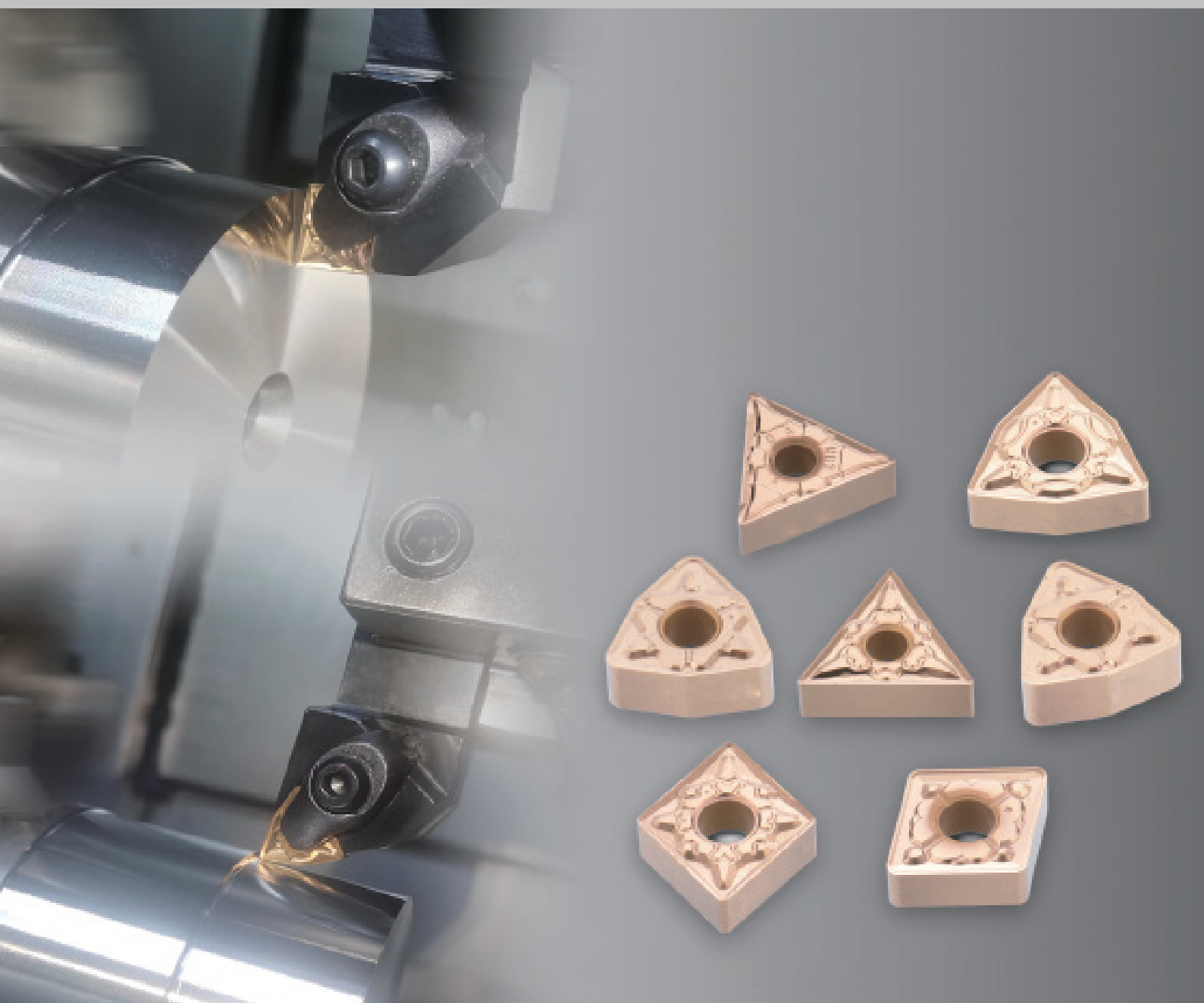
EASYCUT

December 2024

EC211D / EC511D

NEW PRODUCT!

