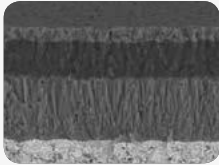
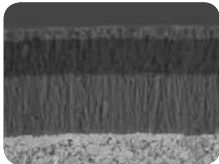
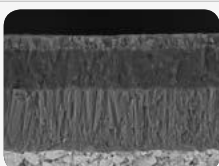



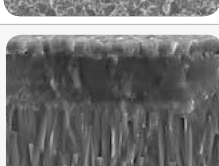
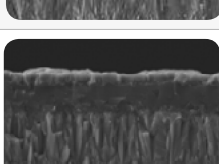
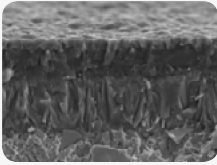

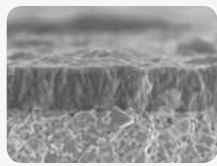
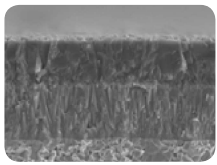
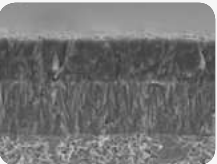
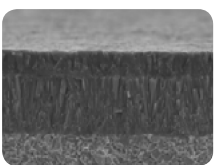


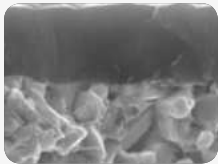
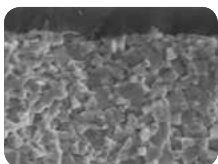
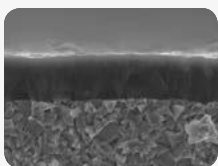
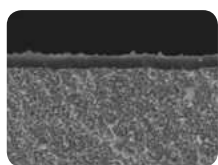
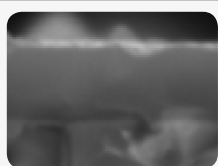
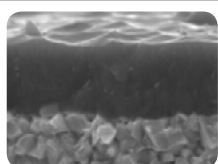
Turning Grades

CVD Coated Carbide

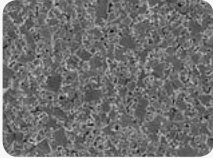
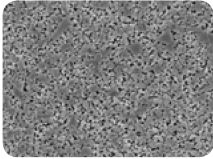
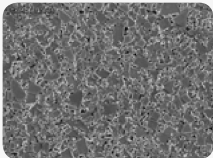
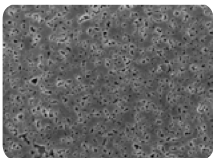
ISO	Grade	Grade Color	Grade Microstructure	Grade Feature
P	GPT6110	Champagne		<ul style="list-style-type: none"> •Brand new CVD coating with special post-treatment technology and high hot hardness cemented carbide substrate, provides the grade with superior adhesion resistance and excellent wear resistance. •Recommended for continuous cutting conditions of carbon steels and alloy steels at high speeds.
	GPT6120	Champagne		<ul style="list-style-type: none"> •Brand new CVD coating with unique low-stress post-treatment, matching cemented carbide substrate with perfect thermo-plastic deformation resistance, guarantees the high wear resistance and toughness. •Recommended for carbon steels and alloy steels in wide cutting conditions at medium to high speeds.
	GPT6130	Champagne		<ul style="list-style-type: none"> •New cemented carbide with special cobalt enrichment controlling technology, combined with new CVD coating and advanced post-treatment, greatly improves the edge breakage. •Recommended for most interrupted cutting conditions of carbon steels and alloy steels at medium speeds.
	GP1105	Ash black		<ul style="list-style-type: none"> •Combining the ultrafine Al2O3 and MT-TiCN coatings with gradient cemented carbide substrate, provides the new grade with excellent wear resistance. •Recommended for stable finishing turning of carbon steels & alloy steels, including steels parting and grooving processing.
	GP1115	Yellow		<ul style="list-style-type: none"> •Ultrafine MT-TiCN and Al2O3 coatings, matching smooth indexed TiN layer and good wear resistant substrate, ensures the grade with long service life. •Recommended for stable finishing to semi-finishing of carbon steels and alloy steels.
	GP1120	Golden		<ul style="list-style-type: none"> •High-strength gradient substrate combined with CVD coating has excellent performance in continuous and light interrupted cutting conditions. •Recommended for semi-finishing and light cutting conditions of carbon steels and alloy steels.
	GP1130	Golden		<ul style="list-style-type: none"> •Fine MT-TiCN and tough Al2O3 in combination with high toughness gradient substrate ensures the good resistance to cutting edge breakage. •Recommended for roughing of carbon steels and alloy steels at low and medium cutting speeds.
	GP1135	Yellow		<ul style="list-style-type: none"> •Well controlled MT-TiCN, Al2O3 and TiN coating with well wear resistance combined with a gradient carbide substrate improves the edge security and high toughness. •Recommended for roughing of carbon steels and alloy steels at high metal removal rates.

