



**CERATIGER**

AGGRESSIVE PIONEER

# CERAMIC



# Grade Information

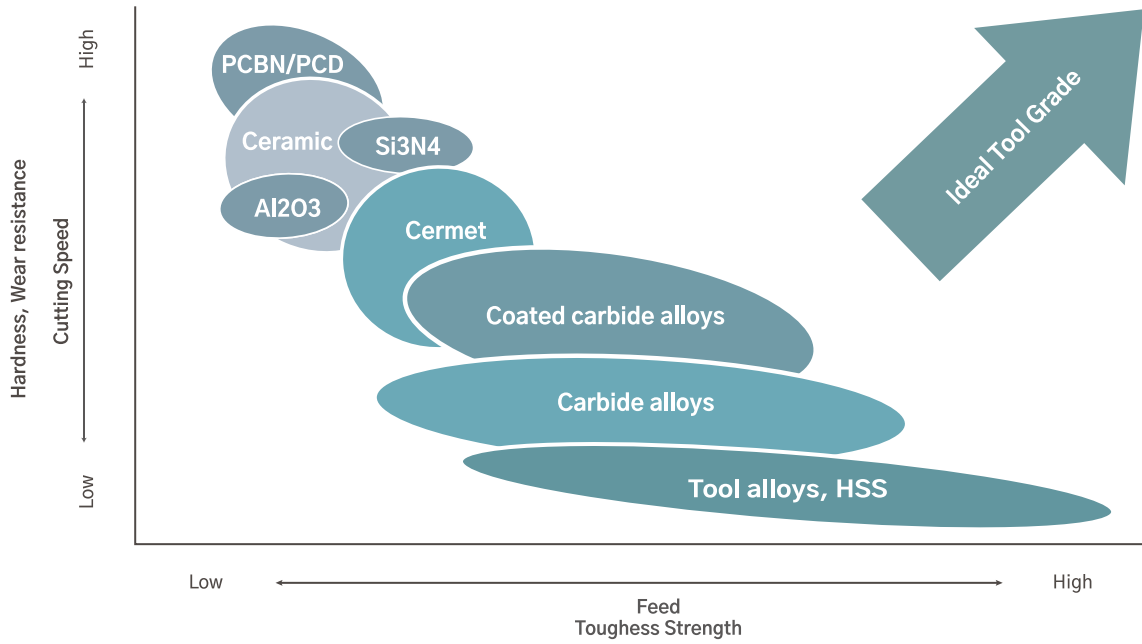
SiC-Whisker	<b>CW400</b>	High Speed Steel, High Chrome Steel in medium or low speed cutting. Roughing and medium cutting with heavy interruption
	<b>CW800</b>	Nickel Base Alloy, Cobalt base Alloy in high speed cutting. Roughing and medium cutting with continuous or light
Al <sub>2</sub> O <sub>3</sub> + TiC(N)	<b>CT100</b>	Finishing for steel and cast iron
	<b>CT300</b>	General machining for steel and cast iron
	<b>CT500</b>	Fine finishing for hardened steel and cast iron
	<b>CT900</b>	fine finishing for hardened steel and cast iron in high speed
TiN Coating	<b>CTP100</b>	TiN coated on CT100 grade
	<b>CTP300</b>	TiN coated on CT300 grade
TiC+ Al <sub>2</sub> O <sub>3</sub>	<b>CD200</b>	Turning & Milling for ductile cast iron
Al <sub>2</sub> O <sub>3</sub> + ZrO <sub>2</sub>	<b>CZ200</b>	Medium cutting for cast iron and steel
	<b>CZ300</b>	Medium cutting for hardened cast iron
Si <sub>3</sub> N <sub>4</sub>	<b>CN26</b>	Roughing for cast iron with interruption
	<b>CN300</b>	Roughing for cast iron with heavy interruption
	<b>CN400</b>	General machining for cast iron
	<b>CN500</b>	Roughing for cast iron in high speed
	<b>CN600</b>	Roughing for cast iron with interrupted in high speed
SiAlON	<b>CN800</b> (SiAlON)	General machining for Ni-based alloy and cast iron (Dry)
	<b>CN1000</b> (SiAlON)	General machining for Ni & Co-based alloy and cast iron
AlTiN/TiN Coating	<b>CNC400</b>	AlTiN/TiN coated on CN400 grade
	<b>CNC1000</b>	AlTiN/TiN coated on CN1000 grade