New CVD coating grades for stainless steel high-speed turning grade

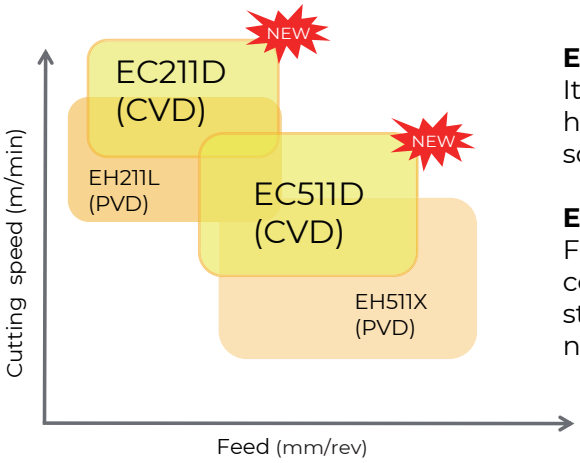


Grade Introduction

CVD coating grades for stainless steel turning-EC211D / EC511D.

New CVD coating grades for stainless steel turning-EC211D / EC511D, fully cover the stainless steel speed continuous turning to general turning with stable and long tool life as well as high efficiency. The new CVD coating has good wear resistance, heat resistance and plastic deformation resistance due to combined micro grain K-Al_2O_3 and MT-TiCN.

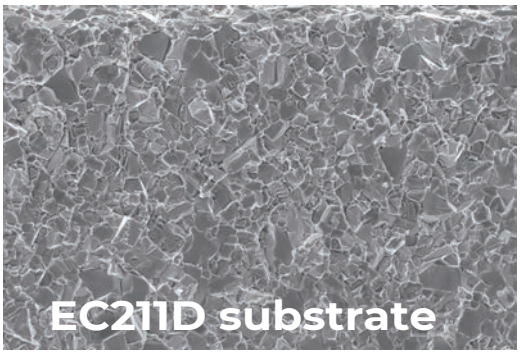
Application Range



EC211D
It offers good wear resistance at high-speed and high-efficiency stainless steel turning. Suitable for some heat resistant alloy turning.

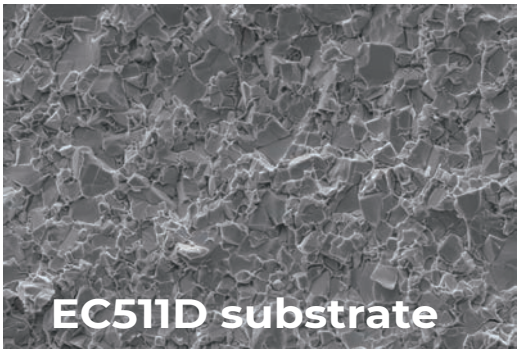
EC511D
First choice for stainless steel turning, CVD coating combined with new carbide substrate, showing a stable machining performance and extraordinary notch wear resistance.

EC211D / EC511D Grade Features



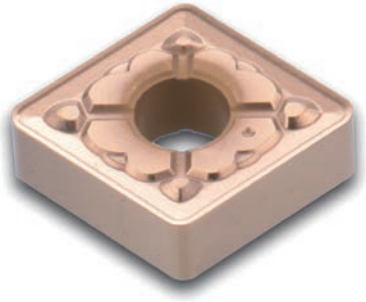
EC211D
It offers good wear resistance at high-speed and high-efficiency stainless steel turning.

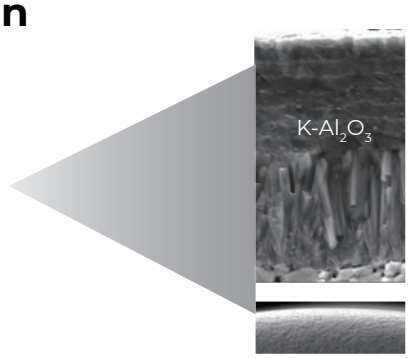
Suitable for some heat resistant alloy turning.



EC511D
First choice for stainless steel turning, CVD coating combined with new carbide substrate, showing a stable machining performance and extraordinary notch wear resistance.

