

Expanded
Inserts

CVD Coated Grade for Cast Iron Milling

MC5020

Globally proven black super-smooth coating, a breakthrough for cast iron machining.

■ Ensures stable, reliable machining to cover all cast iron milling applications.



NEW

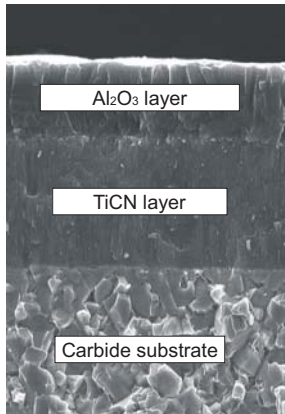
MC5020

CVD Coated Grade for Cast Iron Milling

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Features

- MC5020 has excellent wear, chipping and thermal crack resistance and prevents the problems usually associated with machining cast irons over prolonged periods.



Structure of MC5020

Improved wear resistance

The micro-grain wear resistant Al_2O_3 and fibrous TiCN layers deliver excellent wear resistance when milling a wide range of cast irons.

Improved fracture resistance

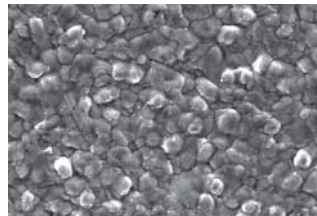
Use of a specially developed cemented carbide that provides superior resistance to fracture and thermal cracking prevents the cutting edge from sudden fracturing.

Reduced abnormal damage

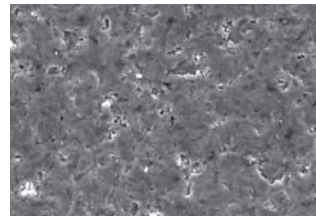
An extremely smooth black super-smooth coating prevents abnormal damage such as weld chipping.

Black super-smooth coating

Comparison of Coating Surface



Conventional coating



Black super-smooth coating

Application Range

MC5020 is the first recommendation for cast iron milling. Offers high wear resistance and superior fracture resistance over a wide application area.



Recommended Cutting Conditions

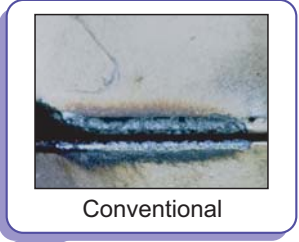
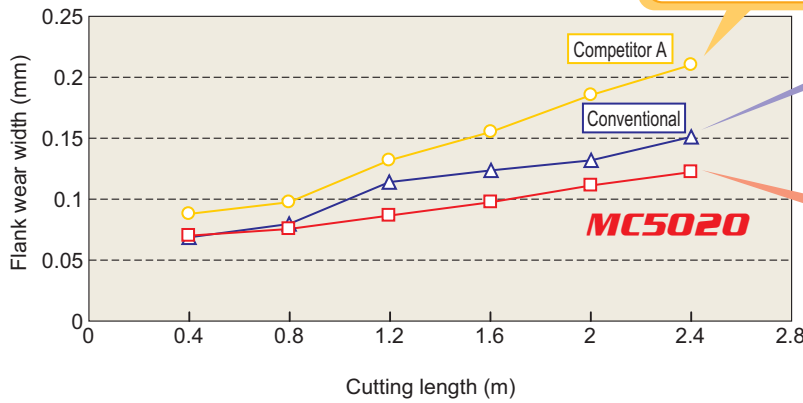
	Work Material	Tensile Strength	Cutting Speed (m/min)	Feed per Tooth (mm/tooth)
K	Cast Iron	250–350MPa	200 (100–250)	0.2 (0.1–0.3)
		≤450MPa	200 (100–250)	0.2 (0.1–0.3)
	Ductile Cast Iron	500–800MPa	110 (80–150)	0.2 (0.1–0.3)

Cutting Performance

Wear Resistance

MC5020 delivers excellent wear resistance when machining ductile cast iron.

