



INNOVATIVE CUSTOM ENGINEERING

TOOLS AND INSERTS FOR TURNING

**ICE is a high-tech engineering group
specializing in tooling and hard
material technologies**

TOOLING FOR THE FUTURE

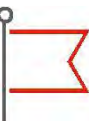
The ICE Group

For over 5 years, ICE has been a pioneer developing exceptional hard material products for cutting tools and wear protection.

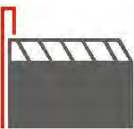
The privately-owned company, based in Sussex, Wisconsin, develops and manufactures highly specialized carbide cutting tools, inserts and holders.

The ICE Group is the market leader in several wear part application areas, and successfully develops new types of cemented carbide, cermet and ceramic grades which are used for instance in the wood, metal and stone working industries.

Facts and figures



1 headquarters
Sussex (Wisconsin)



5
production sites



> 25
sales subsidiaries



> 60
employees



> 100,000
different products



> 10
patents and
utility models



> 2,000
valued customer



> 5
military vets



70 %
of products developed

Welcome to ICE

Our dedication is your solution!

For over 5 years, we have been producing unique and consistently innovative hard material solutions for cutting tools, wear protection, as well as wood and stone working. Whether it is highly specialized cut-ting tools, inserts, or rods and preforms made of hard materials, with a total of four top class brands, the ICE GROUP is your partner for exceptional and custom-made hard material solutions which guarantee the economy, consistency and performance of your production.

Ever more powerful machines, facilities and machining methods constantly create new challenges for our development engineers. Our employees are already working today on the solutions of tomorrow.

Hard material for your success

Hard materials in general and hard materials are applied wherever tools or components are exposed to high wear. They improve the quality of the tools and parts, extend the life of the tool and ensure secure processes.

High pressure and temperature, the application of abrasive or aggressive materials, and the machining of hard materials are just some examples of factors that cause wear, and to which our hard materials and hard metals are resistant.

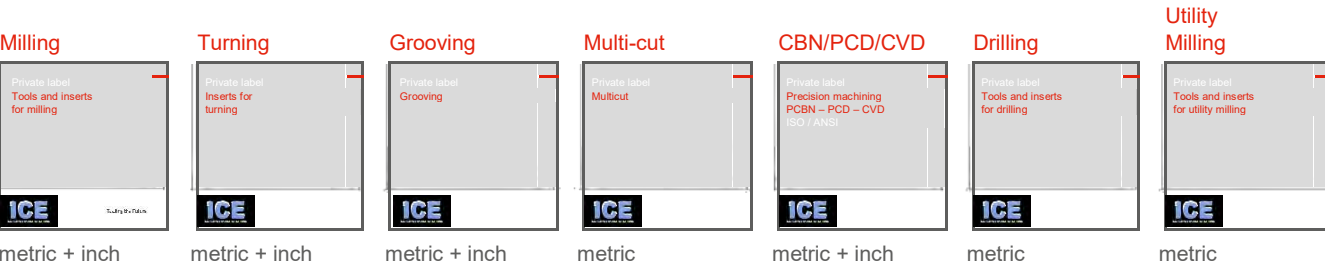
TOOLING SOLUTIONS BY ICE

The competence brand TOOLING SOLUTIONS BY ICE closely collaborates with customers who use our tools in the field. To develop new tools as a partner with our customers gives us some leading-edge technologies.

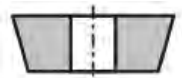
From carbide blanks and semi-finished products to coated and pack-aged inserts or tool holders, e.g. for milling, turning, drilling, parting and grooving – all products satisfy individual customer needs and offer top quality.

The experts at ICE provide their partners with advice so that the right tooling solution can always be optimally positioned in the respective market segment. The products developed here are the benchmark in the industry in terms of both price and performance.

