MITSUBISHI MATERIALS

MC5020

CVD COATED GRADE FOR CAST IRON MILLING





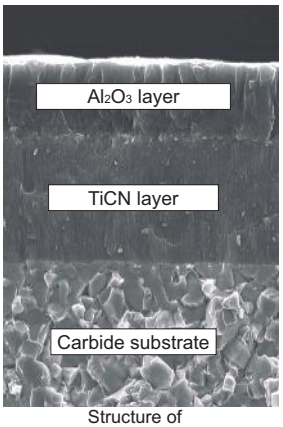
TOOL NEWS **B170A**

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

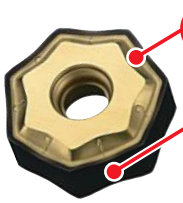
The micro-grain wear resistant Al_2O_3 and fibrous TiCN layers deliver excellent wear resistance when milling a wide range of cast irons.

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

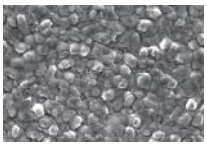
An extremely smooth black super-smooth coating prevents abnormal damage such as weld chipping.



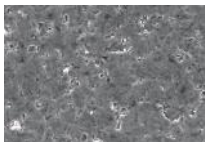
Gold rake face to ease spent corner recognition.

Black super-smooth coating

●Comparison of Coating Surface



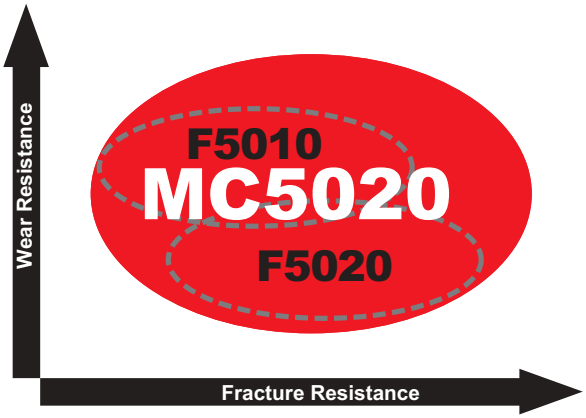
Conventional coating



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.



Reccomended Cutting Conditions

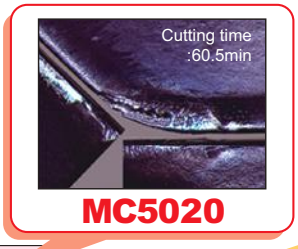
	Work Material	Tensile Strength	Cutting Speed (SFM)	Feed per Tooth (IPT)
K	Cast Iron	250—350MPa	985 (330—1150)	.010 (.004—.016)
	Ductile Cast Iron	≤450MPa	655 (330—820)	.008 (.004—.012)
		500—800MPa	555 (260—655)	.008 (.004—.012)

Cutting Performance

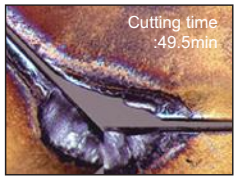
Wear Resistance

MC5020 delivers excellent wear resistance when machining cast iron.

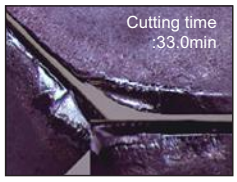
<Cutting conditions>
Workpiece : AISI No 45B
(Semi-heavy interrupted cutting)
Cutting speed: 1640 SFM
Feed : .012 IPT
Depth of cut : .020 inch
Dry cutting