# Grade Comparison

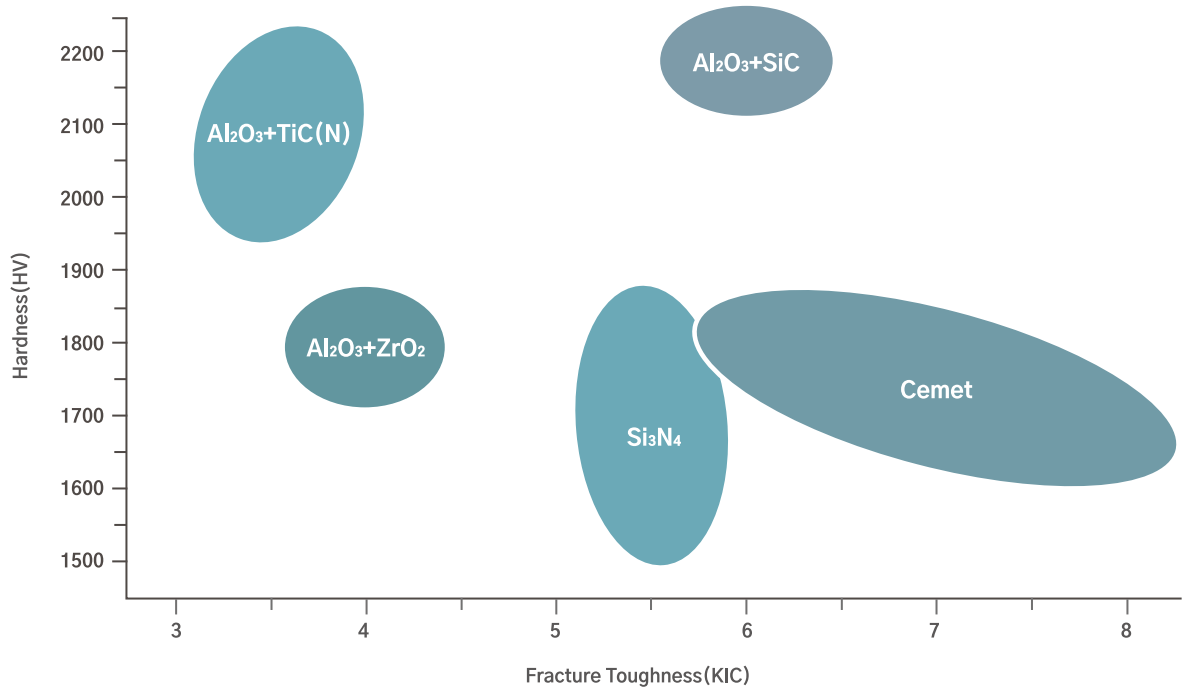
Grade \ Maker		KCERA	NTK	Ceram Tec	Kennametal	Sandvik	Tungaloy	Greenleaf	Kyocera	Mitsubishi	Sumitomo	Taegu Tec
CERAMIC	Black	CD200	HC6	SH4								
		CT100	HC2		K090		LX21/ M014A		A65	XD202	NB90S/ NB90M	AB30/IN23
		CT300	HC7	SH2	KY1615 MC2	CC650	LX10	GEM6 GEM7	KT66		NB150H	
		CT500 CT900	HC5									AB20/IN22
	Coated Black TM	CTP100 CTP300	ZC4		KY4400 HTM85D	CC6050	LX11		A66N PT600M	XD805	NB100C	AB2010
	White	CZ200 CZ300	HC1 HW2 HW3	SN60 SN180E SN180	K060 AC5	CC620	LXA	GEM9	AZ5000 KA30		W80	AW120
	Silicon Nitride	CN26 CN300 CN400 CN500 CN600	EC1 SX1 SX2 SX6	SL406 SL408 SL500 SL550	KY2000 KY3500	CC6090 CC6190	FX105 CX710	HSN100 GSN100	KS6000 KS6050	XE515 XE520	NS260 SN2000K SN2100K	AS10
	Coated Silicon Nitride	CNC400	SP2	SL550C SL554C	KY3400 KYK25	GC1690	TF110	HSN200	CS7050	XE9	NS260C	SC10
	SiAlON	CN800		SL506/8 SL606/8	KYK10							AS500
		CN1000	SX9	SL808	KY1540 KYS30	CC6080 CC6160	TS200 TS300		KS6030 KS6040		SN1000S SN2000S	TC3020 TC3030
	Coated SiAlON	CNC1000	SL6	SL654C SL658C SL858C	KYS25			SiAlOX	KX207			
	Whisker	CW800	WA1		KY4300/MC3 KY1525/ CW3020	CC670	TW43 (OEM)	WG300	KXW1		WX1500	TC430/IW7
		CW400	WA5									



