

ISCAR Grades Chart

Grades	ISO	Coating Layers	Recommended Applications	PARTING	GROOVING	FACING	ISOTURN	THREADING	DRILLING	MILLING
IC300 PVD COATED	P25-P50 M20-M40 S15-S25	TiCN	A tough submicron TiN/TiCN PVD coated grade. Suitable for milling heat resistant alloys, austenitic stainless steel and carbon steel at unfavorable conditions, at low to medium cutting speeds.							
S.T. IC330 IC328	P25-P50 M30-M40 S25-S30	TiN TiCN	A TiN/TiCN PVD coated tough grade. Used for milling, grooving, parting and drilling a wide range of workpiece materials, at low to medium cutting speeds.							
IC3028	P25-P45 M15-M35	TiCN	A TiN/TiCN PVD toughest coated grade. Used for turning stainless steel and high temperature alloys, at low to medium cutting speeds. Used for interrupted cuts and very heavy turning operations.							
IC354	P20-P40 M10-M30	TiCN	A TiN/TiCN PVD coated, tough grade. Used for general applications in parting and grooving carbon, alloy and stainless steel at medium to high cutting speeds.							
S.T. IC380	P15-P30 M20-M30 S15-S25 H20-H30	TiAlN	A tough submicron substrate, TiCN PVD coated and a special surface treatment. Designed for machining heat resistant alloys, austenitic stainless steel, at medium to high cutting speeds, interrupted cut and unfavorable conditions. Excellent notch wear and built-up edge resistance. High resistance to mechanical and thermal shock - therefore milling with coolant may be applied.							
IC900	P15-P40 M20-M30 K05-K25 S15-S25 H10-H25	AL-TEC TiAlN	A tough, submicron PVD TiAlN coated grade. Suitable for milling heat resistant alloys, austenitic stainless steel, hard alloys and carbon steel at medium to high cutting speeds.							
IC903	H01-H10 P05-P15 M10-M20 S10-S20	AL-TEC TiAlN	Ultra-fine grain carbide with 12% cobalt, TiAlN PVD coated grade. Used for up to 62 HRC hardened steel, titanium, nickel-based alloys and stainless steel at high speeds and medium feeds. A tough and highly wear resistant grade.							
S.T. IC806	S15-S25	TiCN	A tough submicron substrate, TiAlN PVD coated grade followed by a special "SUMO TEC" surface treatment. Suitable for turning inconel at low to medium cutting speeds.							
S.T. IC807 IC907	P10-P30 M05-M20 S05-S20 H05-H15	TiCN	A tough submicron substrate, TiAlN PVD coated grade. Suitable for turning heat resistant alloys, austenitic stainless steel and hard steel at low to medium cutting speeds.							
S.T. IC808 IC908	P15-P30 M20-M30 K20-K40 S05-S20 H05-H15	TiCN	A tough submicron substrate, TiAlN PVD coated grade. Designed for machining heat resistant alloys, austenitic stainless steel, hard alloys and carbon steel at medium to high cutting speeds, interrupted cut and unfavorable conditions. Excellent notch wear and built-up edge resistance.							
S.T. IC810 IC910	K10-K30 P15-P30	AL-TEC TiCN	A PVD TiAlN coated grade. First choice for milling nodular cast iron at medium to high cutting speeds.							
S.T. IC830 IC928	P20-P50 M20-M30 K15-K40 S15-S40	TiCN	A PVD TiAlN coated tough grade. Suitable for milling stainless steel, high temperature alloys and other alloy steels. Recommended for interrupted cut and heavy operations.							
IC418	K10-K25	TiC Al ₂ O ₃	A TiC/Al ₂ O ₃ multilayer, CVD coated grade. Used for grooving and turning grey and nodular cast iron at medium to high cutting speeds. Can be used for interrupted cuts and heavy machining.							
S.T. IC5005 IC428	K05-K20 P05-P15 H15-H25	TiCN Al ₂ O ₃	A TiC/Al ₂ O ₃ multilayer, CVD coated grade. Used for grooving and turning grey and nodular cast iron at medium to high cutting speeds.							
S.T. IC5010	K10-K25	TiCN Al ₂ O ₃	A TiCN/Al ₂ O ₃ / TiN multilayer, CVD coated grade. Used for turning grey and nodular cast iron at medium to high cutting speeds.							
S.T. IC5100 IC4100	K05-K20 P10-P25	α-TEC TiCN Al ₂ O ₃	A tough substrate with a new MTCVD and TiCN/Al ₂ O ₃ coating. Recommended for milling grey cast iron at high cutting speeds, providing extended tool life.							
S.T. IC5400	P20-P35	TiCN Al ₂ O ₃	A tough substrate with a new MTCVD and alpha Al ₂ O ₃ coating. Recommended for milling steel at high cutting speed providing excellent tool life.							
S.T. IC6015	M05-M25	TiCN Al ₂ O ₃	A very hard substrate with a cobalt enriched outer layer and alpha Al ₂ O ₃ coating. Used for finishing and medium turning of stainless steel at high cutting speed. Features long tool life and excellent repeatability.							
S.T. IC6025	M15-M35	TiCN Al ₂ O ₃	A tough substrate with MTCVD Al ₂ O ₃ and TiCN coating. Recommended for machining stainless steel at high feeds and unfavorable conditions at medium cutting speed.							
S.T. IC8080	K01-K20 P05-P20	TiCN Al ₂ O ₃	A hard fine grain substrate with MTCVD Al ₂ O ₃ coating. Features excellent chipping and wear resistance. Recommended for high speed drilling of cast iron and steel, to be used for the peripheral insert on DR drills.							
S.T. IC8150	P01-P30 K05-K15 M05-M15	TiCN Al ₂ O ₃	A very hard substrate with a cobalt enriched layer, MTCVD TiCN and a thick Al ₂ O ₃ CVD coating. Features excellent thermal stability and resistance to chipping and plastic deformation. Recommended for high speed machining of steel at stable or slightly unstable conditions.							