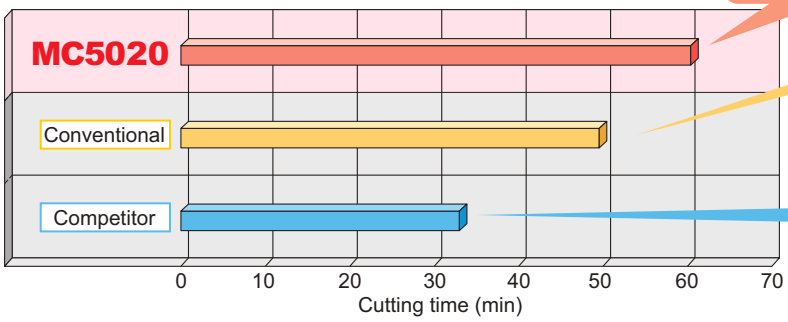
MC5020



Conventional



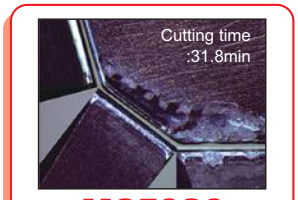
Competitor



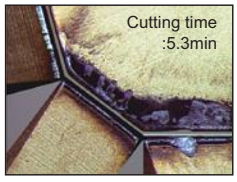
Fracture and Chipping Resistance

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

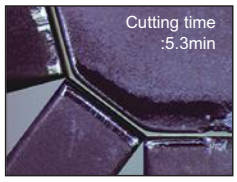
<Cutting conditions>
Workpiece : AISI 100-70-03
(Heavy interrupted cutting)
Cutting speed: 490 SFM
Feed : .008 IPT
Depth of cut : .059 inch
Dry cutting



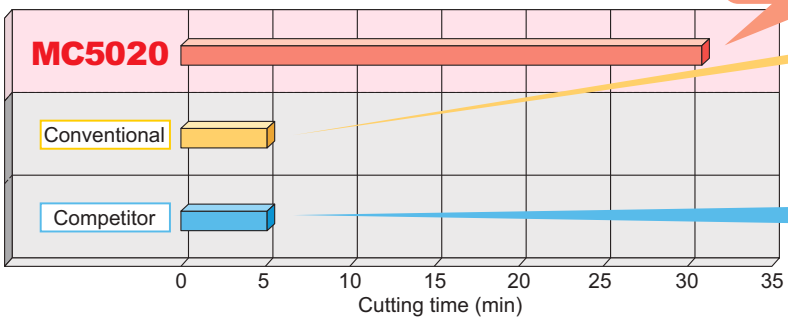
MC5020



Conventional



Competitor

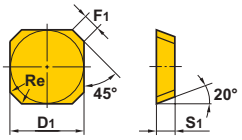
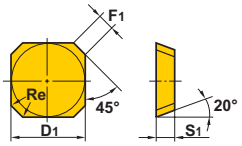
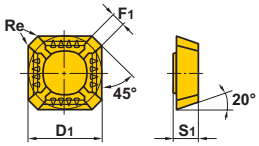
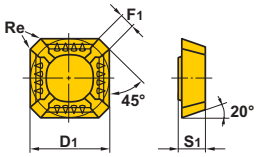
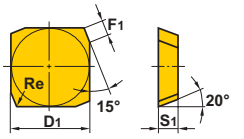
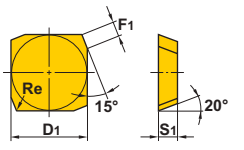
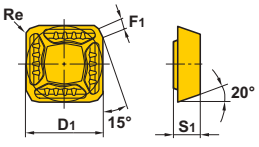


CVD Coated Grade for Cast Iron Milling

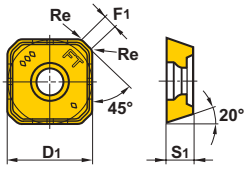
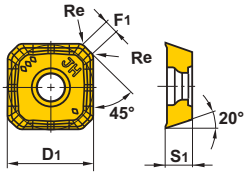
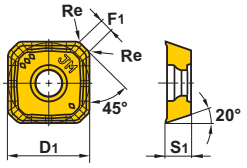
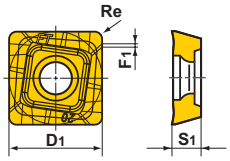
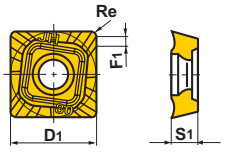
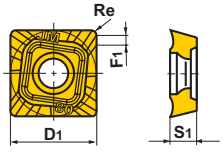
MC5020

Inserts

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

Cutter Type Insert Sharp	Order Number	(ISO) Number	Class	Honing	Stock	Dimensions (inch)				Geometry
						D_1	S_1	F_1	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	

● : USA Stock ★ : Inventory maintained in Japan.

