

THE NEW VALUE FRONTIER

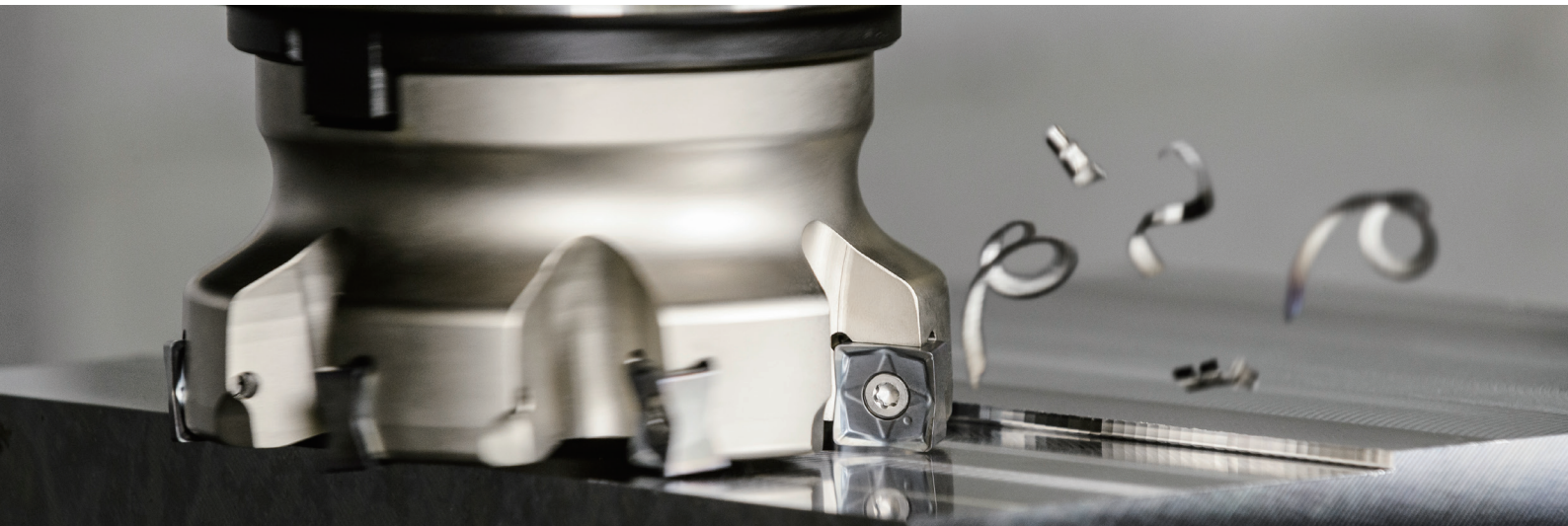


Highly Efficient Cutter with a 88°  
Cutting Edge Angle

**MFSN88**

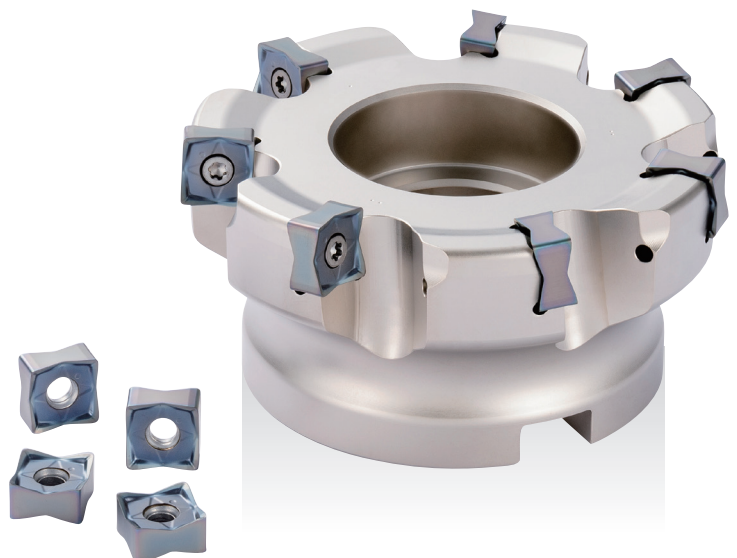
Highly Efficient Cutter with a 88° Cutting Edge Angle

# MFSN88



**Economical Inserts with 8 Cutting Edges. Reduces Cost in Shoulder Roughing**

Cost reduction in approximately 90° corner cutting  
Reduces Chattering with Low Cutting Force Design  
TN620M cermet insert is available