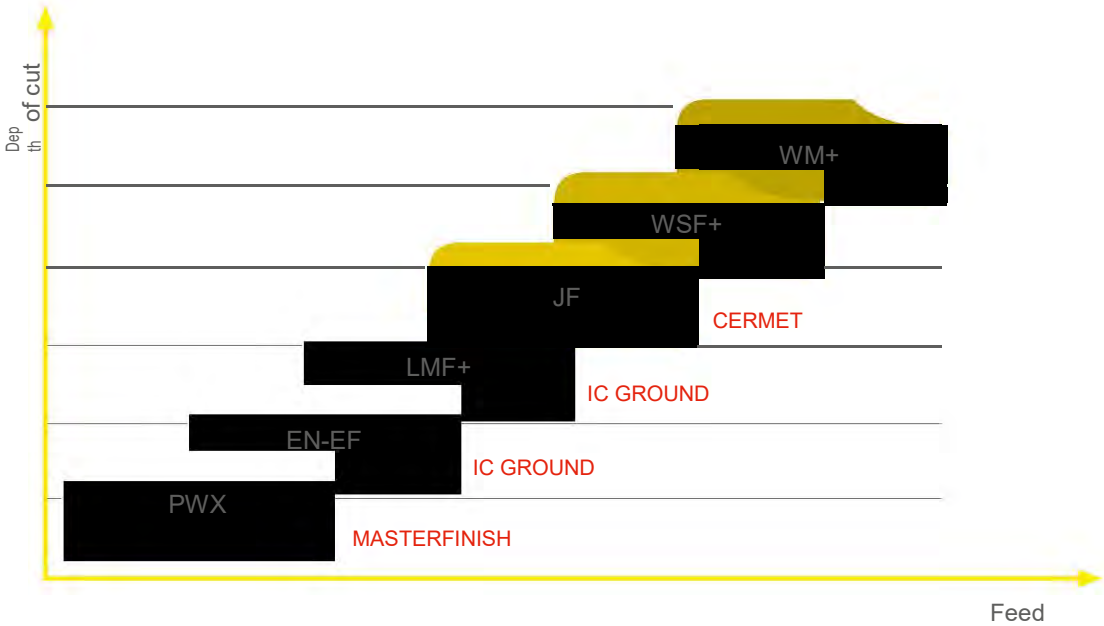
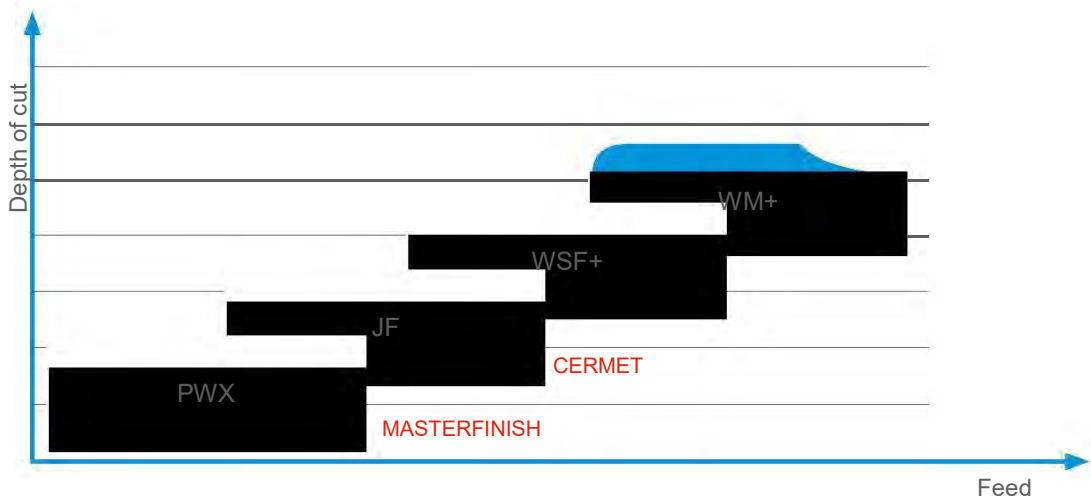
Our product portfolio



