

MX3030

NEW CERMET GRADE FOR A WIDER RANGE OF APPLICATIONS



MX3030

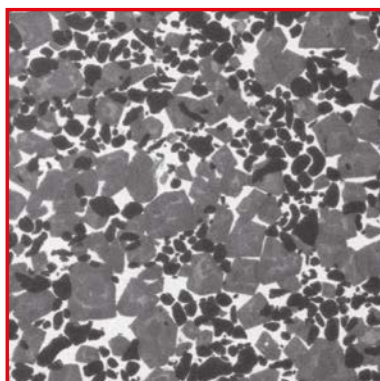
NEW CERMET GRADE FOR A WIDER RANGE OF APPLICATIONS

Enables excellent surface finishes even at high efficiency machining conditions.

IMPROVED MACHINING EFFICIENCY BY MAINTAINING EXCELLENT SURFACE FINISHES EVEN AT LARGE DEPTHS OF CUT

Cermet has a low affinity with iron, excellent thermal stability and oxidation resistance, and is therefore a suitable grade for finishing. However, it does not have the same bonding strength as cemented carbide thereby creating the challenge to compensate for fracture resistance.

MX3030 solves the challenge with higher thermal conductivity than conventional products and has excellent thermal cracking resistance. Therefore, it is possible to suppress wear and maintain high quality surface finishes. Also, since MX3030 has excellent toughness, improved machining efficiency even at large depths of cut can be realised.



MX3030

A special alloy is used for the binder material



Fracture resistance properties increased

High hardness Ti compound particles are used in the substrate



High wear resistance properties

MILD STEEL DIN ST37-2 SURFACE FINISH COMPARISON

Material	DIN ST37-2
DC (mm)	125
Vc (m/min)	200
fz (mm/t)	0.1
ap (mm)	2.0
ae (mm)	100
Cutting mode	Dry cutting, 8 Inserts, Centre cut, After 8 m cutting work



MX3030



Conventional

MX3030

INSERTS

P	Steel	◆
M	Stainless steel	◆
K	Cast iron	◆

Please note that the cutting conditions differ depending on multiple factors, for more details refer to the recommended cutting conditions.

Edge preparation: E: Round S: Chamfer + Round T: Chamfer

Order number	Hand	Class	Edge preparation	MX3030	IC	L	LE	W1	S	BS	RE	Geometry
SNGU140812ANER-L	R	G	E	●	14.0	—	—	—	8.4	1.5	1.2	WSX445
SNGU140812ANER-M	R	G	E	●								
SNMU140812ANER-M	R	M	E	●								
SNGU140812ANEL-L	L	G	E	★								
SNGU140812ANEL-M	L	G	E	★								
SNMU140812ANEL-M	L	M	E	★								
NEW AOMT123604PEER-M	R	M	E	●	—	12.0	10	6.6	3.6	1.6	0.4	APX3000
NEW AOMT123608PEER-M	R	M	E	●	—	12.0	10	6.6	3.6	1.2	0.8	
SEET13T3AGEN-JL	—	E	E	●	13.4	—	—	—	3.97	1.9	1.5	ASX445
SEMT13T3AGSN-JM	—	M	S	●	13.4	—	—	—	3.97	1.9	1.5	
SOET12T308PEER-JL	R	E	E	●	12.7	—	—	—	3.97	1.4	0.8	ASX400
SOMT12T308PEER-JM	R	M	E	●	12.7	—	—	—	3.97	1.4	0.8	
OEMX12T3ETR1	R	M	T	★	12.7	—	—	—	3.97	1.0	—	OCTACUT
OEMX1705ETR1	R	M	T	★	17.0	—	—	—	5.0	1.4	—	
RPMW10T3M0E	—	M	E	★	10.0	—	—	—	3.97	—	—	BRP
RPMW1204M0E	—	M	E	★	12.0	—	—	—	4.76	—	—	

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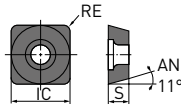
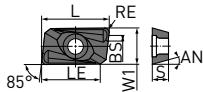
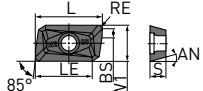
[10 inserts in one case]



MX3030 – INSERTS

P	Steel	◆	Please note that the cutting conditions differ depending on multiple factors, for more details refer to the recommended cutting conditions.
M	Stainless steel	◆	
K	Cast iron	◆	

