

# GRADE PROPERTIES

Cermet									
Grade Name	Color	Main Component	Coating Layer	Density	Hardness of Substrate		Fracture Toughness (MPa <sup>m<sup>1/2</sup></sup> )	Flexural Toughness (MPa)	
					(HV)	(GPa)			
TN610	Gray	TiCN	-	6.6	1,750	17.2	6.0	2,100	
TN620	Gray	TiCN	-	6.9	1,550	15.2	9.0	2,500	
TN6010	Gray	TiCN	-	6.5	1,700	16.7	7.0	2,000	
TN6020	Gray	TiCN	-	6.4	1,500	14.7	10.0	2,500	
TN60	Gray	TiCN+NbC	-	6.6	1,600	15.7	9.0	1,760	
TN90	Gray	TiCN+NbC	-	6.4	1,450	14.2	10.0	1,960	
TN100M	Gray	TiCN+NbC	-	6.7	1,520	14.9	10.5	1,860	
TC40	Gray	TiC+TiN	-	6.0	1,650	16.2	9.0	1,570	
TC60	Gray	NbC	-	8.1	1,500	14.7	10.5	1,670	
PVD Coated Cermet									
PV710	Gold	MEGACOAT NANO	Thin Coating	6.6	1,750	17.2	6.0	2,100	
PV720	Gold	MEGACOAT NANO	Thin Coating	6.9	1,550	15.2	9.0	2,500	
PV7005	Blackish Red	MEGACOAT	Thin Coating	6.0	1,650	16.2	8.5	1,470	
PV7010	Blackish Red	MEGACOAT	Thin Coating	6.5	1,700	16.7	7.0	2,000	
PV7025	Blackish Red	MEGACOAT	Thin Coating	6.4	1,500	14.7	10.0	2,500	
PV7040	Blackish Red	MEGACOAT	Thin Coating	6.0	1,650	16.2	9.0	1,570	
PV7020	Gold	TiAlN+TiN	Thin Coating	6.4	1,500	14.7	10.0	2,500	
PV90	Gold	TiN	Thin Coating	6.4	1,450	14.2	10.0	1,960	
CVD Coated Carbide									
CA420M	Gold	Micro columnar TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN	Thick Coating	14.5	1,600	15.8	13.0	3,400	
CA4010	Gold	Columnar TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN	Thick Coating	14.8	1,670	16.4	10.0	3,000	
CA4115	Gold	Micro columnar TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN	Thick Coating	14.7	1,550	15.2	12.0	2,750	
CA4120	Gold	Micro columnar TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN	Thick Coating	14.7	1,550	15.2	12.0	2,750	
CA4505	Blackish Gray	Micro columnar TiCN+Al <sub>2</sub> O <sub>3</sub>	Thick Coating	14.9	1,780	17.4	9.5	2,350	
CA4515	Blackish Gray	Micro columnar TiCN+Al <sub>2</sub> O <sub>3</sub>	Thick Coating	14.9	1,570	15.4	12.0	2,780	
CA510	Gold	Micro columnar TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN	Thick Coating	14.5	1,470	14.4	11.5	2,500	
CA515	Gold	Micro columnar TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN	Thick Coating	14.4	1,440	14.1	12.5	2,650	
CA525	Gold	Micro columnar TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN	Thick Coating	14.2	1,360	13.3	13.5	2,750	
CA530	Gold	Micro columnar TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN	Thick Coating	13.9	1,340	13.1	14.5	2,850	
CA5505	Gold	Micro columnar TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN	Thick Coating	14.7	1,730	17.0	10.0	2,540	
CA5515	Gold	Micro columnar TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN	Thick Coating	14.7	1,550	15.2	12.0	2,750	