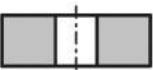
PST – Positive Size Turning



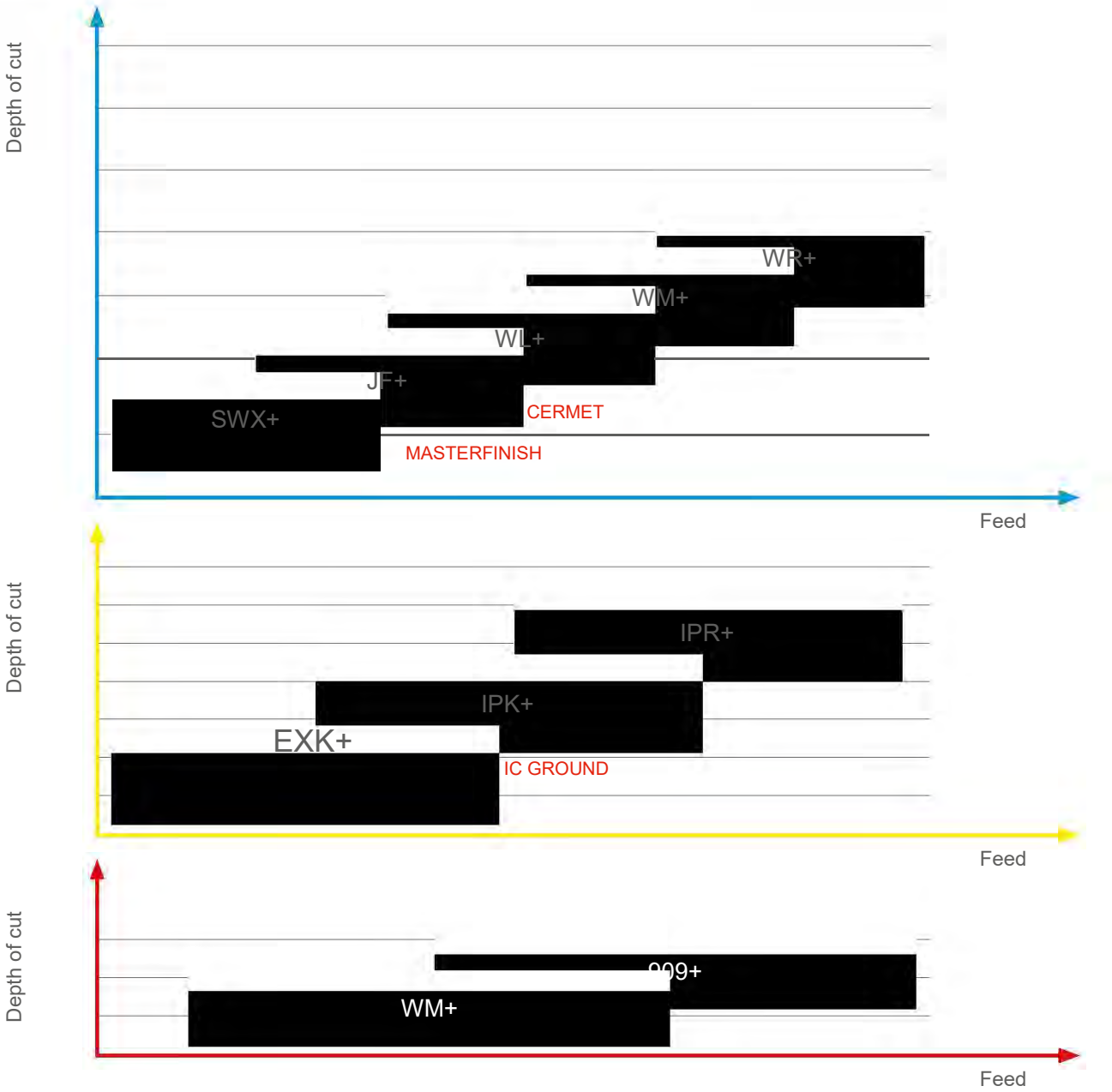
	Steel extreme finishing	MASTERFINISH	▼▼▼	PWX	P 18
	Steel finishing	CERMET	▼▼▼	JF	P 20
	Steel finishing		▼▼▼	WSF+	P 22
	Steel semi finishing		▼▼	WM+	P 28
	Stainless steel extreme finishing	MASTERFINISH	▼▼▼	PWX	P 34
	Stainless steel extreme finishing	IC GROUND	▼▼▼	FN-EF	P 36
	Stainless steel finishing	IC GROUND	▼▼▼	LMF+	P 38
	Stainless steel finishing	CERMET	▼▼▼	JF	P 40
	Stainless steel finishing		▼▼▼	WSF+	P 42
	Stainless steel medium		▼▼	WM+	P 44
	Cast iron		▼▼	WM+	P 48
	Non-ferrous semi finishing medium	IC GROUND	▼▼	LMF+	P 50



NST – Negative Size Turning



	Steel extreme finishing	MASTERFINISH	▼▼▼	SWX+	P 54
	Steel semi finishing	CERMET	▼▼▼	JF+	P 56
	Steel semi finishing		▼▼▼	WL+	P 58
	Steel semi finishing		▼▼	WM+	P 60
	Steel roughing		▼	WR+	P 68
	Stainless steel finishing	IC GROUND	▼▼▼	EXK+	P 70
	Stainless steel medium		▼▼	IPK+	P 72
	Stainless steel roughing		▼	IPR+	P 76
	Cast iron medium		▼▼	WM+	P 78
	Cast iron light roughing		▼	909+	P 80
	Exotics semi finishing		▼▼	IPE+	P 84