Grade Introduction



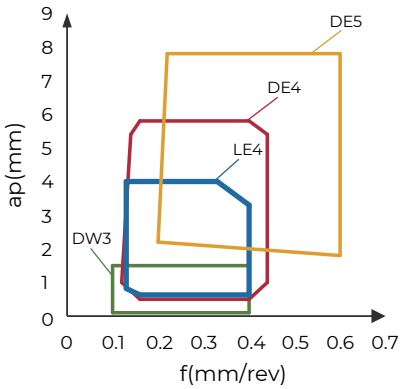


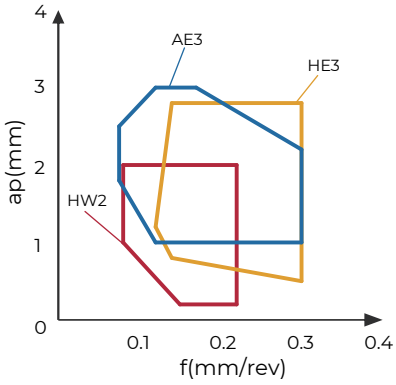
SEM image of coating surface of nose

- Combined micro grain K-Al_2O_3 and MT-TiCN.
- Higher toughness, wear resistance and built-up edge resistance.
- New post-processing for a smoother surface, good built-up edge resistance and chip evacuation.
- First choice for stainless steel high-speed turning.
- New substrate for stainless steel finish turning, with gardient sintering process to get excellent wear resistance and toughness.

  It also can achieve high-speed turning even under unstable machining conditions
- Suitable for stainless steel high-speed turning and some heat resistant alloy machining

Geometry Choices

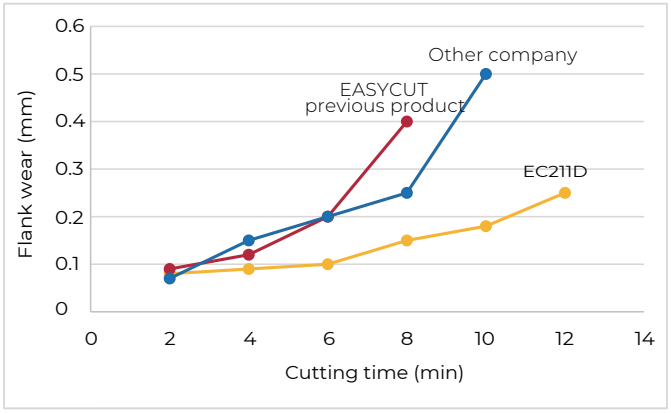




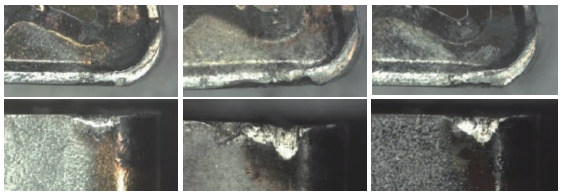
Application		Geometry		Features	Chipbreaker cross section
Negative	Finishing	DW3		**First choice for finish turning** Zero edge width design decreased the built-upedge, achieved good surface quality and good chip breaking.	A B
	Medium turning	DE4		**First choice for medium turning** Sharp cutting edge design, low cutting force, achieved good chip breaking, and chip evacuation in a wide range.	A B
		LE4		**Second choice for medium turning** Used in stainless steel medium turning. Suitable for interrupted turning. Big rake angle and small edge width design for smooth cutting.	A B
Negative	Roughing	DE5		**Choice for rough turning** Big chip breaker provided a smooth chip evacuation, excellent chip breaking and high metal removing rate.	A B
Positive	Finishing	HW2		**First choice for finish turning** Positive rake angle design reduced the adhension trend and offered good surface quality and long tool life. Used in steel and stainless steel machining.	A B
	Semi-finishing	HE3		**First choice for semi-finish turning** Cutting edge design offered smooth cutting,effectively avoided built-up edge. It has awide range of chip evacuation.	A B
	Roughing	AE3		**First choice for rough turning** Simple and durable chip breaker design offered a wide application and high versatility.	A B

Tool cutting performance

EC211D wear resistance comparison



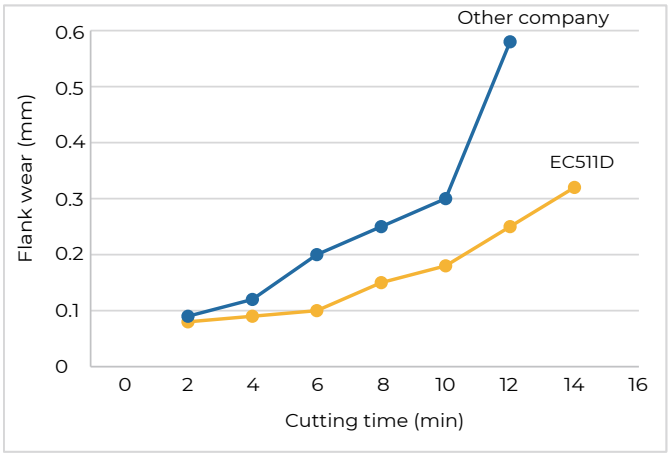
EC211D | Other company | EASYCUT previous product