ISO	Grade	Grade Color	Grade Microstructure	Grade Feature
P	GP1225	Yellow		<ul style="list-style-type: none"> •Combined columnar grain MT-TiCN, Al₂O₃ and TiN coating with a gradient substrate provides excellent wear resistance and toughness. •Recommended for semi-finishing to medium roughing of steels and alloy steels.
M	GM1115	Shiny golden		<ul style="list-style-type: none"> •Combined nano-columnar MT-TiCN, thin Al₂O₃, bright TiN and a gradient substrate gives excellent wear resistance, low-stress post-treatment provides less built-up-edge and longer tool life. •Recommended for finishing to semi-finishing of stainless steels.
	GM1125	Shiny golden		<ul style="list-style-type: none"> •Compact TiCN coating with good toughness substrate gives the grade with excellent resistance to heat and mechanical impact. •Recommended for semi-finishing to roughing machining of stainless steels.
K	GK1115	Ash black		<ul style="list-style-type: none"> •High wear resistant substrate with fine grain, combined with thick Al₂O₃ coating and smoothy post-treatment, provides the grade with outstanding wear resistance and high edge toughness on processing grey cast irons. •Recommended for finishing machining of grey cast irons.
	GK1120	Ash black		<ul style="list-style-type: none"> •Thicker Al₂O₃ coating combined with fine grained substrate provides high edge security and toughness. •Recommended for finishing to semi-finishing of nodular cast irons.
	GK1125	Ash black		<ul style="list-style-type: none"> •Thick MT-TiCN coating and ultrafine Al₂O₃, matching high wear resistant cemented carbide substrate with fine grain, helps to improve toughness and great wear resistance. •Recommended for interrupted roughing of nodular cast irons.

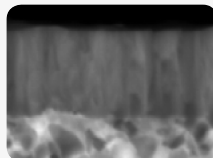
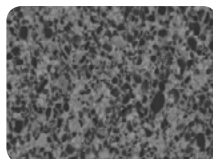
PVD Coated Carbide

ISO	Grade	Grade Color	Grade Microstructure	Grade Feature
M	GM3215	Purplish grey		<ul style="list-style-type: none"> •Brand new PVD TiAlN coating combined with submicron grained WC-Co cemented carbide substrate, provides the new grade with excellent wear resistance and heat resistance. •Recommended for finishing of stainless steels and heat resistant alloys in stable cutting conditions at medium speeds.
	GM3220	Bronze		<ul style="list-style-type: none"> •New nano-structured PVD coating matching high cobalt cemented carbide substrate, gives the grade with excellent wear resistance and high hot hardness. •Recommended for continuous cutting and light or medium interrupted cutting of stainless steels and soft steels at medium to low cutting speeds.
	GM3225	Purplish grey		<ul style="list-style-type: none"> •The combination of optimized TiAlN coating and submicron grained carbide substrate with high Co content, provides superior adhesion and toughness. •Recommended for semi-finishing of stainless steels and threading of steels, stainless steels, etc.
S	GS3115	Purplish red		<ul style="list-style-type: none"> •Fine grained cemented carbide substrate, matching PVD coating with high aluminum content, have excellent adhesion and wear resistance. •Recommended for semi-finishing or finishing of stainless steels and heat resistant alloys.
N	GN3125	Purplish bronze		<ul style="list-style-type: none"> •New TiB-based PVD coating with fine grained cemented carbide substrate, gives excellent wear resistance and less built-up-edge, which makes it optimal for efficient cutting of non-ferrous metals. •Recommended for general machining of copper, aluminum and other non-ferrous metals.
/	GA4230	Purplish red		<ul style="list-style-type: none"> •PVD TiAlN coating with high toughness substrate provides excellent wear resistance and high edge security for a broad application area. •Recommended as general choice for parting and grooving of steels.