Highly Efficient Cutter with a 88° Cutting Edge Angle

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Economical Inserts with 8 Cutting Edges. Reduces Chattering with Low Cutting Force Design

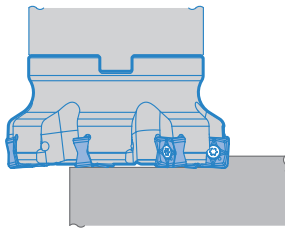
Suitable for Shoulder Roughing. Applicable to Various Types of Machining with Product Lineup from ø32

## 1 Economical Inserts with 8 Cutting Edges Suitable for Shoulder Roughing

Cost reduction in approximately 90° corner cutting. Applicable to various types of machining

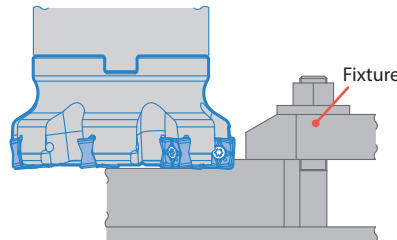
Shoulder Roughing

Cost reduction by switching from 90°  
cutter with positive inserts

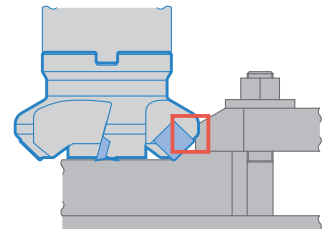


Facing Without Interfering with Fixtures

MFSN88



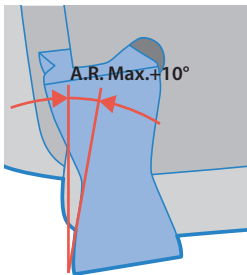
Conventional 45° Cutter



See page 4 for unmachined corner portion

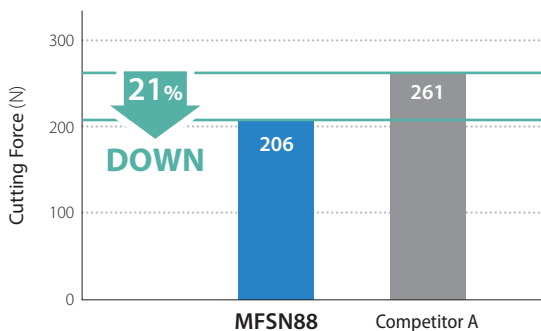
## 2 Reduces Chattering with Low Cutting Force Design

Chatter Resistant Medium to Roughing Machining Range



Helical cutting edge with A.R. Max. +10°

Cutting Force Comparison (Internal Evaluation)



Thrust force is cutting resistance.

Cutting Conditions: Vc = 200 m/min, fz = 0.15 mm/t, ap = 3 mm Cutting Dia. ø63 Workpiece: S50C

