

Machining Gray / Ductile Cast Iron with Ceramics



High Speed Machining of Cast Irons

SX6 Silicon Nitride Ceramic

SP9 CVD Coated Silicon Nitride Ceramic



Features

- 1st choice for roughing gray cast iron
- Applicable for wet cutting
- Excellent thermal shock resistance makes high speed milling possible

Recommended Applications

- Gray cast iron – Rough – Turning and milling

Recommended Cutting Conditions

| Work material | Purpose | Grade | Cutting speed (SFM) | Feed (IPR / IPT) | Depth of cut (inch) | DRY | WET |
|----------------|---------|------------|---------------------|------------------|---------------------|-----|-----|
| Gray cast iron | Turning | SX6 | 1800-3500 | .012-.024 | .020-.140 | ● | ● |
| | Milling | SX6 | 1500-4200 | .003-.010 | .020-.140 | ● | ○ |

| | SX6 | SP9 |
|------------|-----|-----|
| Notching | ◎ | |
| Flank Wear | | ◎ |
| Toughness | ○ | ◎ |
| Heat Shock | ◎ | |

Features

- Extremely tough – Tough enough to rough cast iron with T0420 (.004" X20) edge preparation
- Small edge preparation – Low tool pressure for stable precision machining
- SP9's toughness makes higher feed rates possible
- Dramatically reduced flank wear due to CVD coating

Recommended Applications

- Gray cast iron – Rough – Turning and milling
- Ductile cast iron – Rough – Turning and milling

Recommended Cutting Conditions

| Work material | Purpose | Grade | Cutting speed (SFM) | Feed (IPR / IPT) | Depth of cut (inch) | DRY | WET |
|-------------------|---------|------------|---------------------|------------------|---------------------|-----|-----|
| Gray cast iron | Turning | SP9 | 1200-2700 | .012-.024 | -.140 | ● | ○ |
| | Milling | SP9 | 1200-2500 | .003-.010 | -.240 | ● | ○ |
| Ductile cast iron | Turning | SP9 | 800-2000 | .012-.024 | -.140 | ○ | ● |
| | Milling | SP9 | 2100-3000 | .002-.010 | -.240 | ● | ○ |

HC1, HW2 Alumina Oxide Ceramic

Features

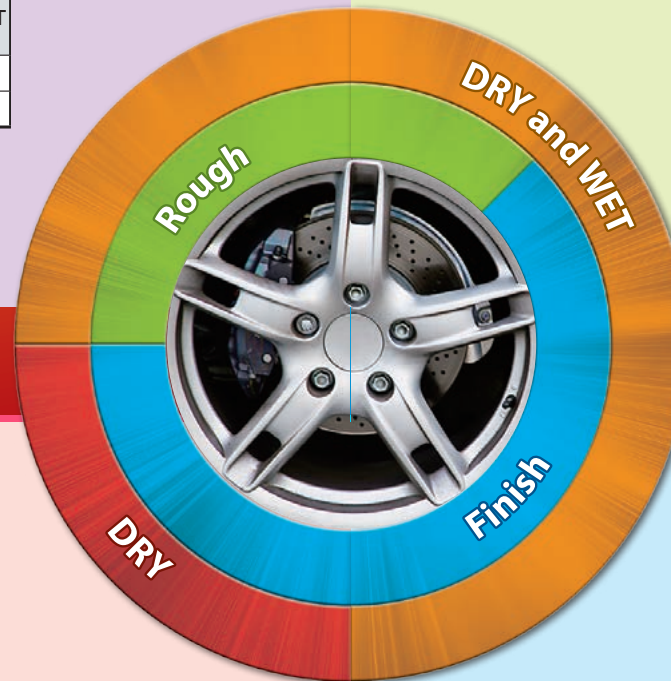
- 1st choice for finishing gray cast iron with no coolant
- Excellent wear resistance makes high speed finishing possible

Recommended Applications

- Gray cast iron – Finish – Turning
- Chilled liners – Rough / Finish – Turning (HW2)

Recommended Cutting Conditions

| Work material | Purpose | Grade | Cutting speed (SFM) | Feed (IPR) | Depth of cut (inch) | DRY | WET |
|----------------|---------|------------|---------------------|------------|---------------------|-----|-----|
| Gray cast iron | Turning | HC1 | 1200-2100 | .004-.016 | .020-.080 | ● | |
| | | HW2 | 1200-2100 | .004-.016 | .020-.080 | ● | |
| Chilled liners | Turning | HW2 | 800-1200 | .004-.012 | .020-.080 | ● | |



HC2, HC6 TiC Ceramic WA1 Whisker Reinforced Ceramic

Features

- All grades make high speed finishing of cast iron possible
- Applicable for wet cutting conditions
- HC6 – Optimized for finishing ductile cast iron

Recommended Applications

- Gray cast iron – Finish – Turning (HC2 · HC6 · WA1)
- Ductile cast iron – Finish – Turning (HC6)

Recommended Cutting Conditions

| Work material | Purpose | Grade | Cutting speed (SFM) | Feed (IPR) | Depth of cut (inch) | DRY | WET |
|-------------------|---------|----------------|---------------------|------------|---------------------|-----|-----|
| Gray cast iron | Turning | HC2/HC6 | 1200-2100 | .004-.016 | -.060 | ● | ● |
| | | WA1 | 1200-2100 | .004-.016 | -.120 | ● | ● |
| Ductile cast iron | Turning | HC6 | 600-1500 | .004-.012 | -.040 | ○ | ● |