Edge preparation: E: Round S: Chamfer + Round T: Chamfer

Order number	Hand	Class	Edge preparation	MX3030	IC	L	LE	W1	S	BS	RE	Geometry
SPMW090304	—	M	T	★	9.525	—	—	—	3.18	—	0.4	CESP, SFSP, CGSP  
SPMW090308	—	M	T	★	9.525	—	—	—	3.18	—	0.8	
SPMW120304	—	M	T	★	12.7	—	—	—	3.18	—	0.4	
SPMW120308	—	M	T	●	12.7	—	—	—	3.18	—	0.8	
APMT1135PDER-H1	R	M	E	★	—	11.25	9	6.35	3.5	1.5	0.4	BAP300  
APMT1135PDER-H2	R	M	E	★	—	11.25	9	6.35	3.5	1.2	0.8	
APMT1135PDER-M2	R	M	E	★	—	11.18	9	6.35	3.5	1.2	0.8	
APMT1604PDER-H2	R	M	E	★	—	17.11	14	9.525	4.76	1.4	0.8	BAP400, SRM2  
APMT1604PDER-M2	R	M	E	★	—	17.10	14	9.525	4.76	1.4	0.8	

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[10 inserts in one case]



MX3030

RECOMMENDED CUTTING CONDITIONS

Material	Properties	Cutter type	Inserts	Vc	ft	
						
P Mild steel	≤180 HB	WSX445	L, M	180 [130 – 230]	0.15	
		APX3000	M	160 [120 – 200]	0.15	
		ASX445	JL	180 [130 – 250]	0.15	
		ASX445	JM	180 [130 – 250]	0.2	
		ASX400	JL	180 [130 – 250]	0.15	
		ASX400	JM	180 [130 – 250]	0.18	
		OCTACUT	—	180 [100 – 250]	0.2	
		BAP	H	160 [120 – 200]	0.1	
		BRP	—	180 [130 – 250]	0.30*	
P Carbon steel Alloy steel	180 – 280 HB	WSX445	L, M	150 [120 – 180]	0.15	
		APX3000	M	140 [100 – 180]	0.15	
		ASX445	JL	150 [120 – 180]	0.15	
		ASX445	JM	150 [120 – 180]	0.2	
		ASX400	JL	150 [120 – 180]	0.13	
		ASX400	JM	150 [120 – 180]	0.15	
		OCTACUT	—	120 [80 – 160]	0.2	
		BAP	H	120 [100 – 160]	0.08	
		BRP	—	150 [120 – 180]	0.30*	
	280 – 350 HB	CESP, CFSP, CGSP	—	130 [100 – 160]	0.2	0.4
		WSX445	L, M	150 [120 – 180]	0.15	
		APX3000	M	100 [80 – 160]	0.15	
		ASX445	JL	100 [80 – 160]	0.15	
		ASX445	JM	100 [80 – 160]	0.2	
		ASX400	JL	100 [80 – 160]	0.1	
		ASX400	JM	100 [80 – 160]	0.13	
		OCTACUT	—	100 [80 – 160]	0.2	
		BAP	—	100 [80 – 160]	0.08	
M Stainless steel	≤270 HB	BRP	—	100 [80 – 160]	0.30*	
		WSX445	L, M	130 [100 – 180]	0.15	
		APX3000	M	120 [80 – 140]	0.15	
		ASX445	JL	150 [120 – 180]	0.15	
		ASX445	JM	150 [120 – 180]	0.2	
		ASX400	JL	150 [120 – 180]	0.15	
		ASX400	JM	150 [120 – 180]	0.18	
		OCTACUT	—	150 [100 – 200]	0.15	
		BAP	M	120 [80 – 140]	0.1	
K Cast iron Ductile cast iron	≤500 MPa	BRP	—	150 [120 – 180]	0.30*	
		WSX445	L, M	150 [120 – 180]	0.15	
		APX3000	M	120 [80 – 140]	0.15	
		ASX445	JL	130 [100 – 160]	0.15	
		ASX445	JM	130 [100 – 160]	0.2	
		ASX400	JL	150 [120 – 180]	0.15	
		ASX400	JM	150 [120 – 180]	0.18	
		BAP	H	100 [80 – 120]	0.1	
		BRP	—	150 [120 – 180]	0.30*	

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* BRP is the feed amount at a depth of cut of 3 mm.

1. For APX3000, the feed rate is for cutter diameter DC of 12 – 16 mm, cutting depth $a_e \leq DC \times 0.25$, and $a_p \leq 4$ mm.

