forgings | .0003-.0005 | .0008-.0010 | .0012-.0015 | .0014-.0018 | .0018-.0020 | .0020-.0023 | .0023-.0030 | .0024-.0032 | .0024-.0032 |
| Cast Irons | K | Iron - Cast (Soft)<br>Iron - Cast (Medium Hard)<br>Iron (Hard Chilled)<br>Iron (Malleable) | .0005-.0008 | .0010-.0012 | .0015-.0020 | .0015-.0025 | .0021-.0030 | .0020-.0035 | .0023-.0040 | .0022-.0043 | .0032-.0050 |
| Stainless Steels | M | Stainless Steel<br>Free Machining<br>Ferritic | .0005-.0008 | .0010-.0012 | .0015-.0020 | .0015-.0025 | .0021-.0030 | .0020-.0035 | .0023-.0040 | .0022-.0043 | .0032-.0050 |
| | | Austenitic Stainless<br>304/316<br>Martensitic<br>PH Stainless<br>17-4 PH | .0003-.0005 | .0008-.0010 | .0012-.0015 | .0014-.0018 | .0018-.0020 | .0020-.0023 | .0023-.0030 | .0024-.0032 | .0024-.0032 |
| Special Alloys | S | Titanium<br>6AL-4V | .0003-.0004 | .0004-.0006 | .0006-.0008 | .0008-.0012 | .0008-.0012 | .0012-.0016 | .0016-.0018 | .0018-.0020 | .0020-.0030 |
| | | Stellite<br>Inconel 625/718<br>Incoloy 800-802 | .0003-.0005 | .0005-.0015 | .0005-.0015 | .0010-.0020 | .0010.-0020 | .0010-.0030 | .0020-.0030 | .0025-.0035 | .0025-.0035 |
| Hardened Steels | H | Hardened Steels<br>35-45 Rc<br>Hardened Steels<br>45-55 Rc<br>Hardened Steels<br>55-65 Rc | .0003-.0005 | .0005-.0015 | .0005-.0015 | .0010-.0020 | .0010-.0020 | .0010-.0030 | .0020-.0030 | .0025-.0035 | .0025-.0035 |
| Non-Ferrous | N | Aluminum/Aluminum Alloys<br>Brass/Bronze<br>Magnesium/Magnesium Alloys<br>Plastics/Bakelite | .0008-.0015 | .0015-.0020 | .0020-.0025 | .0025-.0030 | .0030-.0035 | .0035-.0050 | .0050-.0080 | .0075-.0095 | .0085-.0100 |







## General Purpose Technical Metric

| | 2 Flute Series | | | 3 Flute Series | | 4 Flute Series | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Stub | 164 | 166 | 162/168 | 169 | | 163 | 165 | 117 | 167 | 161 |
| Standard | 121 | 150 | | 116 | 145 | 111 | 140 | 151 | | |
| Long Length/Reach | 123 | | 183/186 | | | 122 | | | 181/184 | |

| Workpiece Material Group | | Examples | SMM |
|---|---|---|---|
| Steels | P | Steel - Mild (.2-.3 Carbon) 1018 | 105-150 |
| | | Steel - Mild (.4-.5 Carbon) 4140 | 75-105 |
| | | Tool Steels (1.2 carbon) A2/D2/H13/P20 | 60-75 |
| | | Forgings | 40-75 |
| Cast Irons | K | Iron - Cast (Soft) | 140-185 |
| | | Iron - Cast (Medium Hard) | 90-120 |
| | | Iron (Hard Chilled) | 75-90 |
| | | Iron (Malleable) | 70-90 |

| Workpiece Material Group | | Examples | SMM |
|---|---|---|---|
| Stainless Steels | M | Stainless Steel Free Machining | 90-120 |
| | | Austenitic Stainless 304/316 | 55-70 |
| | | Ferritic | 60-85 |
| | | Martensitic | 45-60 |
| | | PH Stainless 17-4 PH | 40-60 |
| Special Alloys | S | Titanium 6AL-4V | 55-115 |
| | | Cobalt-Based Alloys Stellite | 30-60 |
| | | Nickel-Based Alloys Inconel 625/718 | 30-60 |
| | | Iron-Based Alloys Incoloy 800-802 | 40-60 |

| Workpiece Material Group | | Examples | SMM |
|---|---|---|---|
| Hardened Steels | H | Hardened Steels 35-45 Rc | 60-75 |
| | | Hardened Steels 45-55 Rc | 45-60 |
| | | Hardened Steels 55-65 Rc | 15-30 |
| Non-Ferrous | N | Aluminum/ Aluminum Alloys | 150-215 |
| | | Brass/Bronze | 120-185 |
| | | Magnesium/ Magnesium Alloys | 215-305 |
| | | Plastics/Bakelite | 245-365 |

Bright Tool use low SMM.

ALtima® Coated use high SMM.

| Workpiece Material Group | | Examples | Tool Diameter (mm) 3 | 5 | 6 | 8 | 10 | 12 | 16 | 20 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mm/Tooth | | | | | | | | |
| Steels | P | Steel - Mild (.2-.3 Carbon) 1018<br>Steel - Mild (.4-.5 Carbon) 4140 | .013-.020 | .025-.030 | .038-.051 | .038-.051 | .053-.076 | .051-.089 | .058-.102 | .056-.109 | .081-.127 |
| | | Tool Steels (1.2 carbon)<br>A2/D2/H13/P20<br>Forgings | .008-.013 | .020-.025 | .030-.038 | .036-.046 | .046-.051 | .051-.058 | .058-.076 | .061-.081 | .061-.081 |
| Cast Irons | K | Iron - Cast (Soft)<br>Iron - Cast (Medium Hard)<br>Iron (Hard Chilled)<br>Iron (Malleable) | .013-.020 | .025-.030 | .038-.051 | .038-.051 | .053-.076 | .051-.089 | .058-.102 | .056-.109 | .081-.127 |
| Stainless Steels | M | Stainless Steel<br>Free Machining<br>Ferritic | .013-.020 | .025-.030 | .038-.051 | .038-.051 | .053-.076 | .051-.089 | .058-.102 | .056-.109 | .081-.127 |
| | | Austenitic Stainless<br>304/316<br>Martensitic<br>PH Stainless<br>17-4 PH | .008-.013 | .020-.025 | .030-.038 | .036-.046 | .046-.051 | .051-.058 | .058-.076 | .061-.081 | .061-.081 |
| Special Alloys | S | Titanium<br>6AL-4V | .008-.010 | .010-.015 | .015-.020 | .020-.030 | .020-.030 | .030-.041 | .041-.046 | .046-.051 | .051-.076 |
| | | Stellite<br>Inconel 625/718<br>Incoloy 800-802 | .008-.013 | .013-.038 | .013-.038 | .025-.051 | .025-.051 | .025-.076 | .051-.076 | .064-.089 | .064-.089 |
| Hardened Steels | H | Hardened Steels 35-45 Rc<br>Hardened Steels 45-55 Rc<br>Hardened Steels 55-65 Rc | .008-.013 | .013-.038 | .013-.038 | .025-.051 | .025-.051 | .025-.076 | .051-.076 | .064-.089 | .064-.089 |
| Non-Ferrous | N | Aluminum/Aluminum Alloys<br>Brass/Bronze<br>Magnesium/Magnesium Alloys<br>Plastics/Bakelite | .020-.038 | .038-.051 | .051-.064 | .064-.076 | .076-.089 | .089-.127 | .127-.216 | .191-.241 | .216-.254 |

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