

ASC 320® | Metric (mm)

| ISO | Material | Hardness (BHN) | Speed (M/min) | Feed Rate (mm/rev) by Diameter | | | | | | | | |
|-----------|---|----------------|---------------|--------------------------------|-------------|-------------|--------------|---------------|---------------|---------------|---------------|---------------|
| | | | | 3.00 - 4.00 | 4.01 - 6.00 | 6.01 - 8.00 | 8.01 - 10.00 | 10.01 - 12.00 | 12.01 - 14.00 | 14.01 - 16.00 | 16.01 - 18.00 | 18.01 - 20.00 |
| P | Free Machining Steel 1118, 1215, 12L14, etc. | 100 - 150 | 137 | 0.18 | 0.23 | 0.28 | 0.33 | 0.36 | 0.41 | 0.46 | 0.51 | 0.56 |
| | | 150 - 200 | 122 | 0.13 | 0.20 | 0.23 | 0.28 | 0.30 | 0.36 | 0.41 | 0.46 | 0.51 |
| | | 200 - 250 | 114 | 0.10 | 0.15 | 0.18 | 0.23 | 0.25 | 0.30 | 0.36 | 0.41 | 0.46 |
| | Low Carbon Steel 1010, 1020, 1025, 1522, 1144, etc. | 85 - 125 | 130 | 0.18 | 0.23 | 0.28 | 0.33 | 0.38 | 0.43 | 0.48 | 0.48 | 0.53 |
| | | 125 - 175 | 119 | 0.15 | 0.20 | 0.25 | 0.30 | 0.36 | 0.41 | 0.46 | 0.46 | 0.51 |
| | | 175 - 225 | 110 | 0.13 | 0.20 | 0.25 | 0.28 | 0.33 | 0.38 | 0.43 | 0.43 | 0.48 |
| | Medium Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc. | 225 - 275 | 101 | 0.10 | 0.18 | 0.23 | 0.25 | 0.30 | 0.36 | 0.41 | 0.41 | 0.46 |
| | | 125 - 175 | 119 | 0.15 | 0.20 | 0.25 | 0.30 | 0.33 | 0.36 | 0.41 | 0.46 | 0.51 |
| | | 175 - 225 | 110 | 0.13 | 0.18 | 0.25 | 0.30 | 0.30 | 0.33 | 0.38 | 0.43 | 0.48 |
| | Alloy Steel 4140, 5140, 8640, etc. | 225 - 275 | 98 | 0.10 | 0.15 | 0.23 | 0.28 | 0.28 | 0.30 | 0.36 | 0.41 | 0.48 |
| | | 275 - 325 | 87 | 0.08 | 0.15 | 0.20 | 0.25 | 0.25 | 0.28 | 0.33 | 0.38 | 0.43 |
| | | 175 - 225 | 114 | 0.15 | 0.20 | 0.25 | 0.30 | 0.33 | 0.36 | 0.41 | 0.46 | 0.51 |
| | High Strength Alloy 4340, 4330V, 300M, etc. | 225 - 275 | 104 | 0.13 | 0.18 | 0.23 | 0.28 | 0.30 | 0.33 | 0.38 | 0.43 | 0.48 |
| | | 275 - 325 | 91 | 0.10 | 0.15 | 0.20 | 0.25 | 0.28 | 0.30 | 0.33 | 0.41 | 0.46 |
| | | 325 - 375 | 84 | 0.08 | 0.13 | 0.18 | 0.23 | 0.25 | 0.25 | 0.30 | 0.36 | 0.41 |
| | Structural Steel A36, A285, A516, etc. | 225 - 300 | 79 | 0.13 | 0.18 | 0.20 | 0.28 | 0.28 | 0.30 | 0.33 | 0.36 | 0.41 |
| | | 300 - 350 | 64 | 0.10 | 0.15 | 0.18 | 0.23 | 0.25 | 0.28 | 0.30 | 0.33 | 0.38 |