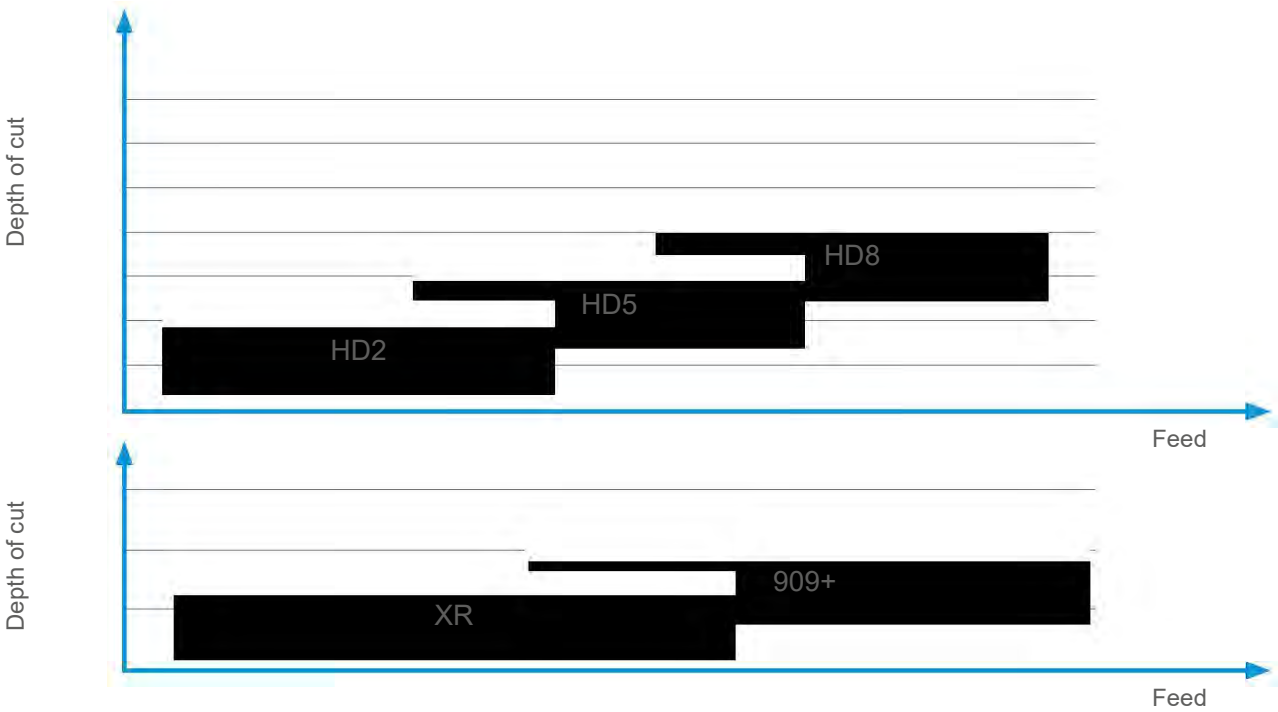


HDT – Heavy Duty Turning

	Steel tube chamfering	▼▼	TCH	P 88
	Steel roughing	▼	HD2	P 90
	Steel roughing	▼	HD5	P 92
	Steel heavy roughing	▼	HD8	P 94
	Steel medium	▼▼	XR (RCMT only)	P 96
	Steel roughing	▼	909+	P 98
	Cast iron roughing	▼	909+	P 100

Miscellaneous

	Steel medium	▼▼	N11	P 104
---	--------------	----	-----	-------





Applications

- ▲ New PREMIUM choice for universal turning of steels
- ▲ Highly wear-resistant grade
- ▲ Designed for maximum cutting parameters / high productivity, long tool life, dry machining



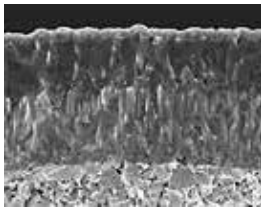
Your advantages

- ▲ Existing in standard range
- ▲ Easy wear detection with special “top layer” on coating

Your benefits

- ▲ High productivity
- ▲ Increased tool life

ICCP125HP HC-P25 | HC-K30 | HC-20



Specification:
Composition: Co 7.6 %; mixed carbides 7.0 %; others 0.4 %; WC balance | Grain size: 1-2mm |
Hardness: HV₃₀ 1470 | Coating specification: CVD TiCN-Al₂O₃ Top layer

Recommended application:
The first and premium choice for the universal machining of steel.



Available range

Insert	Designation	Chipbreaker
	CNMG 432-WM+ ICCP125HP	
	CNMG 433-WM+ ICCP125HP	
	DNMG 442-WM+ ICCP125HP	
	TNMG 332-WM+ ICCP125HP	
	SNMG 432-WM+ ICCP125HP	
	WNMG 432-WM+ ICCP125HP	
	WNMG 433-WM+ ICCP125HP	



Applications



The ICCM120 is suitable for:

- ▲ High cutting parameters in wet conditions
- ▲ Better plastic deformation resistance and can withstand higher temperature in service
- ▲ Continuous to slightly interrupted cut

Your advantages

- ▲ Two grades for everything in stainless steel
- ▲ Easy selection of inserts
- ▲ Easy wear detection with yellow “top layer” on coating
- ▲ Tool life increased

Your benefits

- ▲ Productivity
- ▲ Reduced warehousing cost

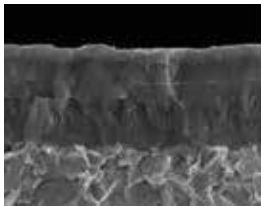


Available range

Insert	Designation	Chipbreaker	
	CNMG 431-IPK+ ICCM120HP		
	CNMG 432-IPK+ ICCM120HP		
	DNMG 441-IPK+ ICCM120HP	...-IPK+	
	DNMG 442-IPK+ ICCM120HP		
	WNMG 431-IPK+ ICCM120HP		
	WNMG 432-IPK+ ICCM120HP		

ICCM120HP

HC-M20 | HC-P30



Specification:
Composition: Co 7.6%; mixed carbides 7.0%; others 0.4%; WC balance | Grain size: 1-2 m |
Hardness: HV₃₀ 1470 | Coating specification: CVD TiCN-Al₂O₃-Top layer.

