

CVD Coated Grade for Cast Iron Milling

**MC5020**

# Breakthrough for cast iron machining.

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

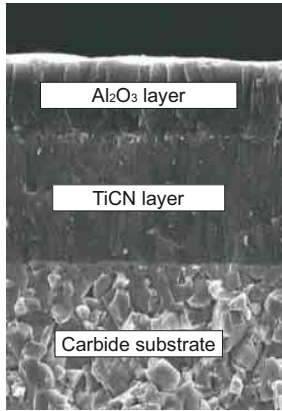


# CVD Coated Grade for Cast Iron Milling

# MC5020

## Features

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



Structure of MC5020

### Improved wear resistance

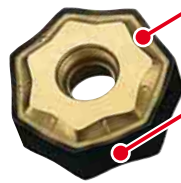
The micro-grain wear resistant  $Al_2O_3$  and fibrous TiCN layers deliver excellent wear resistance when milling a wide range of cast irons.

### 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.



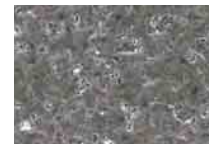
Gold rake face to ease spent corner recognition.

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

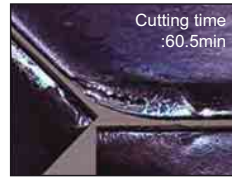
Work Material	Tensile Strength	Cutting Speed (SFM)	Feed per Tooth (IPT)
K Cast Iron	250—350MPa	985 (330—1150)	.010 (.004— .016)
	≤450MPa	655 (330—820)	.008 (.004— .012)
Ductile Cast Iron	500—800MPa	555 (260—655)	.008 (.004— .012)

# Cutting Performance

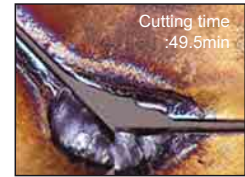
## Wear Resistance

MC5020 delivers excellent wear resistance when machining cast iron.

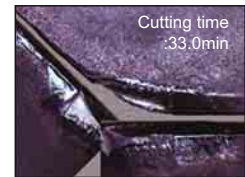
<Cutting conditions>  
 Workpiece : AISI No 45B  
 (Semi-heavy interrupted cutting)  
 Cutting speed: 1640 SFM  
 Feed : .012 IPT  
 Depth of cut : .020 inch  
 Dry cutting



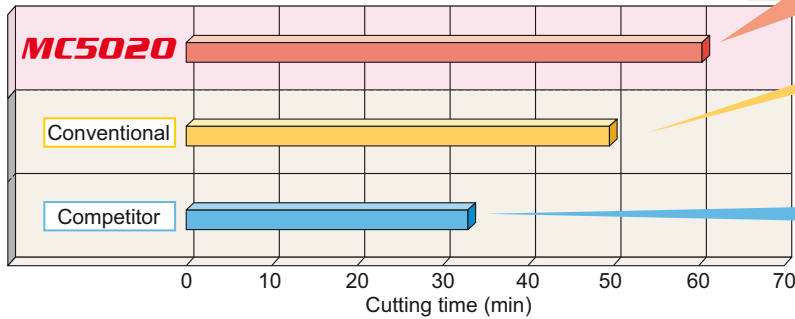
**MC5020**



Conventional



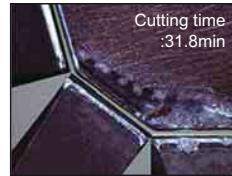
Competitor



## Fracture and Chipping Resistance

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

<Cutting conditions>  
 Workpiece : AISI 100-70-03  
 (Heavy interrupted cutting)  
 Cutting speed: 490 SFM  
 Feed : .008 IPT  
 Depth of cut : .059 inch  
 Dry cutting