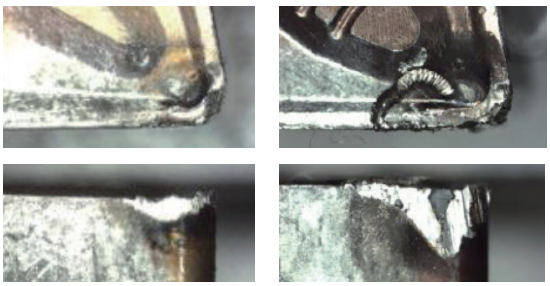
Insert: CNMG 120408E-DE4 EC211D
Material: 316 L
Speed: 220 m/min
Feed: 0.25 mm/rev
Cutting depth: 1.5 mm
Coolant: Wet

EC211D with DE4 geometry has excellent wear resistance, notch wear resistance and longer tool life

EC511D wear resistance comparison



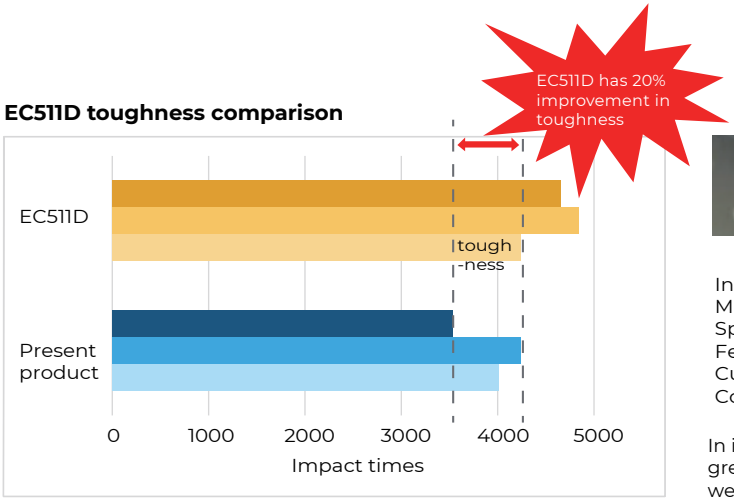
EC511D | Other company



Insert: CNMG 120408E-DE4 EC511D
Material: 316 L
Speed: 180 m/min
Feed: 0.25 mm/rev
Cutting depth: 1.5 mm
Coolant: Wet

The flank wear of EC511D is half of the customer's current grade, and its wear resisitance is doubled

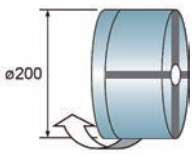
EC511D toughness comparison



EC511D | Other company

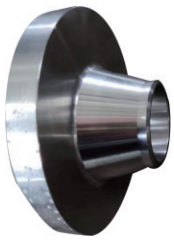
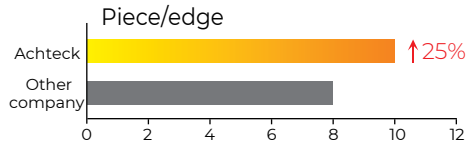
notch wear resistance

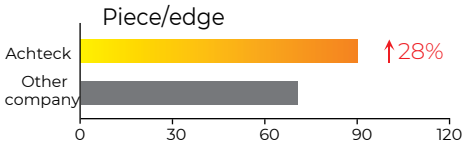
Insert: CNMG 120408E-DE4 EC511D
Material: 316 L
Speed: 100 m/min
Feed: 0.25 mm/rev
Cutting depth: 1.0 mm
Coolant: Wet

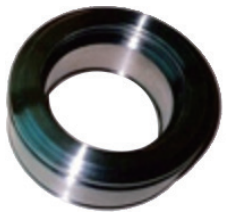
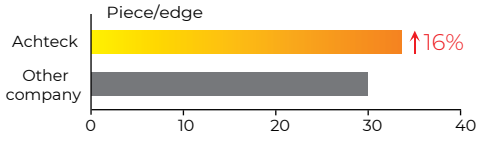