Recommended application:
It brings advantages to dry machining, at even higher cutting speeds, and makes long tool life possible.



Applications



The ICCK110HP is suitable for:

- ▲ Stable machining conditions
- ▲ High cutting speeds
- ▲ Continuous to slightly interrupted cut
- ▲ Dry machining of Spheroidal cast iron (GGG) / compacted graphite iron (CGI) (grey cast iron (GG) at high V_c with smooth cut)

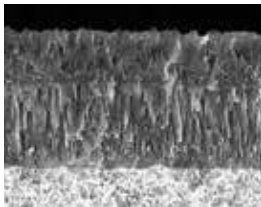
Your advantages

- ▲ Existing in standard range
- ▲ Highly wear-resistant grade
- ▲ Very good process security
- ▲ Two grades for everything in cast iron
- ▲ Easy selection of inserts

Your benefits

- ▲ Reduced warehousing costs
- ▲ The right insert available for every application
- ▲ Maximum cutting parameters / high productivity, long tool life, dry machining

ICCK110HP HC-K10 | HC-P05



Specification:
Composition: Co 5.0 %; mixed carbide 2.0 %; WC balance | Grain size: submicron | Hardness: HV₃₀ 1810 |
Coating specification: CVD TiCN-Al₂O₃

Recommended application:
The wear-resistant grade for the machining of cast iron at highcutting speed with continuous cut.



Available range

Insert	Designation	Chipbreaker
	CNMG 432-909+ ICCK110HP	
	CNMG 433-909+ ICCK110HP	
	CNMG 543-909+ ICCK110HP	
	SNMG 433-909+ ICCK110HP	...-909+
	WNMG 432-909+ ICCK110HP	
	WNMG 433-909+ ICCK110HP	
	CNMA 432EN ICCK110HP	
	WNMA 433EN ICCK110HP	-

Positive Size Turning PST



New chipbreaker

Optimized by FEM:

- ▲ Positive Masterfinish Geometry
- ▲ High surface quality



Cutting data

General cutting parameters depending on the application

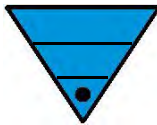
Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide			Application	Depth of cut and feed rate	
			ICCP115 V _c [sfm]	ICCP125 V _c [sfm]	ICCP135 V _c [sfm]		a _p [inch]	f [inch]
P	Non alloyed steel 0 - 0.45 % C	150 – 250	722 – 1312	558 – 787	558 – 623	PWX	0.039 to 0.138	0.012 to 0.006
	Low alloyed steel	250 – 300	656 – 1050	328 – 623	295 – 492			
	High alloyed steel	200	591 – 1050	427 – 689	394 – 656			
	Corrosion resistant steel	200	656 – 1050	427 – 689	459 – 591			
M	Ferritic	200	722 – 1050	459 – 689	459 – 656	Ex: CCMX 32.52-PWX for CK60 Different in each application		
	Austenitic	180	-	328 – 689	361 – 623			
	Martensitic	230 – 260	-	-	262 – 492			
	Duplex	330	-	230 – 328	180 – 246			
K	Grey cast iron	180	459 – 1214	427 – 689	-			
	Spheroidal	160	623 – 1411	394 – 787	-			
	Malleable/Tempered iron	130	591 – 1706	492 – 820	-			

Consistent cutting depth	Inconsistent cutting depth	Interrupted cut
•	◻	X

Available range



MASTERFINISH



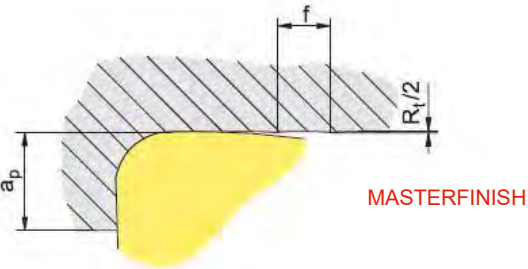
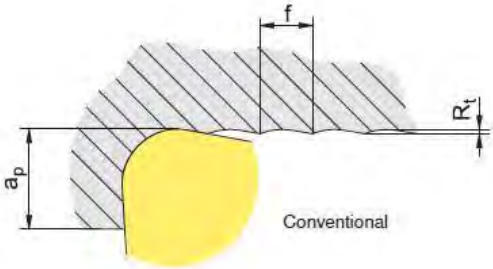
Steel extreme finishing – Masterfinish

Insert	Designation	Chipbreaker	Available
	CCMX 32.51-PWX ICCP125	...-PWX	•
	CCMX 32.52-PWX ICCP125		•
	DCMX 21.51-PWX ICCP125		•
	DCMX 32.51-PWX ICCP125		•
	DCMX 32.52-PWX ICCP125		•

Operating principle

Improved surface finish

With the same feed rate an insert with „Masterfinish“ cutting edge reaches a roughness value R_a which is many times higher than the one of a conventional insert.