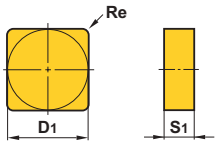
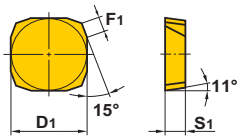
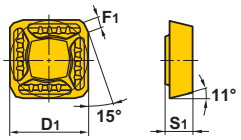
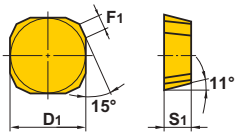
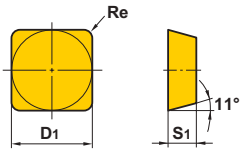
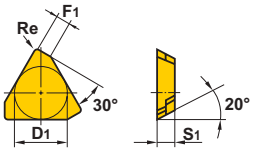
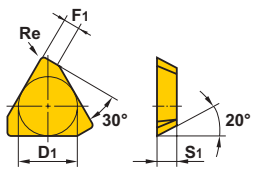
Cutter Type Insert Sharp	Order Number	(ISO) Number	Class	Honing	Stock	Dimensions (inch)				Geometry
						D1	S1	F1	Re	
ASX445 	SEMT13T3AGSN-FT	SEMT13T3AGSN-FT	M	S	●	.528	.156	.078	.059	
ASX445 	SEMT13T3AGSN-JH	SEMT13T3AGSN-JH	M	S	●	.528	.156	.078	.059	
ASX445 	SEMT13T3AGSN-JM	SEMT13T3AGSN-JM	M	S	●	.528	.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	

CVD Coated Grade for Cast Iron Milling

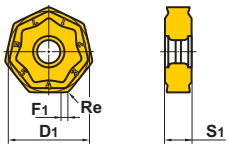
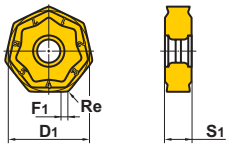
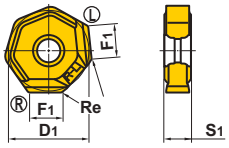
MC5020

Inserts

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

Cutter Type Insert Sharp	Order Number	(ISO) Number	Class	Honing	Stock	Dimensions (inch) D1	S1	F1	Re	Geometry
	**SNMN432**	**SNMN120408**	M	E	★	.500	.187	—	.031	
	433	**120412**	M	E	★	.500	.187	—	.047	
FBP415 	**SPEN42EEER1**	**SPEN1203EEER1**	E	E	●	.500	.125	.055	—	 Right hand tool holder shown.
	42EEEL1	**1203EEEL1**	E	E	●	.500	.125	.055	—	
	SPNN42EEER1	**SPNN1203EEER1**	N	E	●	.500	.125	.055	—	
FBP415 	**SPER42EEER-JS**	**SPER1203EEER-JS**	E	E	●	.500	.125	.055	—	
Corner Angle 15° 	**SPKN42EDR**	**SPKN1203EDR**	K	T	●	.500	.125	.055	—	
	**SPMN432**	**SPMN120408**	M	E	★	.500	.187	—	.031	
	433	**120412**	M	E	★	.500	.187	—	.047	
NSE300 	**TEEN32PESR1**	**TEEN1603PESR1**	E	S	★	.375	.125	.055	.016	
NSE400 	**TEEN43PESR1**	**TEEN2204PESR1**	E	S	★	.500	.187	.055	.039	

● : USA Stock ★ : Inventory maintained in Japan.

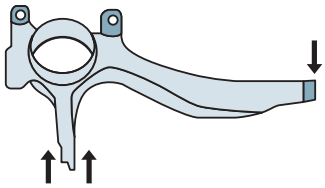
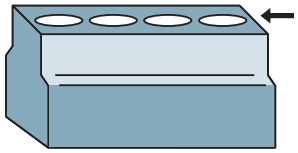
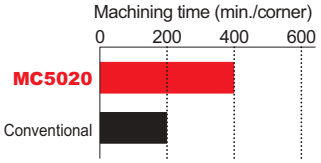
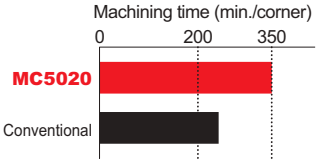
Cutter Type Insert Sharp	Order Number	(ISO) Number	Class	Honing	Stock	Dimensions (inch)				Geometry
						D_1	S_1	F_1	Re	
AHX640W (MK Breaker) 	* **NNMU200608ZEN-MK**	* **NNMU200608ZEN-MK**	M	E	●	.787	.258	.039	.031	
AHX640W (HK Breaker) 	* **NNMU200608ZEN-HK**	* **NNMU200608ZEN-HK**	M	E	●	.787	.258	.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.