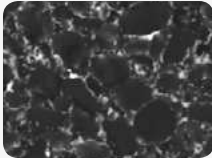
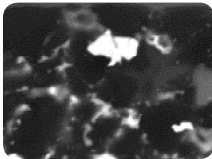
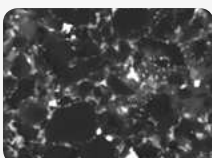
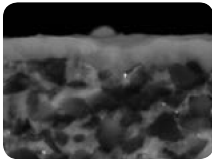

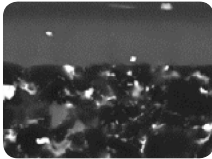
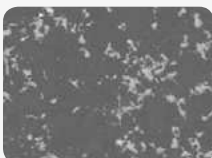
Carbide

ISO	Grade	Grade Color	Grade Microstructure	Grade Feature
S	GS9125	Uncoated		<ul style="list-style-type: none"> •Uncoated fine grain substrate has a good balance of wear resistance and toughness. •Recommended as the first choice for titanium alloys, and even for semi-finishing of titanium alloys grooving.
N	GN9115	Uncoated		<ul style="list-style-type: none"> •Uncoated fine-grained grade has great wear resistance. •Recommended for finishing of aluminum alloys and copper alloys at high cutting speeds.
	GN9120	Uncoated		<ul style="list-style-type: none"> •Fine-grained substrate with special surface treatment improves the wear resistance and less built-up-edge. •Recommended for finishing to semi-finishing of aluminum alloys, copper alloys and other non-ferrous materials.
	GN9130	Uncoated		<ul style="list-style-type: none"> •Uncoated fine-grained substrate grade has quite good wear resistance and toughness. •Recommended for semi-finishing of coppers and aluminum alloys.

Cermet

ISO	Grade	Grade Color	Grade Microstructure	Grade Feature
P	GP31TM	Purplish grey		<ul style="list-style-type: none"> •Thin PVD coating and cermet have excellent resistance to built-up-edge and plastic deformation, which ensures the high surface quality. •Recommended for finishing of carbon steels and low alloy steels at high cutting speeds.
	GP91TM	Uncoated		<ul style="list-style-type: none"> •Uncoated cermet has well wear resistance and toughness, even excellent high surface quality. •Recommended for finishing of carbon steels and low alloy steels when good surface quality is required.

PCBN & PCD

ISO	Grade	Grade Color	Grade Microstructure	Grade Feature
K	BKN115P	Uncoated		<ul style="list-style-type: none"> •Uncoated grade with high hardness has excellent wear resistance. •Recommended for finishing of grey cast irons and valve seat machining.
	BKC120P	Purplish grey		<ul style="list-style-type: none"> •Outstanding PVD coating can reduce the friction between cutting edge and workpiece, which improves the wear resistance dramatically. •Recommended for finishing of nodular cast irons.
S	BSN115P	Uncoated		<ul style="list-style-type: none"> •Uncoated grade has a high edge toughness and chemical stability •Recommended for finishing of powder metallurgy parts.
H	BHC115P	Purplish grey		<ul style="list-style-type: none"> •New TiAlN coating provides the good resistance to notch wear, which reduces the roughness of the workpiece surface. •Recommended for finishing of quenched steels when high surface quality and close tolerances are required.
	BHC125P	Purplish grey		<ul style="list-style-type: none"> •CBN substrates with TiAlN coating have great toughness and wear resistance, which is capable of longer tool life and more stability. •Recommended for general machining of quenched steels.
	BHC135P	Purplish grey		<ul style="list-style-type: none"> •CBN substrate with high edge toughness matching TiAlN coating greatly improves wear resistance. •Recommended for interrupted processing of quenched steels.
N	DNN125P	Uncoated		<ul style="list-style-type: none"> •Medium grained diamond has excellent wear resistance and toughness. •Recommended for high efficient finishing of aluminums, coppers, plastics and graphite materials.