### Application Range



### Mechanical Properties



## CERAMIC

K-cera Ceramics take pride in its outstanding wear resistance and thermal shock resistance with high speed cutting. Pure raw materials give stability and fine microstructure to the products.

Through proper or optimum process, shaped bodies are completely condensed so that finished goods are strong and resistant against fracture and wear.

- Improved work efficiency by increasing cutting speed on extremely higher than carbide inserts.
- Longer tool life through excellent wear resistance
- Precise cutting and superior surface roughness

Whisker	CW400	Excellent flank & Notch wear in high speed cutting Al <sub>2</sub> O <sub>3</sub> +SiC	High Speed Steel, High Chrome Steel in medium or low speed cutting Roughing and medium cutting with heavy interruption	Tougher ⇕
	CW800	Excellent flank & Notch wear in high speed cutting Al <sub>2</sub> O <sub>3</sub> +SiC	Nickel Base Alloy, Cobalt Base Alloy in high speed cutting Roughing and finishing with continuous or light interruption	Harder
Al <sub>2</sub> O <sub>3</sub> Series	CT100	Tougher than CT300 High thermal shock resistance Al <sub>2</sub> O <sub>3</sub> +TiC	Universal grade for machining cast iron and steel	Tougher ↑
	CT300	Excellent wear resistance Al <sub>2</sub> O <sub>3</sub> +TiCN	A basic choice for machining steel and cast iron	↑ ↓
	CT500	Alternative to PCBN, Fine microstructure Al <sub>2</sub> O <sub>3</sub> +TiCN	Fine finishing for hardened steel and cast iron	
	CT900	Excellent wear and thermal shock resistance Al <sub>2</sub> O <sub>3</sub> +TiCN	Fine finishing for hardened steel and cast iron in high speed	
	CTP100	Good wear resistance TiN coating on CT100	Finishing for steel and cast iron	
	CTP300	Excellent wear resistance TiN coating on CT300	Finishing for steel and cast iron	
	CD200	High thermal shock resistance, Usable with coolant TiC+Al <sub>2</sub> O <sub>3</sub>	Machining ductile cast iron Finishing for ductile cast iron and hard materials	Finishing for ductile cast iron
ZrO <sub>2</sub> Series	CZ200	Toughened by zirconia, High chemical stability Al <sub>2</sub> O <sub>3</sub> +ZrO <sub>2</sub>	Finishing, semi-finishing of cast iron and steel	Tougher ⇕
	CZ300	Harder alternative to SZ200 Al <sub>2</sub> O <sub>3</sub> +ZrO <sub>2</sub>	Finishing, semi-finishing of cast iron and steel	Harder
Si <sub>3</sub> N <sub>4</sub> Series	CN26	Good toughness and thermal shock resistance Well balanced wear resistance and toughness Si <sub>3</sub> N <sub>4</sub>	First choice for roughing with interrupted cuts Roll turning and milling of cast iron and steel	Roughing in lower speed
	CN300	Tougher alternative to CN400 Good toughness and thermal shock resistance Si <sub>3</sub> N <sub>4</sub>	Roughing and high speed cutting with interruption	Tougher ↑
	CN400	Excellent wear resistance in high speed cutting Si <sub>3</sub> N <sub>4</sub>	Frist choice for roughing of cast iron High speed machining with interrupted cuts	↑ ↓
	CN500	Harder alternative to CN400 Improved wear resistance at hugh speed cutting Si <sub>3</sub> N <sub>4</sub>	High speed roughing for cast iron	
	CN600	Excellent wear resistance & thermal shock resistance AlTiN+TiN multi coating on CN400	Roughing for cast iron with inerruption and high speed	Tougher ⇕
	CNC400	Excellent wear resistance in inerrupted cutting Si <sub>3</sub> N <sub>4</sub>	Cast iron in roughing and semi-finishing cutting	Harder
SiAlON Series	CN800	Excellent wear resistance SiAlON	In Dry cutting condition, great performance against notch wear Machining for steel and HRSA materials in high speed	Tougher ↑
	CN1000	Excellent thermal shock resistance and wear resistance SiAlON	Medium or low speed cutting of HRSA materials and cast iron Roughing and medium cutting with heavy interruption	↑ ↓
	CNC1000	Excellent thermal shock resistance and wear resistance AlTiN+TiN multi coating on CN1000	Medium or low speed cutting of HRSA materials and cast iron Roughing and medium cutting with heavy interruption	