S.T. IC8250	P10-P35 M05-M20	TiCN Al ₂ O ₃	A tough substrate with a cobalt enriched layer combined with MTCVD TiCN and a thick alpha Al ₂ O ₃ CVD coating. Recommended for general use machining of steel in a wide range of conditions, featuring high toughness and wear resistance.							
S.T. IC8350	P20-P45 M15-M30	TiCN Al ₂ O ₃	A very tough substrate with a cobalt enriched layer combined with a MTCVD TiCN and Al ₂ O ₃ CVD coating. Provides excellent toughness and good wear resistance on steel for interrupted and unstable cutting conditions.							
DT7150 CVD-PVD COATED	K05-K25	DO-TEC TiCN Al ₂ O ₃	A tough substrate with a dual MTCVD Al ₂ O ₃ and TiAlN PVD coating. Recommended for medium to high cutting speeds for machining of both grey and nodular cast iron. Features high wear and chipping resistance.							
IC20N	P05-P25 M05-M15		A cermet grade, used for grooving and turning applications. Recommended for semi-finishing and finishing operations when excellent surface finish is required. Wear resistant, prevents built-up edge.							
IC30N	P10-P30 M10-M20 H10-H25		A cermet grade. Provides excellent resistance to wear and plastic deformation even at high cutting speeds and medium feeds. Useful for turning and milling of semi-finishing and finishing applications.							
IC07	M10-M20 S10-S30		An uncoated, fine grain carbide grade. Used for high temperature alloys and stainless steel at low to medium cutting speeds.							
IC08	M10-M30 N10-N25 S10-S30		An uncoated, fine grain carbide grade. Used for stainless steel and high temperature alloys at low to medium cutting speeds.							
IC20	M10-M25 K10-K20 N05-N25 S05-S20 H05-H15		An uncoated carbide grade. Used for semi-finishing, finishing and semi-roughing of aluminum, cast iron and stainless steel. Used at low to medium speeds and feeds.							
IC28	N10-N30 P30-P50 M30-M40 S20-S25		An uncoated carbide grade. Used mainly for machining aluminum at medium cutting speeds with medium to large chip sections. The inserts usually feature very sharp cutting angles.							
IB05S	S05		Super fine grain PCBN with a very high CBN content for machining ferrous sintered metals.							
IB10H	H10		Extra fine grain PCBN, enables grinding a very sharp edge used for finish turning of hardened steel, providing excellent surface finish.							
IB10HC	H10	TiN	TiN PVD coated, fine grain PCBN substrate. Used for high speed, continuous turning of hardened steel, providing excellent surface finish.							
IB10S	S10		Fine grain, very hard PCBN grade for machining valve seats, sintered metals and Ti alloys.							
IB20H	H20		A combination of coarse and fine grain PCBN, used for general and interrupted cutting of hardened steel.							
IB25HA	H25		AlTiN PVD coated, very tough PCBN, used for general cutting of hardened steel.							
IB25HC	H25	TiN	TiN PVD coated, medium grain size PCBN substrate. Used for medium and light interrupted cut turning of hardened steel.							
IB50	K01-K10 H01-H10		A 50% CBN brazed tip, used for finishing hardened steel (45-65 HRC) and nodular cast iron in continuous cutting.							
IB55	K05-K15 H10-H25		A 55% CBN brazed tip, used for finishing hardened steel (45-65 HRC) in continuous cutting.							
ID5	N01-N10		A PCD brazed tip, suitable for machining aluminum (Si < 12%) and copper alloys and general cutting of nonferrous materials.							
ID8	N05-N15		PCD grade for milling applications. Ideal for machining nonferrous metals, such as high silicon (>12%) aluminum alloys and metal matrix composites. Typical components: engine, gearbox and transmission components, disk brakes, glass epoxy parts, etc.							
IN11 WHITE CERAMICS	K01-K10 S01-S10		White ceramic, features high toughness and wear resistance. Used for high speed turning of cast iron.							
IN22	H05-H25 K05-K10		Black ceramic (Al ₂ O ₃ /TiCN), used for high speed, light roughing and finishing of hardened steel and chilled cast iron.							
IN23 BLACK CERAMICS	K05-K15 H10-H30		Black ceramic (Al ₂ O ₃ /TiCN), used for machining grey and nodular cast iron at medium to finishing conditions.							
IS6	K01-K10		SiAlON based ceramic grade for high speed machining of cast iron. Used for roughing and finishing at both wet and dry conditions of automotive parts like brake drum, brake disk etc. Provides high productivity also in roughing of mill rolls made of High-Cr Steel and HSS.							
IS8 SILICON NITRIDE	K01-K20		A silicon nitride grade, used for medium turning and milling applications. Can be used for interrupted cuts. Cutting speed range: 100-1500 m/min, feed range: 0.1-1.0 mm/rev.							
IS80 SILICON NITRIDE	K01-K20	TiN	A CVD coated Si ₃ N ₄ ceramic grade. Used for rough turning and milling of grey and nodular cast iron.							
IN420 BLACK CERAMICS	K05-K10 H05-H25	TiN	Black ceramic (Al ₂ O ₃ /TiCN) TiN PVD coated, used for light roughing and finishing for high speed machining of hardened steel, chilled cast iron, high chromium steel, etc.							
IW7	S20-S30 H05-H25		Whisker reinforced ceramic grade for machining high nickel alloys and hardened steel.							