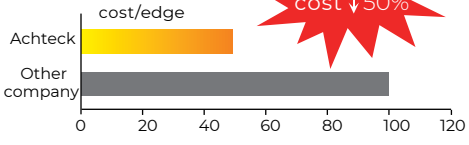
In interrupted turning, EC511D has greatly improved toughness and the notch wear decreased to half at the same time

Success Stories

Tool	WNMG 060412E-DE4 EC211D
Part	
Material	304
Machining type	Continued
Vc	200m/min
f	0.25-0.3mm/rev
ap	0.8mm
Coolant	Emulsion
Result	 EASYCUT DE4+EC211D reduced bur, and tool life increased by 25%

Tool	WNMG 080408E-DE4 EC211D
Part	
Material	SUS316L
Machining type	Continued
Vc	230m/min
f	0.2mm/rev
ap	1.0mm
Coolant	Emulsion
Result	 EASYCUTE C211D improved its surface finish, and tool life increased by 28%

Tool	CNMG 120408E-DE4 EC511D
Part	
Material	316L
Machining type	Continued
Vc	160m/min
f	0.25mm/rev
ap	3.0mm
Coolant	Emulsion
Result	 Rough turning cast part, the tool life in rough turning the oxidated surface increased by 16%

Tool	CNMG 120412E-DE4 EC511D
Part	
Material	431
Machining type	Continued
Vc	120m/min
f	0.45mm/rev
ap	3.0mm
Coolant	Emulsion
Result	 The tool life is same as the competitor's, but the tool cost reduced by 50%

Application Range and Parameter Recommendation

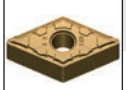
Material	Application Range								
	Finishing ⟷ Roughing								
ISO classification	M01	M05	M10	M15	M20	M25	M30	M35	M40
M		EC211D							
				EC511D					
S	S01	S05	S10	S15	S20	S25	S30	S35	S40
		EC211D							
				EC511D					

First choice for stainless, second choice for high-temperature alloy

Material				Brinell Hardness (HB)	Strength (N/mm²)	Grade					
						Cutting Speed Vc (m/min)					
						EC211D			EC511D		
						f(mm/rev)			f(mm/rev)		
ISO	Classification					0.1	0.3	0.5	0.1	0.3	0.5
M	Heat resistant alloys	Ferritic/martensitic, annealed		200	675	190	170	150	190	160	130
		Martensitic, heat-treated		330	1114	170	150	130	130	115	100
		Austenitic, quench hardened		200	675	250	200	150	200	160	120
		Austenitic, precipitation hardened (PH)		300	1013	150	130		130	110	
		Austenitic/ferritic, duplex		230	778	160	145	130	140	120	100
S	Fe base alloys	Fe based	Annealed	200	680	80	50		70	45	
			Hardened	280	940	60	40		50	35	
		Ni or Co based	Annealed	250	840	60	40		50	35	
			Hardened	350	1180	50	35		40	30	
			Cast	320	1080	40	30		30	20	
	Titanium alloys	Pure titanium		200	680						
		α and β alloys, hardened		375	1260	60	45	35	50	35	25
		β alloys		410	1400	40	35	30	40	30	20
	Tungsten alloys			300	1010						
	Molybdenum alloys			300	1010						

* This table just shows us the cutting data under general cutting condition, and these need to be adjusted according to machine rigidity, tool body, machining condition, coolant and other factors. (f = mm/rev needs to be adjusted according to the insert diameter)