| | | 350 - 400 | 49 | 0.08 | 0.13 | 0.15 | 0.20 | 0.23 | 0.25 | 0.28 | 0.30 | 0.33 |
| | Tool Steel H-13, H-21, A-4, O-2, S-3, etc. | 100 - 150 | 110 | 0.13 | 0.20 | 0.23 | 0.28 | 0.30 | 0.33 | 0.36 | 0.41 | 0.46 |
| | | 150 - 250 | 98 | 0.10 | 0.18 | 0.20 | 0.25 | 0.28 | 0.30 | 0.33 | 0.38 | 0.43 |
| 250 - 350 | | 82 | 0.08 | 0.13 | 0.18 | 0.20 | 0.23 | 0.25 | 0.28 | 0.33 | 0.38 | |
| S | High Temp Alloy Hastelloy B, Inconel 600, etc. | 150 - 200 | 79 | 0.08 | 0.10 | 0.13 | 0.15 | 0.18 | 0.20 | 0.23 | 0.25 | 0.28 |
| | | 200 - 250 | 67 | 0.05 | 0.08 | 0.10 | 0.13 | 0.15 | 0.18 | 0.20 | 0.23 | 0.25 |
| M | Stainless Steel 300 Series 304, 316, 17-4PH, etc. | 140 - 220 | 37 | 0.08 | 0.10 | 0.13 | 0.15 | 0.18 | 0.20 | 0.23 | 0.25 | 0.28 |
| | | 220 - 310 | 27 | 0.05 | 0.08 | 0.08 | 0.10 | 0.13 | 0.15 | 0.18 | 0.20 | 0.23 |
| K | Nodular, Grey, Ductile Cast Iron | 135 - 185 | 61 | 0.10 | 0.13 | 0.15 | 0.18 | 0.20 | 0.23 | 0.28 | 0.30 | 0.33 |
| | | 185 - 275 | 43 | 0.08 | 0.10 | 0.10 | 0.13 | 0.15 | 0.18 | 0.23 | 0.25 | 0.28 |
| | | 120 - 150 | 168 | 0.20 | 0.25 | 0.30 | 0.36 | 0.41 | 0.46 | 0.51 | 0.56 | 0.61 |
| | | 150 - 200 | 152 | 0.20 | 0.25 | 0.30 | 0.36 | 0.41 | 0.46 | 0.51 | 0.56 | 0.61 |
| | | 200 - 220 | 145 | 0.18 | 0.23 | 0.28 | 0.33 | 0.38 | 0.43 | 0.48 | 0.53 | 0.58 |
| N | Cast Aluminum | 220 - 260 | 131 | 0.18 | 0.23 | 0.28 | 0.33 | 0.38 | 0.43 | 0.48 | 0.53 | 0.58 |
| | | 260 - 320 | 122 | 0.15 | 0.20 | 0.25 | 0.30 | 0.36 | 0.41 | 0.46 | 0.51 | 0.56 |
| | Wrought Aluminum | 30 | 457 | 0.20 | 0.25 | 0.33 | 0.38 | 0.43 | 0.51 | 0.56 | 0.61 | 0.66 |
| | | 180 | 305 | 0.15 | 0.20 | 0.28 | 0.33 | 0.38 | 0.46 | 0.51 | 0.56 | 0.61 |

Speed and Feed Adjustment

| | 3.5xD | 6xD | 9xD |
|-----------------|-------|------|------|
| See above chart | | 0.90 | 0.75 |

Recommended Speed and Feed Example

If the recommended speed and feed is 91 M/min and 0.25 mm/rev, then reduce to 68 M/min and 0.19 mm/rev when using a 9xD tool

$$91 \cdot 0.75 = 68 \text{ M/min}$$

$$0.25 \cdot 0.75 = 0.19 \text{ mm/rev}$$

Calculations

| Value | Formula |
|--------|------------------------|
| mm/min | RPM • mm/rev |
| M/min | RPM • 0.003 • DIA |
| RPM | (M/min • 318.47) / DIA |

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department.

Coolant Recommendations