MX3030

CUTTING PERFORMANCE

SURFACE FINISH COMPARISON WHEN MACHINING DIN 42CrMo4 ALLOY STEEL

The MX3030 grades produced an excellent finished surface with uniform machining marks with only a slight cloudiness.

Material	DIN 42CrMo4
Tool	ASX400-JL
Vc (m/min)	250
fz (mm/t)	0.05
ap (mm)	0.5
ae (mm)	100
Cutting mode	Dry cutting

Ra 0.5105 μm Rz 3.1582 μm



MX3030

Ra 0.5320 μm Rz 3.8950 μm



Conventional

SYMBOLS

 Recommended cutting conditions	MACHINING TYPE
NEW Completely new products or expansions released in the current Spring or Autumn product launch and are not included in the latest version of the General Catalogue.	 Roughing
NEW Products or expansions that have already been introduced in one of the previous Spring or Autumn product launches but are not included in the latest General Catalogue.	 Medium cutting
APPLICATION	 Light cutting
 Face milling	 Pre-finishing
 Chamfer milling	 Finishing
 Shoulder milling with R	 Fine-finishing
 Face milling close to a wall	TOOL MATERIAL
 Shoulder milling	 Ultra micro grain carbide Ultra micro grain carbide substrate material.
 Side milling	 Cubic boron nitride Mitsubishi Materials' original CBN material.
 Slot milling	 Ceramic For high speed efficient machining of super alloys due to the excellent high temperature strength property.
 Ramping	 High hardness powder metallurgy HSS High hardness powder metallurgy HSS substrate material.
 Pocket milling	 High grade high alloy HSS High grade high alloy HSS substrate material.
 Slot milling with R	 Cobalt high speed steel Cobalt high speed steel substrate material.
 Copy milling	 High speed steel High speed steel substrate material.
 T-Slot milling	

SYMBOLS

COATING



SMART MIRACLE coating

New smooth and dense coating technology for high efficiency milling of difficult to cut materials.



CRN coating

Newly developed CrN coating for Copper Electrodes machining.



Violet coating

Increased tool life of 2-3 times more than TiN coated products.



DP coating

New generation coating suitable for a wide range of materials.



MIRACLE coating

The original Miracle (Al,Ti)N coating. Also suitable for dry cutting.



[Al, Ti]N coating

[Al,Ti]N highly versatile application range.



[Al,Ti,Cr]N multi-layer coating

For carbon, alloy and hardened steels.



IMPACT MIRACLE coating

Single phase nano crystal coating technology has higher film hardness and heat resistance.



MIRACLE coating

The original MIRACLE (Al,Ti)N coating. Also suitable for dry cutting.



VFR coating

The [AlCrSi]N/[AlTiSi]N PVD multilayer coating is ideal for machining of extremely hard materials up to 70 HRC.



DLC coating

Hardness similar to CVD diamond coating achieved with high adhesion strength.



Diamond coating

Suitable for CFRP and CFRP-aluminium materials.



Diamond coating

Suitable for graphite machining.



Diamond coating

The original CVD diamond coating.



CVD Diamond coating

Unique multi-layer micro-grain diamond crystal control technology drastically improves wear resistance and smoothness.

CUTTING EDGE PROPERTIES



Sharp corner edge

Indicates the end mill has a sharp corner edge.



Gash land

Indicates the end mill cutting edge has a protective chamfer.



Rake angle



Helix angle

Indicates the helix angle of the end mill.



Point angle

Indicates the drill point angle.



Roughing flute geometry



Variable helix



Rounded gash



Corner angle

WEB THINNING



X type point geometry

X web thinning used at the drill point.



XR type point geometry

XR web thinning used at the drill point.



S type point geometry

Easy cutting geometry.



N type point geometry

Effective when the point web is thick.



Chipbreaker

SYMBOLS

TOLERANCES



Tolerance of taper angle
Indicates the tolerance of the taper angle.



R tolerance
Indicates the radial tolerance of a ball nose end mill.



R tolerance
Indicates the radial tolerance of the corner radius.



R tolerance
Indicates the radial tolerance of a cutter with a corner radius.



Outside diameter tolerance
Indicates the diameter tolerance of the end mill.



Peak tolerance
Indicates the tolerance for the end diameter.



Shank diameter tolerance



Shank diameter tolerance



Drill tolerance / diameter

COOLANT HOLES



External coolant



Internal coolant



Internal coolant



Centered, internal coolant hole



Radial, internal coolant holes



Internal coolant holes



Internal coolant holes

MEMO

MEMO

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