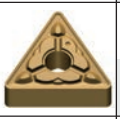
Negative Insert List

Insert	Product code	Size(mm)				Grade	
		r	d	l	s	EC211D	EC511D
	CNMG 120404E-DW3	0.4	12.7	12.9	4.76	●	●
	120408E-DW3	0.8	12.7	12.9	4.76	●	●
	CNMG 120404E-LE4	0.4	12.7	12.9	4.76	●	●
	120408E-LE4	0.8	12.7	12.9	4.76	●	●
	120412E-LE4	1.2	12.7	12.9	4.76	●	●
	160612E-LE4	1.2	15.875	16.1	6.35	●	●
	160616E-LE4	1.6	15.875	16.1	6.35	●	●
	190612E-LE4	1.2	19.05	19.3	6.35	●	●
	190616E-LE4	1.6	19.05	19.3	6.35	●	●
	CNMG 120404E-DE4	0.4	12.7	12.9	4.76	●	●
	120408E-DE4	0.8	12.7	12.9	4.76	●	●
	120412E-DE4	1.2	12.7	12.9	4.76	●	●
	120416E-DE4	1.6	12.7	12.9	4.76	○	○
	160608E-DE4	0.8	15.875	16.1	6.35	●	●
	160612E-DE4	1.2	15.875	16.1	6.35	●	●
	160616E-DE4	1.6	15.875	16.1	6.35	●	●
	190608E-DE4	0.8	19.05	19.3	6.35	○	○
	190612E-DE4	1.2	19.05	19.3	6.35	○	○
	190616E-DE4	1.6	19.05	19.3	6.35	○	○
	CNMG 120408E-DE5	0.8	12.7	12.9	4.76	●	●
	120412E-DE5	1.2	12.7	12.9	4.76	●	●
	DNMG 150404E-DW3	0.4	12.7	15.5	4.76	●	●
	150408E-DW3	0.8	12.7	15.5	4.76	●	●
	150604E-DW3	0.4	12.7	15.5	6.35	●	●
	150608E-DW3	0.8	12.7	15.5	6.35	●	●
	DNMG 150404E-LE4	0.4	12.7	15.5	4.76	●	●
	150408E-LE4	0.8	12.7	15.5	4.76	●	●
	150412E-LE4	1.2	12.7	15.5	4.76	●	●
	150604E-LE4	0.4	12.7	15.5	6.35	●	●
	150608E-LE4	0.8	12.7	15.5	6.35	●	●
	150612E-LE4	1.2	12.7	15.5	6.35	●	●

Insert	Product code	Size(mm)				Grade	
		r	d	l	s	EC211D	EC511D
	DNMG 150404E-DE4	0.4	12.7	15.5	4.76	●	●
	150408E-DE4	0.8	12.7	15.5	4.76	●	●
	150412E-DE4	1.2	12.7	15.5	4.76	○	○
	150604E-DE4	0.4	12.7	15.5	6.35	●	●
	150608E-DE4	0.8	12.7	15.5	6.35	●	●
	150612E-DE4	1.2	12.7	15.5	6.35	●	●
	DNMG 150408E-DE5	0.8	12.7	15.5	4.76	○	○
	150412E-DE5	1.2	12.7	15.5	4.76	○	○
	150608E-DE5	0.8	12.7	15.5	6.35	●	●
	150612E-DE5	1.2	12.7	15.5	6.35	●	●
	SNMG 120404E-DW3	0.4	12.7	12.7	4.76	●	●
	120408E-DW3	0.8	12.7	12.7	4.76	●	●
	SNMG 120408E-LE4	0.8	12.7	12.7	4.76	●	●
	120412E-LE4	1.2	12.7	12.7	4.76	●	●
	150612E-LE4	1.2	15.875	15.875	6.35	●	●
	150616E-LE4	1.6	15.875	15.875	6.35	●	●
	190612E-LE4	1.2	19.05	19.05	6.35	●	●
	SNMG 120408E-DE4	0.8	12.7	12.7	4.76	●	●
	120412E-DE4	1.2	12.7	12.7	4.76	●	●
	150612E-DE4	1.2	15.875	15.875	6.35	○	○
	150616E-DE4	1.6	15.875	15.875	6.35	○	○
	190612E-DE4	1.2	19.05	19.05	6.35	●	●
	190616E-DE4	1.6	19.05	19.05	6.35	●	●
	SNMG 120408E-DE5	0.8	12.7	12.7	4.76	●	●
	120412E-DE5	1.2	12.7	12.7	4.76	●	●