New Carbide Grades The SUMO TEC S.T. CVD and PVD Grades Feature

- Improved toughness
- Better chipping resistance
- Reduced built-up edge
- Increased tool life
- Better reliability for machining all types of workpiece materials



Member IMC Group

Grades for Applications and Materials

Main Applications	Material Groups					
	ISO P Steel	ISO H Hard Steel	ISO M Stainless Steel	ISO S High Temp.	ISO K Cast Iron	ISO N Nonferrous
INDEXABLE MILLING CUTTERS	Harder ↑ IC908 (808) IC30N IC830 (928) ↓ IC330 (328) Tougher	Harder ↑ IB55 IB85 ↓ IC808 (908) Tougher	Harder ↑ IC908 (808) IC4050 IC928 (830) IC330 (328) ↓ IC28 Tougher	Harder ↑ IC08 IC928 (830) ↓ IC28 Tougher	Harder ↑ IS8 IC4100 (5100) DT7150 ↓ IC810 (910) Tougher	Harder ↑ ID5 ID8 IC07 IC08 ↓ IC28 Tougher
DRILLING	IC808 (908)	IC808 (908)	IC808 (908)	IC808 (908)	IC808 (908) ↑ IC808 (908) Tougher	IC808 (908)
PARTING	Harder ↑ IC807 (907) IC808 (908) ↓ IC830 (928) 1028 Tougher	Harder ↑ IC807 (907) ↓ IC808 (908) Tougher	Harder ↑ IC807 (907) IC808 (908) ↓ IC830 (928) 1028 Tougher	Harder ↑ IC807 (907) IC20 IC808 (908) ↓ IC830 (928) Tougher	Harder ↑ IC807 (907) IC20 ↓ IC808 (908) Tougher	IC20
GROOVE TURN	Harder ↑ IC20N IC807 IC808 (908) IC8250 IC354 IC830 Tougher	Harder ↑ IB50 IC807 ↓ IC808 Tougher	Harder ↑ IC807 IC808 (908) IC354 ↓ IC830 Tougher	Harder ↑ IC907 IC807 IC07 IC20 IC908 ↓ IC08 Tougher	Harder ↑ IC5010 IC428 ↓ IC8250 Tougher	Harder ↑ ID5 ↓ IC20 Tougher
FACING	Harder ↑ IC808 IC8250 ↓ IC830 Tougher	Harder ↑ IC808 ↓ IC20 Tougher	Harder ↑ IC808 IC8250 IC354 ↓ IC830 Tougher	Harder ↑ IC808 ↓ IC20 Tougher	Harder ↑ IC5010 IC428 ↓ IC20 Tougher	IC20
ISO TURNING	Harder ↑ IC8150 (9150) IC8250 (9250) IC8350 (9350) ↓ IC3028 Tougher	Harder ↑ IB50 IB10HC IB10H IB20H IB25HC IN420 IN22 IN23 IC807 (907) Tougher	Harder ↑ IC807 (907) IC908 (808) IC6015 ↓ IC6025 IC3028 Tougher	Harder ↑ IW7 IS9 IB05S IB10S IC806 IC807 (907) IC20 IC3028 Tougher	Harder ↑ IN420 IS8 IS6 IN11 IN23 IC5005 (428) IC5010 (4028) IC8150 (9150) ↓ IC20 Tougher	Harder ↑ ID5 ↓ IC20 Tougher
THREADING	Harder ↑ IC808 (908) IC250 ↓ IC228 Tougher	IC808 (908)	Harder ↑ IC808 (908) ↓ IC228 Tougher	Harder ↑ IC08 ↓ IC228 Tougher	Harder ↑ IC808 (908) ↓ IC228 Tougher	Harder ↑ IC08 ↓ IC228 Tougher