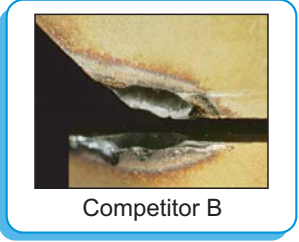
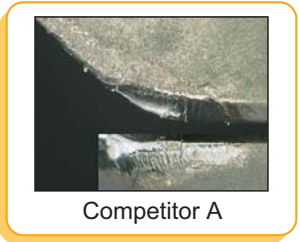
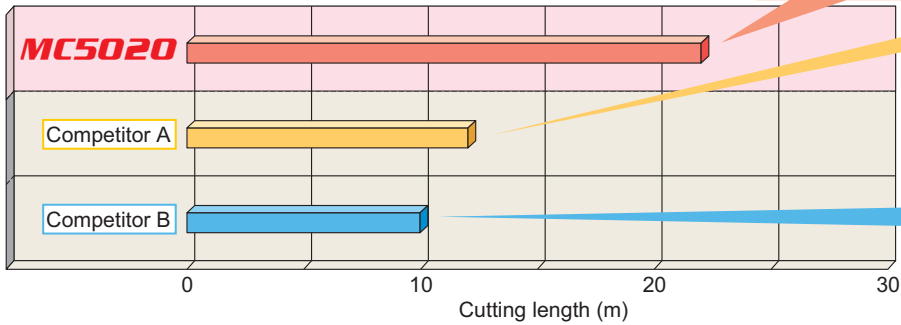
<Cutting Conditions>
 Workpiece : JIS FCD700
 Cutting speed : 250m/min
 Feed : 0.3mm/tooth
 Depth of Cut : 1.5mm
 Dry cutting



Fracture and Chipping Resistance

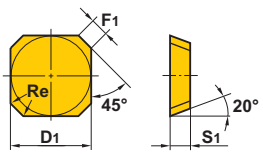
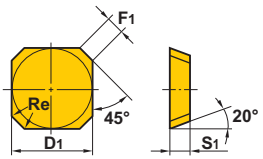
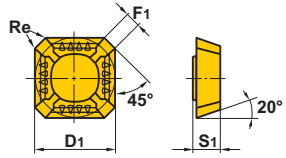
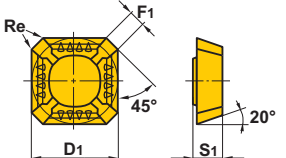
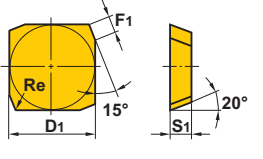
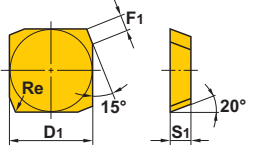
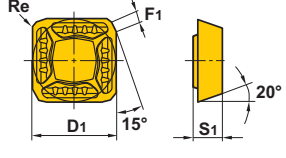
MC5020 displays exceptional fracture and chipping resistance with a highly reliable cutting edge!

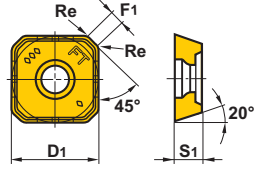
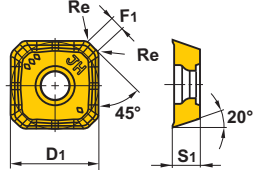
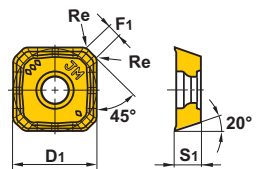
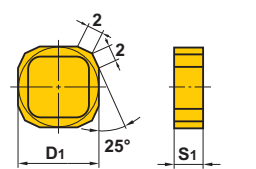
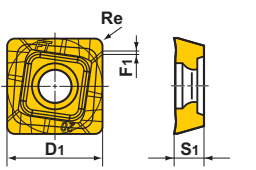
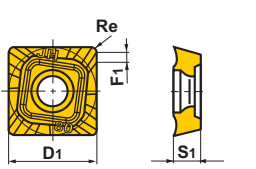
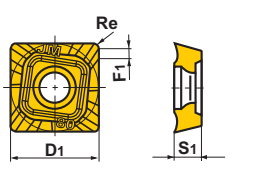
<Cutting Conditions>
 Workpiece : JIS FC300 (Slit material)
 Cutting speed : 500m/min
 Feed : 0.3mm/tooth
 Depth of Cut : 0.5mm
 Dry cutting