CVD Coated Grade for Cast Iron Milling

MC5020

Application Examples

Insert (Grade)		NNMU200608ZEN-MK(MC5020)	SNMN433(MC5020)	SPEN42EEER1(MC5020)
Workpiece		AISI No35B  AHX640W Type Cutter Roughing	Ductile Cast Iron (AISI 60-40-18)  Roughing	Cast Iron (AISI No 35B)  Roughing
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		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.	Machining time (min./corner)  **MC5020** achieved longer tool life than a conventional grade.	Machining time (min./corner)  **MC5020** achieved longer tool life than a conventional grade.

Memo

MTEC

MACHINING TECHNOLOGY AND EDUCATION CENTER

Welcome to our new world-class Machining Technology and Education Center (MTEC) in Mooresville, NC providing year round support and services to North America.



ABOUT MTEC

TOOLING PROPOSALS & EVALUATION

We will review your current processes or outline a new process. From this review, we will improve productivity, analyze programming methods and output a solution with programming, tooling and time savings.

MACHINING SIMULATION

Using the latest CAD/CAM software and our cutting tool experience, we will outline a new process using proper machining techniques to maximize tool life and productivity.

TECHNICAL SUPPORT

Dedicated local professionals to answer any of your order, product or technical questions.

TRAINING

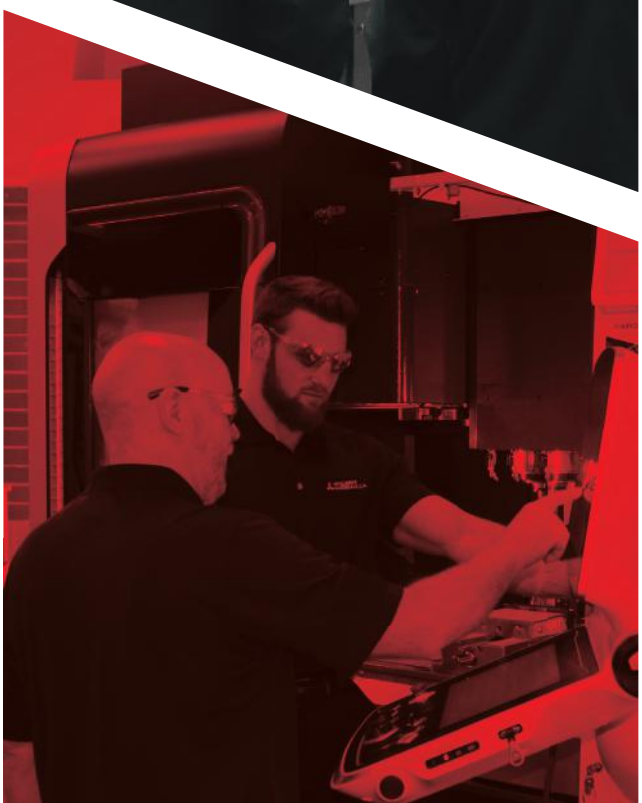
We are excited to offer several levels of training with goals to reach our highest level--Craftsman Machining Technology. At MTEC NC, we will train using a combination of classroom and hands-on machine time to develop skills and real-world understanding of materials, tools and applications. In addition to multi-day courses, we will have Machining Technology skills seminars, as well as seminars from our partners to complement our apprentice level courses, our journeyman courses, and up to our craftsman level courses.

PROCESS IMPROVEMENTS

Review of the complete part processing and recommend changes of speed, feed, new tooling, reduction of passes, modifying programming and other solutions to reduce cycle time, save money and be proactive.







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mmusnewsstand.com/register

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- Basic Drilling
- Basic Milling
- Basic Turning
- Advanced Drilling
- Advanced End Milling
- Advanced Turning
- Basic Threading
- Advanced Face Milling
- Basic Workpiece Materials
- Tool Grades
- Advanced Workpiece Materials

TRAINING COURSES

Programs are designed for several levels of skill development – from basic understanding to advance manufacturing with digital solutions, complementing to your valued experience in CNC machining environment. Participate in machining demonstrations with Mitsubishi Materials' skilled engineers. Discover methods to reduce setup and cycle time, optimize programs and enhance your knowledge base.

Information on course schedule,
course description, and accommodations

MTECTRAINING.INFO

Follow the QR Code for a virtual facility tour

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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.

www.mmc-carbide.com/us

Tools specifications subject to change without notice.

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