New chipbreaker

Optimized by FEM:

- ▲ Increase life time
- ▲ Reduce temperature and stresses



Cutting data

General cutting parameters depending on the application

Work piece material		Hardness	Cermet ICM10 V _c [s	Application	Depth of cut and feed rate	
	Type of treatment/app	HB	[s	Chip gro	a _p [in	f [in
P	Steel	Non alloyed steel 0 - 0.45 % C				
		Low alloyed steel				
		High alloyed steel				
		Corrosion resistant steel				
M	Stainless steel	Ferritic				
		Austenitic				
		Duplex				
		Martensitic				
K	Cast iron	Grey cast iron				
		Spheroidal				
		Malleable/Tempered iron				

• available from stock, ◻ available upon request

Ex: CCMT 32.51-JF
Different in each application

Consistent cutting depth	Inconsistent cutting depth	Interrupted cut
•	X	X

Available range



Turning steel pos finishing "CERMET"

Insert	Designation	Chipbreaker	Available
	CCMT 21.51-JF ICM10	... JF	•
	CCMT 32.51-JF ICM10		•
	DCMT 21.51-JF ICM10		•
	DCMT 32.51-JF ICM10		•
	TCGT 21.5.5-JF ICM10		•
	TCMT 21.51-JF ICM10		•
	WCGT 020102-JF ICM10 (ISO metric)		•

New chipbreaker

WSF+:

▲ To optimize the control of the chip



Cutting data

General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide			Application Chip groove	Depth of cut and feed rate		
			ICCP115 V _c	ICCP125 V _c	ICCP135 V _c		a _p [inch]	f [inch]	
			[m/min]	[sfm]	[sfm]				
P	Non alloyed steel 0 - 0.45 % C	150 – 250	722 – 1312	558 – 787	558 – 623	WSF+	0.02 to 0.089	0.006 to 0.003	
	Low alloyed steel	250 – 300	656 – 1050	328 – 623	295 – 492				
	Steel High alloyed steel	200	591 – 1050	427 – 689	394 – 656				
	Corrosion resistant steel	200	656 – 1050	427 – 689	459 – 591				
M	steel Ferritic	200	722 – 1050	459 – 689	459 – 656	Ex: CCMT 32.51-WSF+ for CK60 Different in each application			
	Austenitic	180	–	328 – 689	361 – 623				
	Martensitic	230 – 260	–	–	262 – 492				
	Duplex								330
K	Ca iro st_n Grey cast iron	180	459 – 1214	427 – 689	–				
	Spheroidal	160	623 – 1411	394 – 787	–				
	Malleable/Tempered iron	130	591 – 1706	492 – 820	–				

Available range



Turning steel pos finishing “P15”

Insert	Designation	Chipbreaker	Available
	CCMT 21.51-WSF+ ICCP115	...-WSF+	•
	CCMT 32.51-WSF+ ICCP115		•
	CCMT 32.52-WSF+ ICCP115		•
	CCMT 431-WSF+ ICCP115		•
	DCMT 21.51-WSF+ ICCP115		•
	DCMT 32.51-WSF ICCP115		•

New chipbreaker

WSF+:

▲ To optimize the control of the chip



Cutting data

General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide			Application Chip groove	Depth of cut and feed rate		
			ICCP115 V _c	ICCP125 V _c	ICCP135 v _c		a _p [inch]	f [inch]	
			[sfm]	[sfm]	[m/min]				
P	Non alloyed steel 0 - 0.45 % C	150 – 250	722 – 1312	558 – 787	558 – 623	WSF+ Ex: CCMT 32.51-WSF+ for CK60 Different in each application	0.02 to 0.089	0.006 to 0.003	
	Low alloyed steel	250 – 300	656 – 1050	328 – 623	295 – 492				
	High alloyed steel	200	591 – 1050	427 – 689	394 – 656				
	Corrosion resistant steel	200	656 – 1050	427 – 689	459 – 591				
M	steel	Ferritic	200	722 – 1050	459 – 689	459 – 656			
		Austenitic	180	–	328 – 689	361 – 623	Consistent cutting depth	Inconsistent cutting depth	Interrupted cut
		Martensitic	230 – 260	–	262 – 492				
		Duplex							330
K	Cast iron	Grey cast iron	180	459 – 1214	427 – 689	–			X
		Spheroidal	160	623 – 1411	394 – 787	–			
		Malleable/Tempered iron	130	591 – 1706	492 – 820	–			