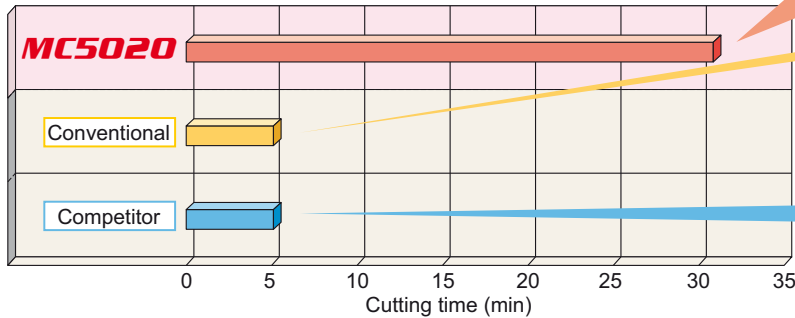
**MC5020**



Conventional




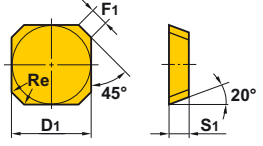

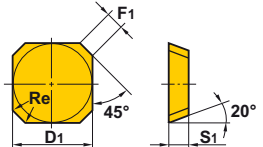

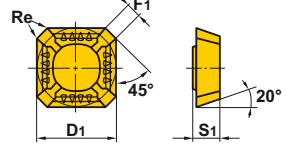

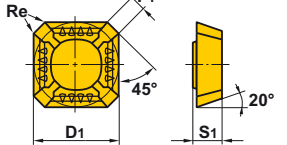

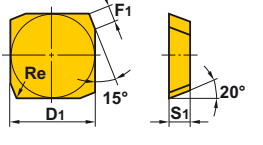

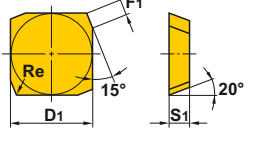

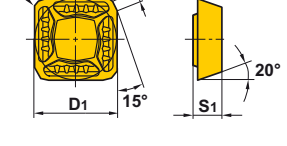
Competitor



# MC5020

## Inserts

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

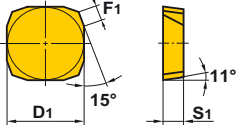

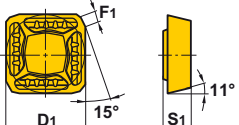


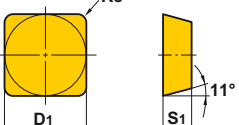


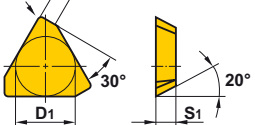
Cutter Type Insert Sharp	Order Number	(ISO) Number	Class	Honing	Stock	Dimensions (inch)				Geometry
						D1	S1	F1	Re	
SE445 	SEEN42AFSN1	SEEN1203AFSN1	E	S	●	.500	.125	.055	.039	
SE545 	SEEN53AFSN1	SEEN1504AFSN1	E	S	●	.625	.187	.055	.039	
SE445 	SEER42AFEN-JS	SEER1203AFEN-JS	E	E	●	.500	.125	.055	.039	
SE545 	SEER53AFEN-JS	SEER1504AFEN-JS	E	E	★	.625	.187	.055	.039	
SE415 	SEEN42EFSR1	SEEN1203EFSR1	E	S	★	.500	.125	.055	.039	
SE515 	SEEN53EFSR1	SEEN1504EFSR1	E	S	★	.625	.187	.055	.039	
SE415 	SEER42EFER-JS	SEER1203EFER-JS	E	E	★	.500	.187	.055	.039	


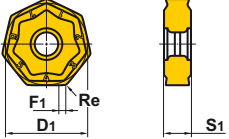

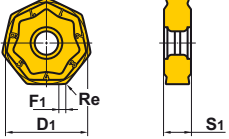

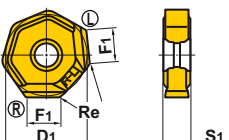
Cutter Type Insert Sharp	Order Number	(ISO) Number	Class	Honing	Stock	Dimensions (inch)				Geometry
						D1	S1	F1	Re	
ASX445 	SEMT13T3AGSN-FT	SEMT13T3AGSN-FT	M	S	●	.528	.156	.078	.059	
ASX445 	SEMT13T3AGSN-JH	SEMT13T3AGSN-JH	M	S	●	.528	.156	.078	.059	
ASX445 	SEMT13T3AGSN-JM	SEMT13T3AGSN-JM	M	S	●	.528	.156	.078	.059	
ASX400 	SOMT12T320PEER-FT	SOMT12T320PEER-FT	M	E	●	.500	.156	.020	.079	
ASX400 	SOMT12T308PEER-JH	SOMT12T308PEER-JH	M	E	●	.500	.156	.055	.031	
ASX400 	SOMT12T308PEER-JM	SOMT12T308PEER-JM	M	E	●	.500	.156	.055	.031	