## Physical Properties

Grade	Coated	Composition	Color	Density(g/cm <sup>2</sup> )	Hardness(Hv)	Toughness (MPa·m <sup>1/2</sup> )
CW400		Al <sub>2</sub> O <sub>3</sub> + SiC	Green	3.8	2,100	6.0
CW800		Al <sub>2</sub> O <sub>3</sub> + SiC	Green	3.7	2,100	6.5
CT100		Al <sub>2</sub> O <sub>3</sub> + TiC	Black	4.2	2,100	4.5
	CTP100	(TiN)	Gold			
CT300		Al <sub>2</sub> O <sub>3</sub> + TiCN	Black	4.4	2,150	4.0
	CTP300	(TiN)	Gold			
CT500		Al <sub>2</sub> O <sub>3</sub> + TiCN	Black	4.3	2,200	4.0
CT900		Al <sub>2</sub> O <sub>3</sub> + TiCN	Black	4.3	2,200	4.5
CD200		TiC + Al <sub>2</sub> O <sub>3</sub>	Black	4.6	2,250	5.0
CZ200		Al <sub>2</sub> O <sub>3</sub> + ZrO <sub>2</sub>	White	4.1	1,800	4.5
CZ300		Al <sub>2</sub> O <sub>3</sub> + ZrO <sub>2</sub>	Pink	4.1	1,850	4.0
CN26		Si <sub>3</sub> N <sub>4</sub>	Black	3.3	1,600	6.0
CN300		Si <sub>3</sub> N <sub>4</sub>	Gray	3.2	1,600	6.5
CN400		Si <sub>3</sub> N <sub>4</sub>	Gray	3.2	1,650	6.5
	CNC400	(AlTiN+TiN)	Gold			
CN500		Si <sub>3</sub> N <sub>4</sub>	Gray	3.2	1,650	6.5
CN600		Si <sub>3</sub> N <sub>4</sub>	Black	3.2	1,700	7.0
CN800		Si <sub>3</sub> N <sub>4</sub> + Al <sub>2</sub> O <sub>3</sub>	Black	3.2	1,900	6.5
CN1000		Si <sub>3</sub> N <sub>4</sub> + Al <sub>2</sub> O <sub>3</sub>	Black	3.3	1,800	7.0
	CNC1000	(AlTiN+TiN)	Gold			

## Choice of Ceramic Grade for Workpiece

Workpiece		CT100/CT300 CTP100/ CTP300	CT500 CT900	CD200	CZ200 CZ300	CN26/CN300 CN500 CNC400	CN800	CN1000 CNC1000	CW400	CW800
Cast Iron	Gray cast iron	◎	○	○	◎	◎	◎	○		
	Chilled cast iron	○	○		○	○	◎	○		
	Ductile cast iron	○		◎		○	○	○		
Steel	Mild steel	○			○					
	Carbon steel	○			○					
	Alloy steel	◎	○		○		○	○	○	○
	Forged steel	○	◎							
	Heat treated steel	○	◎							
	High speed steel	○	◎						◎	○
	High manganese steel	○	○			○	○	○	◎	○
	Stainless steel									
Heat resistant super alloy						○	◎	○	◎	