Inserts

Honing E:Round S:Chamfer + Round T:Chamfer

Cutter Type Insert Sharp	Order Number	Class	Honing	Stock	Dimensions (mm)				Geometry
					D1	S1	F1	Re	
SE445	SEEN1203AFSN1	E	S	●	12.7	3.18	1.4	1.0	
SE545	SEEN1504AFSN1	E	S	●	15.875	4.76	1.4	1.0	
SE445	SEER1203AFEN-JS	E	E	●	12.7	3.18	1.4	1.0	
SE545	SEER1504AFEN-JS	E	E	●	15.875	4.76	1.4	1.0	
SE415	SEEN1203EFSR1	E	S	●	12.7	3.18	1.4	1.0	
SE515	SEEN1504EFSR1	E	S	●	15.875	4.76	1.4	1.0	
SE415	SEER1203EFER-JS	E	E	●	12.7	3.18	1.4	1.0	


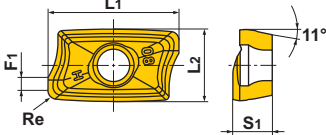

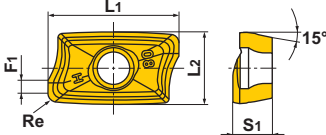

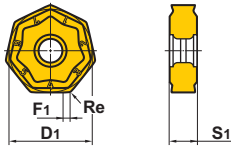

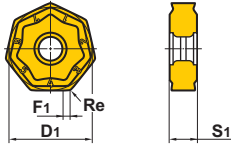

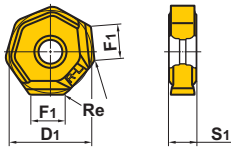
Cutter Type Insert Sharp	Order Number	Class	Honing	Stock	Dimensions (mm)				Geometry
					D ₁	S ₁	F ₁	Re	
ASX445	SEMT13T3AGSN-FT	M	S	●	13.4	3.97	1.9	1.5	
ASX445	SEMT13T3AGSN-JH	M	S	●	13.4	3.97	1.9	1.5	
ASX445	SEMT13T3AGSN-JM	M	S	●	13.4	3.97	1.9	1.5	
BN425	SNMF43B2G	M	E	●	12.7	4.8	—	—	
ASX400	SOMT12T320PEER-FT	M	E	●	12.7	3.97	0.5	2.0	
ASX400	SOMT12T308PEER-JH	M	E	●	12.7	3.97	1.4	0.8	
ASX400	SOMT12T308PEER-JM	M	E	●	12.7	3.97	1.4	0.8	

MC5020

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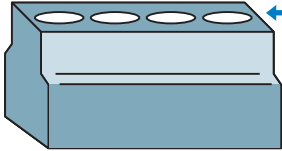
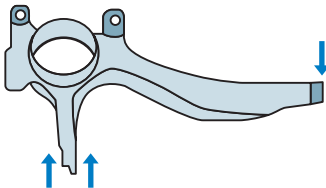
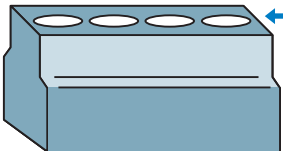
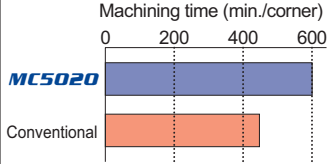
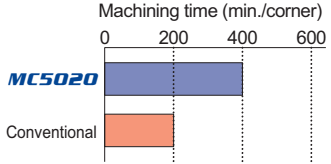
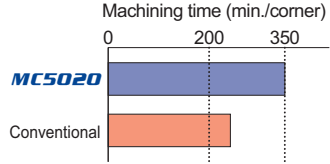
Honing E:Round S:Chamfer + Round T:Chamfer