● Stocked ○ Non-stocked

Negative Insert List

Insert	Product code	Size(mm)				Grade	
		r	d	l	s	EC211D	EC511D
	TNMG 160404E-DW3	0.4	9.525	16.5	4.76	●	●
	160408E-DW3	0.8	9.525	16.5	4.76	●	●
	TNMG 160408E-LE4	0.8	9.525	16.5	4.76	●	●
	160412E-LE4	1.2	9.525	16.5	4.76	●	●
	TNMG 160404E-DE4	0.4	9.525	16.5	4.76	●	●
	160408E-DE4	0.8	9.525	16.5	4.76	●	●
	160412E-DE4	1.2	9.525	16.5	4.76	●	●
	220408E-DE4	0.8	12.7	22.0	4.76	●	●
	220412E-DE4	1.2	12.7	22.0	4.76	●	●
	TNMG 160408E-DE5	0.8	9.525	16.5	4.76	●	●
	160412E-DE5	1.2	9.525	16.5	4.76	●	●
	VNMG 160404E-DW3	0.4	9.525	16.5	4.76	●	●
	160408E-DW3	0.8	9.525	16.5	4.76	●	●
	VNMG 160404E-LE4	0.4	9.525	16.5	4.76	●	●
	160408E-LE4	0.8	9.525	16.5	4.76	●	●
	160412E-LE4	1.2	9.525	16.5	4.76	●	●

Insert	Product code	Size(mm)				Grade	
		r	d	l	s	EC211D	EC511D
	VNMG 160404E-DE4	0.4	9.525	16.5	4.76	●	●
	160408E-DE4	0.8	9.525	16.5	4.76	●	●
	WNMG 080404E-DW3	0.4	12.7	8.7	4.76	●	●
	080408E-DW3	0.8	12.7	8.7	4.76	●	●
	WNMG 080404E-LE4	0.4	12.7	8.7	4.76	●	●
	080408E-LE4	0.8	12.7	8.7	4.76	●	●
	080412E-LE4	1.2	12.7	8.7	4.76	●	●
	WNMG 060408E-DE4	0.8	12.7	8.7	4.76	●	●
	060412E-DE4	1.2	12.7	8.7	4.76	●	●
	080408E-DE4	0.8	12.7	8.7	4.76	●	●
	080412E-DE4	1.2	12.7	8.7	4.76	●	●
	WNMG 080408E-DE5	0.8	12.7	8.7	4.76	●	●
	080412E-DE5	1.2	12.7	8.7	4.76	●	●

● Stocked ○ Non-stocked

Negative Insert List

Insert	Product code	Size(mm)				Grade	
		r	d	l	s	EC211D	EC511D
	CCMT 060202E-HW2	0.2	6.35	6.45	2.38	●	●
	060204E-HW2	0.4	6.35	6.45	2.38	●	●
	060208E-HW2	0.8	6.35	6.45	2.38	●	●
	09T302E-HW2	0.2	9.525	9.67	3.97	●	●
	09T304E-HW2	0.4	9.525	9.67	3.97	●	●
	09T308E-HW2	0.8	9.525	9.67	3.97	●	●
	CCMT 060204E-HE3	0.4	6.35	6.45	2.38	●	●
	060208E-HE3	0.8	6.35	6.45	2.38	●	●
	09T304E-HE3	0.4	9.525	9.67	3.97	●	●
	09T308E-HE3	0.8	9.525	9.67	3.97	●	●
	120404E-HE3	0.4	12.7	12.9	4.76	●	●
	120408E-HE3	0.8	12.7	12.9	4.76	●	●
	120412E-HE3	1.2	12.7	12.9	4.76	●	●
	CCMT 060204E-AE3	0.4	6.35	6.45	2.38	●	●
	060208E-AE3	0.8	6.35	6.45	2.38	●	●
	09T304E-AE3	0.4	9.525	9.67	3.97	●	●
	09T308E-AE3	0.8	9.525	9.67	3.97	●	●
	120404E-AE3	0.4	12.7	12.9	4.76	○	○
	120408E-AE3	0.8	12.7	12.9	4.76	●	●
	120412E-AE3	1.2	12.7	12.9	4.76	●	●
	DCMT 070202E-HW2	0.2	6.35	7.75	2.38	●	●
	070204E-HW2	0.4	6.35	7.75	2.38	●	●
	11T302E-HW2	0.2	9.525	11.62	3.97	●	●
	11T304E-HW2	0.4	9.525	11.62	3.97	●	●
	11T308E-HW2	0.8	9.525	11.62	3.97	●	●
	DCMT 070204E-HE3	0.4	6.35	7.75	2.38	●	●
	070208E-HE3	0.8	6.35	7.75	2.38	●	●
	11T304E-HE3	0.4	9.525	11.62	3.97	●	●
	11T308E-HE3	0.8	9.525	11.62	3.97	●	●
	v 11T312E-HE3	1.2	9.525	11.62	3.97	○	○