Available range



Turning steel pos finishing “P25”

Insert	Designation	Chipbreaker	Available
	CCMT 21.5.5-WSF+ ICCP125		•
	CCMT 21.51-WSF+ ICCP125		•
	CCMT 32.5.5-WSF+ ICCP125		•
	CCMT 32.51-WSF+ ICCP125		•
	CCMT 32.52-WSF+ ICCP125		•
	DCMT 21.5.5-WSF+ ICCP125		•
	DCMT 21.51-WSF+ ICCP125	...-WSF+	•
	DCMT 32.5.5-WSF+ ICCP125		•
	DCMT 32.51-WSF+ ICCP125		•
	DCMT 32.52-WSF+ ICCP125		•
	VCMT 22.5-WSF+ ICCP125		•
	VCMT 221-WSF+ ICCP125		•
	VCMT 331-WSF+ ICCP125		•
	VCMT 332-WSF+ ICCP125		•

New chipbreaker

WSF+:

▲ To optimize the control of the chip



Cutting data

General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide			Application Chip groove	Depth of cut and feed rate		
			ICCP115	ICCP125	ICCP135		a _p [inch]	f [inch]	
			v _c [m/min]	V _c [sfm]	v _c [m/min]				
P	Non alloyed steel 0 - 0.45 % C	150 – 250	722 – 1312	558 – 787	558 – 623	WSF+	0.02 to 0.089	0.006 to 0.003	
	Low alloyed steel	250 – 300	656 – 1050	328 – 623	295 – 492				
	Steel High alloyed steel	200	591 – 1050	427 – 689	394 – 656				
	Corrosion resistant steel	200	656 – 1050	427 – 689	459 – 591				
M	steel Ferritic	200	722 – 1050	459 – 689	459 – 656	Ex: CCMT 32.51-WSF+ for CK60 Different in each application			
	Austenitic	180	–	328 – 689	361 – 623				
	Martensitic	230 – 260	–	–	262 – 492				
	Duplex								
K	Ca iro st_n Grey cast iron	180	459 – 1214	427 – 689	–			X	
	Spheroidal	160	623 – 1411	394 – 787	–				
	Malleable/Tempered iron	130	591 – 1706	492 – 820	–				

Available range



Turning steel pos finishing “P35”

Insert	Designation	Chipbreaker	Available
	CCMT 32.52-WSF+ ICCP135	...-WSF+	•

New chipbreaker

Optimized by FEM:

- ▲ Increase life time
- ▲ Reduce temperature and stresses
- ▲ Universal application



Cutting data

General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide			Application Chip groove	Depth of cut and feed rate	
			ICCP115 V _c	ICCP125 V _c	ICCP135 V _c		a _p [inch]	f [inch]
			[sfm]	[sfm]	[sfm]			
P	Non alloyed steel 0 - 0.45 % C	150 – 250	722 – 1312	558 – 787	558 – 623	WM+	0.02 to 0.118	0.008 to 0.005
	Low alloyed steel	250 – 300	656 – 1050	328 – 623	295 – 492	Ex: CCMT 32.51-WM+ for CK60 Different in each application		
	High alloyed steel	200	591 – 1050	427 – 689	394 – 656			
	Corrosion resistant steel	200	656 – 1050	427 – 689	459 – 591			
M	steel							
	Ferritic	200	722 – 1050	459 – 689	459 – 656			
	Austenitic	180	–	328 – 689	361 – 623			
	Martensitic	230 – 260	–	–	262 – 492			
Duplex								
K	Ca iro st_n							
	Grey cast iron	180	459 – 1214	427 – 689	–			
	Spheroidal	160	623 – 1411	394 – 787	–			
	Malleable/Tempered iron	130	591 – 1706	492 – 820	–			



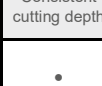
Consistent
cutting depth



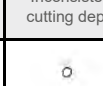
Inconsistent
cutting depth



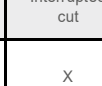
Interrupted
cut



•



◦



X

Available range



Turning steel pos semi finishing "P15"

Insert	Designation	Chipbreaker	Available
	CCMT 21.51-WM+ ICCP115		•
	CCMT 21.52-WM+ ICCP115		•
	CCMT 32.51-WM+ ICCP115		•
	CCMT 32.52-WM+ ICCP115		•
	DCMT 32.51-WM+ ICCP115	...-WM+	•
	DCMT 32.52-WM+ ICCP115		•
	SCMT 431-WM+ ICCP115		•
	TCMT 21.51-WM+ ICCP115		•
	VBMT 331-XM1+ ICCP115	...-XM1+	•