## 3 Long Tool Life with MEGACOAT NANO Coating Technology Insert Lineup Also Contains Cermet Grade

Insert grade and chipbreaker lineup for various machining application



1st Recommendation  
(General Purpose)  
GM Chipbreaker

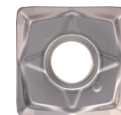


Tough Edge  
GH Chipbreaker

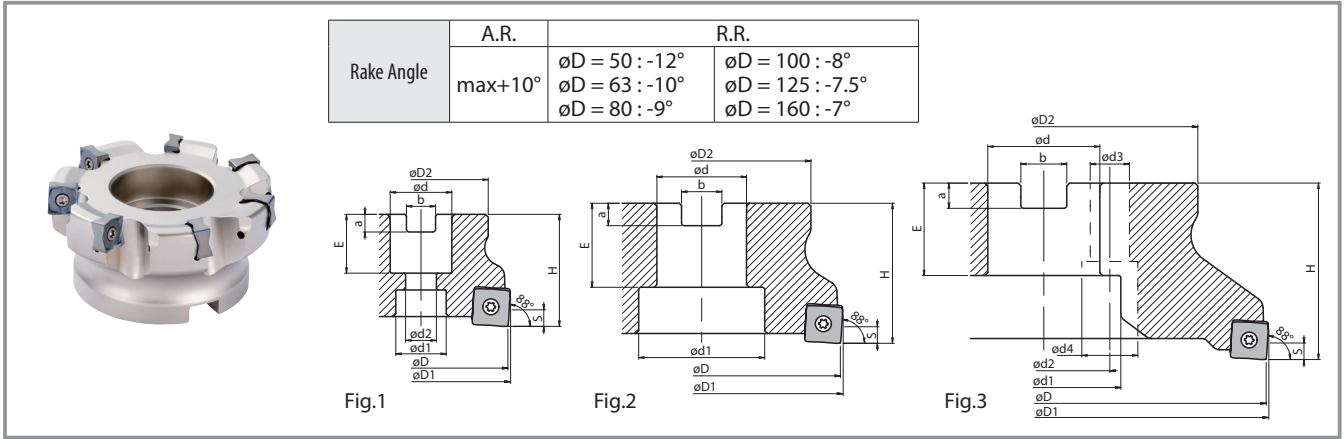


For Stainless Steel  
Machining  
SM Chipbreaker

### Cermet for Milling TN620M



Excellent wear resistance and adhesion resistance  
High quality surface finish



Toolholder Dimensions

Description		Stock	No. of Inserts	Dimensions (mm)											Shape	Weight (kg)	Shim		
Bore Dia. Inch Spec	Fine Pitch	MFSN	88080R-6T-G	øD	øD1	øD2	ød	ød1	ød2	H	E	a	b	ød3	ød4	Fig.1	1.1	No	
				88100R-7T-G	88125R-9T-G	88160R-11T-G	31.75	45	—	50	34	8	12.7						—
Bore Dia. Inch Spec	Extra Fine Pitch	MFSN	88080R-9T-G	80	82	70	25.4	20	13	50	27	6	9.5	—	—	Fig.1	1.1		No
		88100R-11T-G	100	102	78	31.75	45	—	50	34	8	12.7	—	—	Fig.1	1.5			
		88125R-13T-G	125	127	89	38.1	55	—	63	38	10	15.9	—	—	Fig.2	2.6			
		88160R-15T-G	160	162	110	50.8	70	—	63	38	11	19.1	—	—	Fig.2	4.3			
Metric	Fine Pitch	MFSN	88050R-4T-M-G	50	52	48	22	17.5	11	40	21	6.3	10.4	—	—	Fig.1	0.3	No	
		88063R-5T-M-G	63	65	—	—	18	—	40	21	6.3	10.4	—	—	Fig.1	0.4			
		88080R-6T-M-G	80	82	70	27	20	13	50	24	7	12.4	—	—	Fig.1	1.1			
		88100R-7T-M-G	100	102	78	32	45	—	50	30	8	14.4	—	—	Fig.2	1.4			
		88125R-9T-M-G	125	127	89	40	55	—	63	33	9	16.4	—	—	Fig.2	2.4			
	Extra Fine Pitch	MFSN	88050R-5T-M-G	50	52	48	22	17.5	11	40	21	6.3	10.4	—	—	Fig.1	0.3	No	
		88063R-7T-M-G	63	65	—	—	18	—	40	21	6.3	10.4	—	—	Fig.1	0.4			
		88080R-9T-M-G	80	82	70	27	20	13	50	24	7	12.4	—	—	Fig.1	1.1			
		88100R-11T-M-G	100	102	78	32	45	—	50	30	8	14.4	—	—	Fig.2	1.4			
		88125R-13T-M-G	125	127	89	40	55	—	63	33	9	16.4	—	—	Fig.2	2.5			
Metric	Extra Fine Pitch	MFSN	88160R-15T-M-G	160	162	110	50.8	70	—	63	33	9	16.4	14	20	Fig.3	4.3	—	