Insert	Product code	Size(mm)				Grade	
		r	d	l	s	EC211D	EC511D
	DCMT 070204E-AE3	0.4	6.35	7.75	2.38	●	●
	070208E-AE3	0.8	6.35	7.75	2.38	●	●
	11T304E-AE3	0.4	9.525	11.62	3.97	●	●
	11T308E-AE3	0.8	9.525	11.62	3.97	●	●
	11T312E-AE3	1.2	9.525	11.62	3.97	●	●
	SCMT 09T304E-HW2	0.4	9.525	9.525	3.97	●	●
	09T308E-HW2	0.8	9.525	9.525	3.97	●	●
	120404E-HW2	0.4	12.7	12.7	4.76	●	●
	SCMT 09T304E-HE3	0.4	9.525	9.525	3.97	●	●
	09T308E-HE3	0.8	9.525	9.525	3.97	●	●
	120404E-HE3	0.4	12.7	12.7	4.76	●	●
	120408E-HE3	0.8	12.7	12.7	4.76	●	●
	120412E-HE3	1.2	12.7	12.7	4.76	○	○
	SCMT 09T304E-AE3	0.4	9.525	9.525	3.97	●	●
	09T308E-AE3	0.8	9.525	9.525	3.97	●	●
	120404E-AE3	0.4	12.7	12.7	4.76	○	●
	120408E-AE3	0.8	12.7	12.7	4.76	●	●
	120412E-AE3	1.2	12.7	12.7	4.76	●	●
	TCMT 090204E-HW2	0.4	5.56	9.63	2.38	●	●
	110202E-HW2	0.2	6.35	11.0	2.38	●	●
	110204E-HW2	0.4	6.35	11.0	2.38	●	●
	110208E-HW2	0.8	6.35	11.0	2.38	●	●
	16T304E-HW2	0.4	9.525	16.5	3.97	●	●
	16T308E-HW2	0.8	9.525	16.5	3.97	●	●
	TCMT 090204E-HE3	0.4	5.56	9.63	2.38	●	●
	090208E-HE3	0.8	5.56	9.63	2.38	●	●
	110204E-HE3	0.4	6.35	11.0	2.38	●	●
	110208E-HE3	0.8	6.35	11.0	2.38	●	●
	16T304E-HE3	0.4	9.525	16.5	3.97	●	●
	16T308E-HE3	0.8	9.525	16.5	3.97	●	●
	16T312E-HE3	1.2	9.525	16.5	3.97	○	○

● Stocked ○ Non-stocked

Negative Insert List

Insert	Product code	Size(mm)				Grade	
		r	d	l	s	EC211D	EC511D
	TCMT 090204E-AE3	0.4	5.56	9.63	2.38	●	●
	090208E-AE3	0.8	5.56	9.63	2.38	●	●
	110204E-AE3	0.4	6.35	11.0	2.38	●	●
	110208E-AE3	0.8	6.35	11.0	2.38	●	●
	16T304E-AE3	0.4	9.525	16.5	3.97	●	●
	16T308E-AE3	0.8	9.525	16.5	3.97	●	●
	16T312E-AE3	1.2	9.525	16.5	3.97	●	●
	VBMT 110304E-HW2	0.4	6.35	11.07	3.18	●	●
	110308E-HW2	0.8	6.35	11.07	3.18	●	●
	160402E-HW2	0.2	9.525	16.61	4.76	●	●
	160404E-HW2	0.4	9.525	16.61	4.76	●	●
	v 160408E-HW2	0.8	9.525	16.61	4.76	●	●

Insert	Product code	Size(mm)				Grade	
		r	d	l	s	EC211D	EC511D
	VCMT 160404E-HW2	0.4	9.525	16.61	4.76	●	●
	160408E-HW2	0.8	9.525	16.61	4.76	●	●
	VCMT 110304E-HE3	0.4	6.35	11.07	3.18	●	●
	110308E-HE3	0.8	6.35	11.07	3.18	●	●
	160404E-HE3	0.4	9.525	16.61	4.76	●	●
	160408E-HE3	0.8	9.525	16.61	4.76	●	●
	160412E-HE3	1.2	9.525	16.61	4.76	○	○
	VBMT 160404E-AE3	0.4	9.525	16.61	4.76	●	●
	160408E-AE3	0.8	9.525	16.61	4.76	●	●
	160412E-AE3	1.2	9.525	16.61	4.76	●	●

● Stocked ○ Non-stocked