# MC5020

## Inserts

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

Cutter Type Insert Sharp	Order Number	(ISO) Number	Class	Honing	Stock	Dimensions (inch)				Geometry
						D1	S1	F1	Re	
	<b>SNMN432</b>	<b>SNMN120408</b>	M	E	★	.500	.187	—	.031	
	<b>433</b>	<b>120412</b>	M	E	★	.500	.187	—	.047	
	<b>SPEN42EEER1</b>	<b>SPEN1203EEER1</b>	E	E	●	.500	.125	.055	—	 Right hand tool holder shown.
	<b>42EEEL1</b>	<b>1203EEEL1</b>	E	E	●	.500	.125	.055	—	
	<b>SPNN42EEER1</b>	<b>SPNN1203EEER1</b>	N	E	●	.500	.125	.055	—	
	<b>SPER42EEER-JS</b>	<b>SPER1203EEER-JS</b>	E	E	●	.500	.125	.055	—	
Corner Angle 15° 	<b>SPKN42EDR</b>	<b>SPKN1203EDR</b>	K	T	●	.500	.125	.055	—	
	<b>SPMN432</b>	<b>SPMN120408</b>	M	E	★	.500	.187	—	.031	
	<b>433</b>	<b>120412</b>	M	E	★	.500	.187	—	.047	
	<b>TEEN32PESR1</b>	<b>TEEN1603PESR1</b>	E	S	★	.375	.125	.055	.016	
	<b>TEEN43PESR1</b>	<b>TEEN2204PESR1</b>	E	S	★	.500	.187	.055	.039	


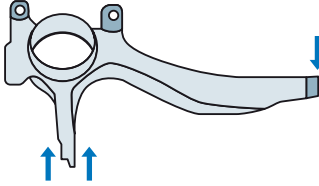
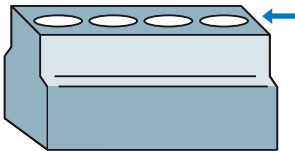
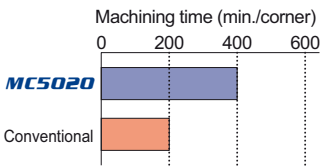
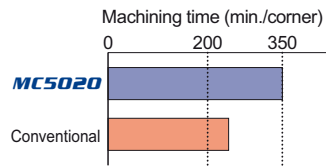
Cutter Type Insert Sharp	Order Number	(ISO) Number	Class	Honing	Stock	Dimensions (inch)				Geometry
						D1	S1	F1	Re	
AHX640W (MK Breaker) 	* NNMU200608ZEN-MK	* NNMU200608ZEN-MK	M	E	●	.787	.258	.039	.031	
AHX640W (HK Breaker) 	* NNMU200608ZEN-HK	* NNMU200608ZEN-HK	M	E	●	.787	.258	.039	.031	
AHX640W (Wiper) 	* WNEU2006ZEN7C-WK 2RH Corners & 2LH Corners	* WNEU2006ZEN7C-WK	E	E	●	.787	.258	.291	.031	

\*The inserts can be used with both right and left hand cutters.



# MC5020

## Application Examples

Insert (Grade)	NNMU200608ZEN-MK(MC5020)	SNMN433(MC5020)	SPEN42EEER1(MC5020)	
Workpiece	<p>AISI No35B</p>  <p>AHX640W Type Cutter</p> <p>Roughing</p>	<p>Ductile Cast Iron (AISI 60-40-18)</p>  <p>Roughing</p>	<p>Cast Iron (AISI No 35B)</p>  <p>Roughing</p>	
Component	Housing case	Steering knuckle	Cylinder block	
Cutting Conditions	Cutting Speed (SFM)	490	1640	985
	Feed per Tooth (IPT)	.004	.005	.005
	Depth of Cut (inch)	.118	.138	.197-.276
	Coolant	Dry cutting	Dry cutting	Dry cutting
Results	<p>In comparison with a conventional 8 corner insert that fractured while machining an unstable component, the AHX640W gave double tool life. In combination with the use of the extra cutting edges a substantial saving can be made.</p>	<p>Machining time (min./corner)</p>  <p><b>MC5020</b> achieved longer tool life than a conventional grade.</p>	<p>Machining time (min./corner)</p>  <p><b>MC5020</b> 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 driver. ●When using rotating tools, please make a trial run to check run-out, vibration and abnormal sounds etc.

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