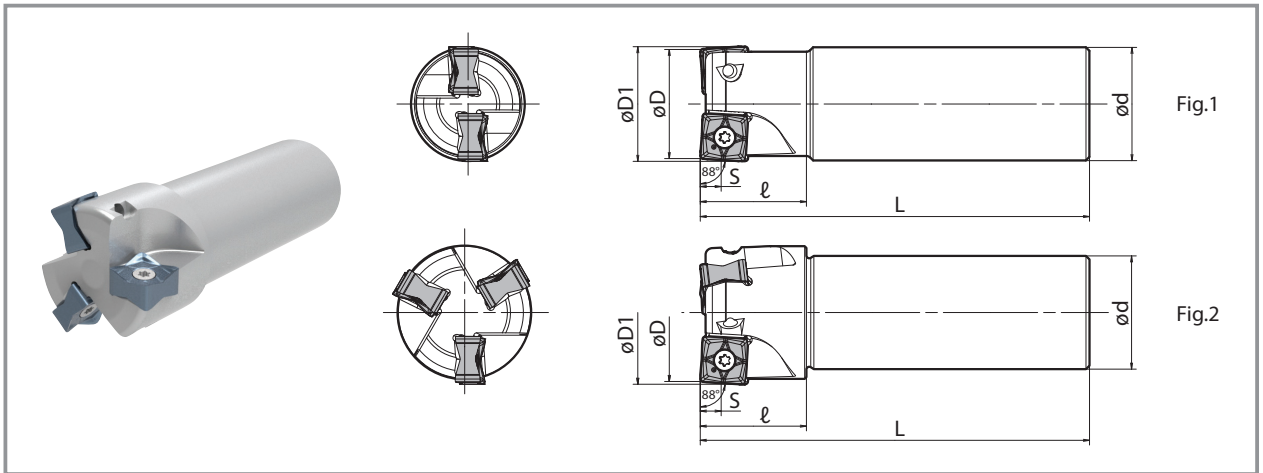
Dimension S: 5mm

● : Standard Stock


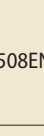
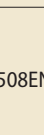
Spare Parts for Face Mill (Common to Inch / Metric Specs)

Description		Clamp Screw	Wrench	Anti-Seize Compound	Arbor Bolt
Fine Pitch	MFSN 88050R-4T-M-G	SB-4090TRP	DTPM-15	P-37	HH10×30
	MFSN 88063R-5T-M-G				HH10×30
	MFSN 88080R-6T(-M)-G				HH12×35
	MFSN 88100R-7T(-M)-G				—
	MFSN 88125R-9T(-M)-G				—
	MFSN 88160R-11T(-M)-G				—
Extra Fine Pitch	MFSN 88050R-5T-M-G	SB-4090TRP	DTPM-15	P-37	HH10×30
	MFSN 88063R-7T-M-G				HH10×30
	MFSN 88080R-9T(-M)-G				HH12×35
	MFSN 88100R-11T(-M)-G				—
	MFSN 88125R-13T(-M)-G				—
	MFSN 88160R-15T(-M)-G				—

Coat Anti-Seize Compound thinly on portion of taper and thread prior to installation.


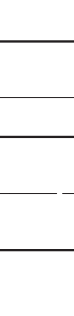

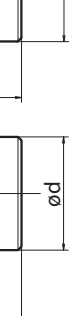




Toolholder Dimensions

Description	Stock	No. of Inserts	Dimensions (mm)						Rake Angle		Shape	Spare Parts		
			øD	øD1	ød	L	ℓ	S	A.R. (MAX)	R.R		Clamp Screw	Wrench	Anti-Seize Compound
														
MFSN 88032R-S32-2T-G	●	2	32	34	32	110	30	5	10°	-15.5°	Fig.1	SB-4090TRP	DTPM-15	P-37
88040R-S32-3T-G	●	3	40	42	32	110	30	5	10°	-13°	Fig.2	Recommended Torque for Insert Clamp 3.5N·m		P-37

● : Standard Stock

Applicable Inserts

Classification of Usage		P	Carbon Steel / Alloy Steel		☆	★		★				
★ : Roughing / 1st Choice ☆ : Roughing / 2nd Choice ■ : Finishing / 1st Choice □ : Finishing / 2nd Choice (In Case Hardness is Under 45HRC)			M	Austenitic Stainless Steel		★	☆		★			
		K		Martensitic Stainless Steel		★				★		
			Precipitation Hardened Stainless Steel		★				★			
		S	Gray Cast Iron						★			
			Nodular Cast Iron (FCD)						★			
		H	Ni-base Heat-Resistant Alloys (Inconel®)		★							
			Titanium Alloy		★							
				High Hardness Steel			□					
		Shape	Description	Dimensions (mm)					MEGACOAT NANO			Cermet
				A	T	ød	Z	rε	PR1535	PR1525	PR1510	TN620M
		13	5.51	4.7	1	0.8	●	●	●	●		
							●	●	●			
							●	●	●			

● : Standard Stock

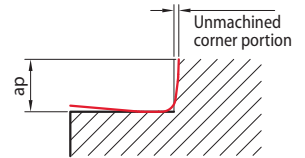
# Applicable Chipbreaker

Cutter	Insert		
	GM	SM	GH
Fine Pitch	○	○	○
Extra Fine Pitch	○	○	fz=0.2mm/t is Recommended