## Choice of Ceramic Grade for Workpiece

Application	Grade	Workpiece	Machining Type	Speed (V) (m/min)	Feed (f) (mm/rev)	Depth (DOC) (mm)	
Turning	CT100 CT300 CT500 CT900 CTP100 CTP300	Gray Cast Iron	Gray Cast Iron (FC) Malleable (FCMB)	Rough Finish	150 ~ 800 200 ~ 1,200	0.2 ~ 0.5 0.3 ~ 0.5	3 ~ 6 0.1 ~ 0.5
			Chilled Cast Iron	Rough Finish	30 ~ 100 50 ~ 200	0.1 ~ 0.2 0.05 ~ 0.15	0.5 ~ 1.5 0.1 ~ 0.5
		Steel	Carbon Steel Alloy Steel Bearing Steel	Rough Finish	150 ~ 400 200 ~ 800	0.2 ~ 0.5 0.05 ~ 0.2	2 ~ 5 0.1 ~ 0.5
			Hard Steel (HRC 45≥)	Rough Finish	20 ~ 100 40 ~ 200	0.1 ~ 0.2 0.05 ~ 0.5	0.5 ~ 1.5 0.1 ~ 0.5
	CD200	Ductile Cast Iron Nodular Cast Iron	Rough Finish	100 ~ 400 200 ~ 800	0.1 ~ 0.2 0.05 ~ 0.25	1 ~ 2 0.1 ~ 0.5	
	CZ200 CZ300	Gray Cast Iron (FC) Steel (HRC 45≤)	Rough Finish	200 ~ 700 300 ~ 1,200	0.2 ~ 0.4 0.05 ~ 0.3	2 ~ 5 0.1 ~ 0.5	
	CN26 CN300 CN400 CN500 CN600 CNC400	Gray Cast Iron	Gray Cast Iron (FC) Malleable (FCMB)	Rough Finish	150 ~ 1,100 250 ~ 1,200	0.3 ~ 0.8 0.15 ~ 0.4	< 5 < 1
			Chilled Cast Iron	Rough Finish	20 ~ 100 60 ~ 200	1.0 ~ 2.0 0.5 ~ 1.0	< 5 < 1
	CN800 CN1000	Ni-Based Alloy Non-Ferrous Metal Inconel	Rough Finish	150 ~ 250 150 ~ 450	0.2 ~ 0.4 0.1 ~ 0.2	< 5 < 1	
	CW400 CW800	High temperature alloys Inconel Stellite	Rough Finish	180 ~ 360 180 ~ 450	0.1 ~ 0.25 0.1 ~ 0.30	1 ~ 3 0.5 ~ 2.0	
Milling	CN26 CN300 CN400 CN500 CN600 CNC400	Gray Cast Iron (FC)	Rough Finish	100 ~ 1,200 150 ~ 1,500	0.3 ~ 0.5 0.3 ~ 0.7	< 5 < 3	
		Ductile Cast Iron Alloy Steel	Rough Finish	90 ~ 500 100 ~ 700	0.1 ~ 0.3 0.1 ~ 0.4	< 5 < 3	
	CN800 CN1000	High temperature alloys Inconel Stellite	Finish	700 ~ 1,000	0.05 ~ 0.15 / tooth	0.5 ~ 2.5	
	CW400 CW800	High temperature alloys Inconel	Rough	150 ~ 400	0.05 ~ 0.1 / tooth	1 ~ 3	