CA5525	Gold	Micro columnar TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN	Thick Coating	14.5	1,400	13.7	12.0	2,780	
CA5535	Gold	Micro columnar TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN	Thick Coating	14.1	1,340	13.1	16.5	2,970	
CA6515	Gold	Micro columnar TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN	Thin Coating	14.7	1,530	15.0	12.0	2,780	
CA6525	Gold	Micro columnar TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN	Thin Coating	14.7	1,370	13.4	16.0	3,100	
CA6535	Gold	Micro columnar TiCN+Al <sub>2</sub> O <sub>3</sub> +TiN	Thin Coating	14.3	1,320	12.9	16.0	3,700	
CR9025	Gold	Columnar TiCN+TiN	Thick Coating	14.5	1,400	13.7	12.0	2,780	
PVD Coated Carbide									
PR630	Gold	TiN	Thin Coating	12.5	1,500	14.7	11.0	2,160	
PR660	Gold	TiN	Thin Coating	13.7	1,450	14.2	12.0	2,250	
PR730	Gold	TiAlN+TiN	Thin Coating	13.7	1,450	14.2	12.0	2,250	
PR830	Gold	TiAlN+TiN	Thin Coating	13.7	1,450	14.2	12.0	2,250	
PR905	Bluish Violet	TiAlN	Thin Coating	14.8	1,670	16.4	10.0	3,000	
PR915	Bluish Violet	TiAlN	Thin Coating	14.1	1,700	16.7	11.0	4,140	
PR930	Reddish Gray	TiCN	Thin Coating	14.1	1,700	16.7	11.0	4,140	
PR1005	Reddish Gray	TiCN	Thin Coating	14.9	1,800	17.6	10.0	3,300	
PR1025	Reddish Gray	TiCN	Thin Coating	14.5	1,600	15.8	13.0	3,400	
PR1115	Purple Red	TiAlN	Thin Coating	14.7	1,700	16.7	11.0	3,000	
PR1125	Purple Red	TiAlN	Thin Coating	14.5	1,600	15.8	13.0	3,400	
PR1210	Blackish Red	MEGACOAT	Thin Coating	14.8	1,670	16.4	10.0	3,000	
PR1215	Blackish Red	MEGACOAT	Thin Coating	14.7	1,700	16.7	11.0	3,000	
PR1225	Blackish Red	MEGACOAT	Thin Coating	14.5	1,600	15.8	13.0	3,400	
PR1230	Blackish Red	MEGACOAT	Thin Coating	13.7	1,450	14.2	12.0	2,250	
PR1305	Blackish Red	MEGACOAT	Thin Coating	15.0	1,790	17.5	9.5	2,350	
PR1310	Blackish Red	MEGACOAT	Thin Coating	14.8	1,670	16.4	10.0	3,000	
PR1325	Blackish Red	MEGACOAT	Thin Coating	14.7	1,370	13.4	16.0	3,100	
PR1425	Blackish Red	MEGACOAT NANO	Thin Coating	14.5	1,600	15.8	13.0	3,400	
PR1510	Blackish Red	MEGACOAT NANO	Thin Coating	14.8	1,720	16.8	9.0	2,450	
PR1525	Blackish Red	MEGACOAT NANO	Thin Coating	14.5	1,600	15.8	13.0	3,400	
PR1535	Blackish Red	MEGACOAT NANO	Thin Coating	14.3	1,320	12.9	16.0	3,700	
Carbide									
KW10	Gray	WC+Co	-	15.0	1,650	16.2	10.0	1,470	
GW15	Gray	WC+Co	-	14.7	1,700	16.7	11.0	3,000	
GW25	Gray	WC+Co	-	14.5	1,600	15.8	13.0	3,400	
SW05	Gray	WC+Co	-	15.0	1,790	17.5	9.5	2,350	
SW10	Gray	WC+Co	-	14.8	1,670	16.4	10.0	3,000	
SW25	Gray	WC+Co	-	14.7	1,370	13.4	16.0	3,100	
DLC Coating									
PDL025	Iridescent	C	Thin Coating	14.5	1,600	15.8	13.0	3,400	

GRADES	A
INSERTS	B
CBN & POD	C
TOOLHOLDERS	D
SMALL TOOLS	E
BORING	F
GRINDING	G
CUT-OFF	H
THREADING	J
HSK TOOLING	N
SPARE PARTS	P
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