Not applicable to vertical milling (plunging)

## Reference data of unmachined corner portion

ap	1 mm	2 mm	3 mm	4 mm	5 mm
Unmachined corner portion	0.12 mm	0.24 mm	0.27 mm	0.31 mm	0.34 mm



## Recommended Cutting Conditions ★ 1st Recommendation ☆ 2nd Recommendation

### Coated Carbide

Insert	Workpiece	Feed (fz: mm/t)	Recommended Insert Grade (Cutting Conditions Vc: m/min)		
			MEGACOAT NANO		
			PR1535	PR1525	PR1510
GM	Carbon Steel (SxxC)	0.1 – 0.2 – 0.3	☆ 120 – 180 – 250	★ 120 – 180 – 250	—
	Alloy Steel (SCM etc)	0.1 – 0.2 – 0.3	☆ 100 – 160 – 220	★ 100 – 160 – 220	—
	Die Steel (SKD etc)	0.1 – 0.15 – 0.25	★ 80 – 140 – 180	★ 80 – 140 – 180	—
	Austenitic Stainless Steel (SUS304 etc)	0.1 – 0.15 – 0.25	☆ 100 – 150 – 200	☆ 100 – 150 – 200	—
	Martensitic Stainless Steel (SUS403 etc)	0.1 – 0.15 – 0.25	☆ 100 – 150 – 200	—	—
	Precipitation Hardened Stainless Steel (SUS630 etc)	0.1 – 0.15 – 0.25	★ 90 – 120 – 150	—	—
	Gray Cast Iron (FC)	0.1 – 0.2 – 0.3	—	—	★ 120 – 180 – 250
	Nodular Cast Iron (FCD)	0.1 – 0.15 – 0.25	—	—	★ 100 – 150 – 200
	Ni-base Heat-Resistant Alloy (Inconel® etc)	0.1 – 0.12 – 0.2	☆ 20 – 30 – 50	—	—
SM	Carbon Steel (SxxC)	0.06 – 0.12 – 0.2	—	☆ 120 – 180 – 250	—
	Alloy Steel (SCM etc)	0.06 – 0.12 – 0.2	—	☆ 100 – 160 – 220	—
	Die Steel (SKD etc)	0.06 – 0.08 – 0.15	—	☆ 80 – 140 – 180	—
	Austenitic Stainless Steel (SUS304 etc)	0.06 – 0.12 – 0.2	★ 100 – 150 – 200	☆ 100 – 150 – 200	—
	Martensitic Stainless Steel (SUS403 etc)	0.06 – 0.12 – 0.2	★ 100 – 150 – 200	—	—
	Precipitation Hardened Stainless Steel (SUS630 etc)	0.06 – 0.12 – 0.2	☆ 90 – 120 – 150	—	—
	Gray Cast Iron (FC)	0.06 – 0.12 – 0.2	—	—	☆ 120 – 180 – 250
	Nodular Cast Iron (FCD)	0.06 – 0.1 – 0.15	—	—	☆ 100 – 150 – 200
	Ni-base Heat-Resistant Alloy (Inconel® etc)	0.06 – 0.08 – 0.15	★ 20 – 30 – 50	—	—
GH	Carbon Steel (SxxC)	0.15 – 0.25 – 0.35	—	☆ 120 – 180 – 250	—
	Alloy Steel (SCM etc)	0.15 – 0.25 – 0.35	—	☆ 100 – 160 – 220	—
	Die Steel (SKD etc)	0.1 – 0.2 – 0.3	—	☆ 80 – 140 – 180	—
	Gray Cast Iron (FC)	0.15 – 0.25 – 0.35	—	—	☆ 120 – 180 – 250
	Nodular Cast Iron (FCD)	0.1 – 0.2 – 0.3	—	—	☆ 100 – 150 – 200

★ 1st Recommendation ☆ 2nd Recommendation

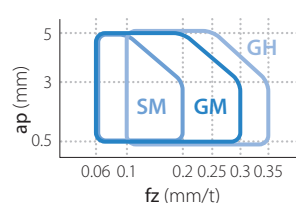
### Cermet

Insert	Workpiece	Feed (fz: mm/t)	Recommended Insert Grade (Cutting Conditions Vc: m/min)
			Cermet TN620M
GM	Carbon Steel (SxxC)	0.06 – 0.12 – 0.15	★ 200 – 250 – 300
	Alloy Steel (SCM etc)	0.06 – 0.12 – 0.15	★ 180 – 220 – 250
	Die Steel (SKD etc)	0.06 – 0.1 – 0.13	★ 150 – 180 – 220