Product Range

TURNING

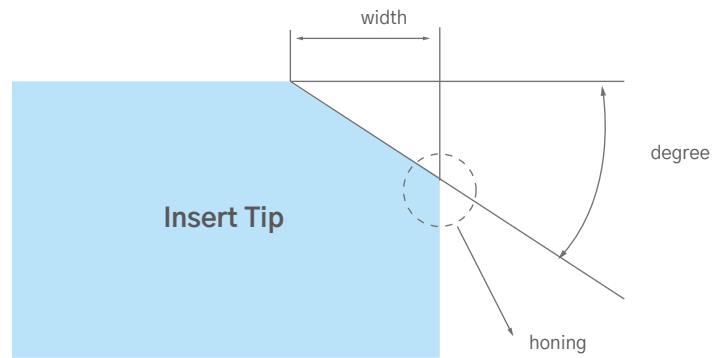
CNGA	CNMA	CNGN	CNMN	CNGX	CNVX	CNMX
CNMX .. RD	CCGX	CCGW	CPGN	DNGA	DNMA	DNGN
DNGX	DNMX	DCGX	ENGN	RNGA	RNGN	RPGA
RPGN	RPGN .. DP	RNGX .. DP	RBGN	RCGN	SCGA	SNMA
SNGN	SNGX	SNMX	SNMX .. RD	SCGN	SCGX	SCGW
SPGN	SPGN ... CR	SNHN ... CR	TNGA	TNGN	TCUN	TPGN
TPUN	VNGA	VNGN	VNGX	WNGA	WNGX	CDH
F-Series	F-Series	F-Series	F-Series	F-Series	F-Series	F-Series



TURNING	LNJ	SNGN3812R	RBGX	RCGX	RPGX	RXGX	SYBF	
	SYBF..K	SYBR	SGF	SGR	SSF	SSR	WFC	
	WRC	WFP	WRP	SRG	SRGA			
TURNING	HNEN	LNE	OEGB	OEGB..CR	OPEN	SNCN	SNCN..ENTN	
	SNGN..ING	SDCN	SDCN..T	SDCW	SEAN	SEAN..NW	SEAN..T	
	SPCN..T	SPCW	SPEN	SPHX	SPKN	SPKN..SP	TNCN	
	TEKN	TPKN	CNGN..AZ	SNCN..ZZT	SNCN..GZ	SNCN..KZ	SCGN..WZ	
	SCGN..XZ	SCGN..ZZ	SCGN..MZ	SCGN..ZMZ				
	SPECIAL	SVW	GVGN	SZT 5810	SNMX	SNGF	INGN	ENDMILL

## Chamfer Specification

### 1 Mono chamfer

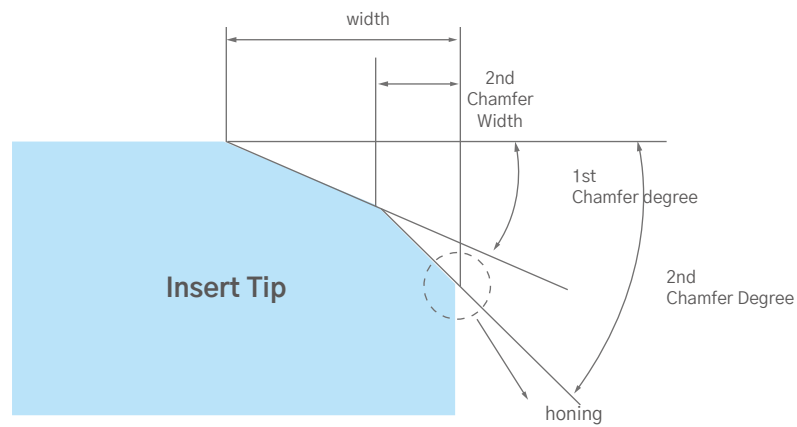


ISO

SNGN 120408 E040

Chamfer Degree(°)	Chamfer Width(mm)		Honing(μm)
E:20	01:0.05	10:0.50	0:NO Honing
F:25	02:0.10	20:1.00	1:10
G:30	03:0.15	40:2.00	2:20
	04:0.20		3:30

### 2 Double chamfer



ISO

SNGN 190716 X542

1st Chamfer Degree(°)	1st Chamfer Width(mm)		2nd Chamfer Width(mm)Degree		Honing(μm)
W:10 X:15	3:1.00 4:1.20 5:1.50 6:2.00	A:0.75 B:1.25 D:2.30	3:0.20x25 4:0.10x30 5:0.20x30	A:0.15X30 B:0.45X25	0:NO Honing 1:10 2:20 3:30 5:50

Meno...





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