

Insert Grades

Ceramic






Ceramic

Ceramics inserts are capable of running at high speeds, thus reducing expensive machining time. Hard turning of 38HRC to 64HRC hardened steels, or rough to finished turning of cast irons are recommended applications for ceramic inserts. KYOCERA's ceramic grades are designed to resist oxidation and maintain hardness at elevated temperatures.

Features

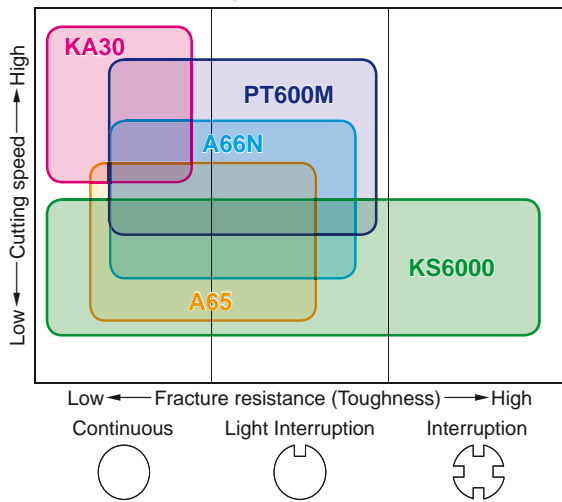
- Excellent wear resistance enables high cutting speeds
- Ceramic maintains good surface finishes due to the low affinity to workpiece materials
- Silicon nitride ceramic (KS6000) has improved thermal shock resistance allowing cast iron machining using coolants

Features of Ceramic

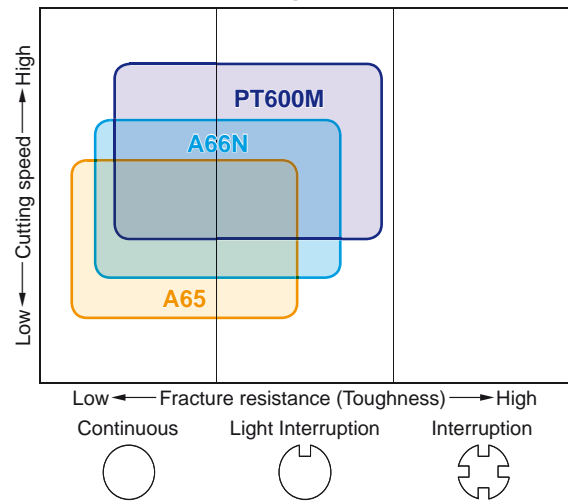
Workpiece Material	Symbol	Color	Main Component	Hardness of Coated Layer (GPa)	Hardness of Substrate (GPa)	Fracture Toughness (MPa·m ^{1/2})	Transverse Strength (MPa)	Advantages
 Cast Iron	KA30	White	Al ₂ O ₃	-	17.5	4.0	750	• Aluminum Oxide ceramic (Al ₂ O ₃) • Application: Finishing of cast iron at high cutting speeds without coolant
	KS6000	Gray	Si ₃ N ₄	-	15.7	6.5	1230	• Silicon nitride ceramic (Si ₃ N ₄) • Application: High feed and interrupted machining of cast iron (with or without coolant)
 Cast Iron	A65	Black	Al ₂ O ₃ +TiC	-	20.6	4.5	780	• Aluminum Oxide and Titanium Carbide ceramic (Al ₂ O ₃ +TiC) • Application: Semi-roughing to finishing of cast iron, and hardened materials.
	A66N (TiN coat)	Gold	Al ₂ O ₃ +TiC	20	20.1	4.1	980	• TiN PVD coated Aluminum Oxide and Titanium Carbide ceramic (TiN coated Al ₂ O ₃ +TiC) • Application: Semi-roughing to finishing of hard materials
 Hard Materials	PT600M (MEGACOAT)	Blackish red	Al ₂ O ₃ +TiC	30	20.1	4.1	980	• Heat-resistant MEGACOAT on Aluminum Oxide and Titanium Carbide ceramic (MEGACOAT Al ₂ O ₃ +TiC) • Application: Semi-roughing to finishing of cast iron, hard materials and roll materials

Application Maps

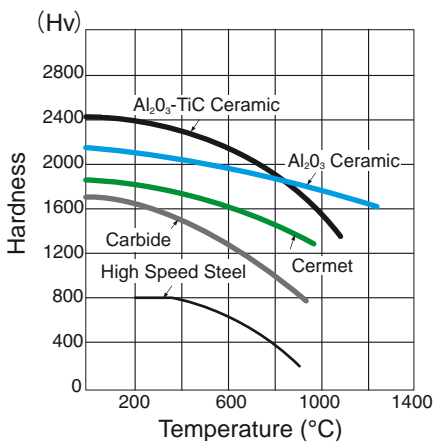
Cast Iron Machining



Hard Materials Machining



High-Temperature Hardness



Properties of PVD Coating