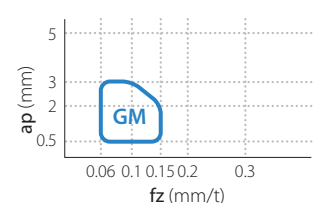
★ 1st Recommendation

## Chipbreaker Recommended Applications

### Coated Carbide



### Cermet



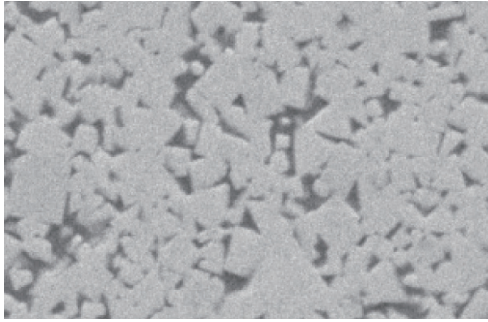
The number in bold font is recommended starting conditions. Adjust the cutting speed and the feed rate within the above conditions according to the actual machining situation. Cutting with coolant is recommended for Ni-base Heat Resistant Alloy and Titanium Alloy.

# MEGACOAT NANO PR1535

Fracture resistant with a tough substrate and high heat-resistant coating  
Stable machining of general steel, mold steel, and difficult-to-cut materials

## 1 Toughening by a New Cobalt Mixing Ratio \*In-house Evaluation

High Toughness Carbide Base Material



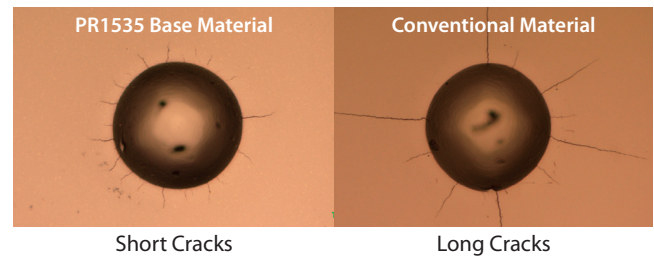
UP  
23%  
Fracture Toughness\*

## 2 Stability Improvement

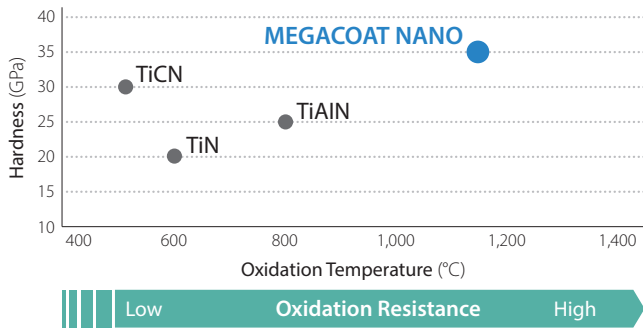
The coarse grain structure and uniform particle size correspond to improved heat resistance, with conductivity values decreased by 11%. The uniform structure also reduces crack propagation.

Cracking Comparison by Diamond Indenter  
(In-house evaluation)

UP  
Shock Resistance

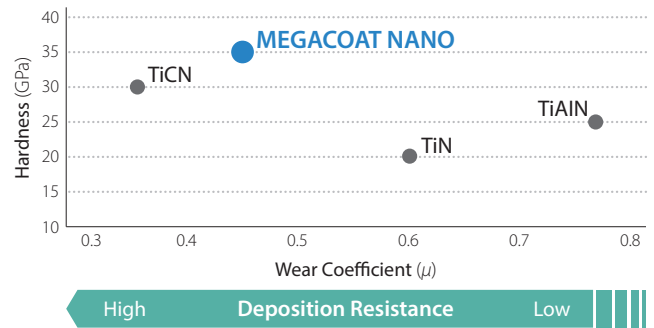


Coating Properties (Abrasion Resistance)



Achieve long tool life with the combination of a tough substrate and a special Nano coating layer

Coating Properties (Deposition Resistance)



Stable Machining with Excellent Wear Resistance