Cutter Type Insert Sharp	Order Number	Class	Honing	Stock	Dimensions (mm)				Geometry
					D1	S1	F1	Re	
	SNMN120408	M	E	●	12.7	4.78	—	0.8	
	120412	M	E	●	12.7	4.78	—	1.2	
FBP415	SPEN1203EEER1	E	E	●	12.7	3.175	1.4	—	
	1203EEEL1	E	E	●	12.7	3.175	1.4	—	
	SPNN1203EEER1	N	E	●	12.7	3.175	1.4	—	
FBP415	SPER1203EEER-JS	E	E	●	12.7	3.175	1.4	—	<p>Right hand tool holder shown.</p>
Corner Angle 15°	SPKN1203EDR	K	T	●	12.7	3.18	1.4	—	
	SPMN120408	M	E	●	12.7	4.76	—	0.8	
	120412	M	E	●	12.7	4.76	—	1.2	
NSE300	TEEN1603PESR1	E	S	●	9.525	3.175	1.4	0.4	
NSE400	TEEN2204PESR1	E	S	●	12.7	4.76	1.4	1.0	

Cutter Type Insert Sharp	Order Number	Class	Honing	Stock	Dimensions (mm)						Geometry
					L1	L2	D1	S1	F1	Re	
NEW APX3000 (H Breaker) 	AOMT123604PEER-H	M	E	●	12	6.6	—	3.6	1.6	0.4	
	123608PEER-H	M	E	●	12	6.6	—	3.6	1.2	0.8	
NEW APX4000 (H Breaker) 	AOMT184808PEER-H	M	E	●	18	9	—	4.8	1.4	0.8	
AHX640W (MK Breaker) 	NNMU200608ZEN-MK The inserts can be used with both right and left hand cutters.	M	E	●	—	—	20	6.55	1.0	0.8	
AHX640W (HK Breaker) 	NNMU200608ZEN-HK The inserts can be used with both right and left hand cutters.	M	E	●	—	—	20	6.55	1.0	0.8	
AHX640W (Wipper) 	WNEU2006ZEN7C-WK The inserts can be used with both right and left hand cutters.	E	E	●	—	—	20	6.55	7.4	0.8	

MC5020

Application Examples

Insert (Grade)		SPMN120408(MC5020)	SNMN120412(MC5020)	SPEN1203EEER1(MC5020)
Workpiece		Cast Iron (JIS FCA) 	Ductile Cast Iron (JIS FCD400) 	Cast Iron (JIS FC250) 
		Roughing of all faces	Roughing	Roughing
Component		Cylinder block	Steering knuckle	Cylinder block
Cutting Conditions	Cutting Speed (m/min)	124	500	300
	Feed per Tooth (mm/tooth)	0.05	0.12	0.12
	Depth of Cut (mm)	3.0	3.5	5-7
Coolant		Wet cutting	Dry cutting	Dry cutting
Results		<p>Machining time (min./corner)</p>  <p>MC5020 achieved longer tool life than a conventional grade.</p>	<p>Machining time (min./corner)</p>  <p>MC5020 achieved longer tool life than a conventional grade.</p>	<p>Machining time (min./corner)</p>  <p>MC5020 achieved longer tool life than a conventional grade.</p>

For Your Safety

- Don't handle inserts and chips without gloves.
- Please machine within the recommended application range and exchange expired tools with new ones in advance of breakage.
- Please use safety covers and wear safety glasses.
- When using compounded cutting oils, please take fire precautions.
- When attaching inserts or spare parts, please use only the correct wrench or spanner.
- When using rotating tools, please make a trial run to check run-out, vibration and abnormal sounds etc.

MITSUBISHI MATERIALS CORPORATION

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Area Marketing & Operations Dept.

KFC bldg., 8F, 1-6-1, Yokoami, Sumida-ku, Tokyo 130-0015, Japan

TEL +81-3-5819-8772 FAX +81-3-5819-8774