New chipbreaker

Optimized by FEM:

- ▲ Increase life time
- ▲ Reduce temperature and stresses
- ▲ Universal application



Cutting data

General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide			Application Chip groove	Depth of cut and feed rate	
			ICCP115 V _c [sfm]	ICCP125 V _c [sfm]	ICCP135 V _c [sfm]		a _p [inch]	f [inch]
P	Non alloyed steel 0 - 0.45 % C	150 – 250	722 – 1312	558 – 787	558 – 623	WM+	0.02 to 0.118	0.008 to 0.005
	Low alloyed steel	250 – 300	656 – 1050	328 – 623	295 – 492			
	High alloyed steel	200	591 – 1050	427 – 689	394 – 656			
	Corrosion resistant steel	200	656 – 1050	427 – 689	459 – 591			
M	steel					Consistent cutting depth	Inconsistent cutting depth	Interrupted cut
	Ferritic	200	722 – 1050	459 – 689	459 – 656			
	Austenitic	180	–	328 – 689	361 – 623			
	Martensitic							
K	Duplex	230 – 260	–	–	262 – 492	.	.	□
		330	–	230 – 328	180 – 246			
	Grey cast iron	180	459 – 1214	427 – 689	–			
	Spheroidal	160	623 – 1411	394 – 787	–			
K	Malleable/Tempered iron	130	591 – 1706	492 – 820	–			

Available range



Turning steel pos medium "P25"

Insert	Designation	Chipbreaker	Available
	CCMT 21.51-WM+ ICCP125		•
	CCMT 21.52-WM+ ICCP125		•
	CCMT 32.51-WM+ ICCP125		•
	CCMT 32.52-WM+ ICCP125		•
	CCMT 431-WM+ ICCP125		•
	CCMT 432-WM+ ICCP125		•
	CCMT 433-WM+ ICCP125		•
	DCMT 21.51-WM+ ICCP125		•
	DCMT 21.52-WM+ ICCP125		•
	DCMT 32.51-WM+ ICCP125		•
	DCMT 32.52-WM+ ICCP125		•
	SCMT 32.51-WM+ ICCP125	...-WM+	•
	SCMT 32.52-WM+ ICCP125		•
	SCMT 431-WM+ ICCP125		•
	SCMT 432-WM+ ICCP125		•
	SCMT 433-WM+ ICCP125		•
	TCMT 1.81.51-WM+ ICCP125		•
	TCMT 21.51-WM+ ICCP125		•
	TCMT 21.52-WM+ ICCP125		•
	TCMT 32.51-WM+ ICCP125		•
	TCMT 32.52-WM+ ICCP125		•
	TCMT 32.53-WM+ ICCP125		•
	VCMT 221-WM+ ICCP125		•
	VCMT 222-WM+ ICCP125		•
	VCMT 331-WM+ ICCP125		•
	VCMT 332-WM+ ICCP125		•
	VBMT 331-XM1+ ICCP125	...-XM1+	•
	VBMT 332-XM1+ ICCP125		•
	WCMT 21.51-WM+ ICCP125		•
	WCMT 21.52-WM+ ICCP125		•
	WCMT 32.51-WM+ ICCP125		•
	WCMT 32.52-WM+ ICCP125	...-WM+	•
	WCMT 431-WM+ ICCP125		•
	WCMT 432-WM+ ICCP125		•
	WCMT 433-WM+ ICCP125		•

New chipbreaker

Optimized by FEM:

- ▲ Increase life time
- ▲ Reduce temperature and stresses
- ▲ Universal application



Cutting data

General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide			Application Chip groove	Depth of cut and feed rate	
			ICCP115 V _c	ICCP125 V _c	ICCP135 V _c		a _p [inch]	f [inch]
			[sfm]	[sfm]	[sfm]			
P	Non alloyed steel 0 - 0.45 % C	150 – 250	722 – 1312	558 – 787	558 – 623	WM+	0.02 to 0.118	0.008 to 0.12
	Low alloyed steel	250 – 300	656 – 1050	328 – 623	295 – 492			
	High alloyed steel	200	591 – 1050	427 – 689	394 – 656			
	Corrosion resistant steel	200	656 – 1050	427 – 689	459 – 591			
M	steel					  	Ex: CCMT 32.51-WM+ for CK60 Different in each application	
	Ferritic	200	722 – 1050	459 – 689	459 – 656			
	Austenitic	180	–	328 – 689	361 – 623			
	Martensitic	230 – 260	–	–	262 – 492			
Duplex								
K	Cast iron					  		
	Grey cast iron	180	459 – 1214	427 – 689	–			
	Spheroidal	160	623 – 1411	394 – 787	–			
	Malleable/Tempered iron	130	591 – 1706	492 – 820	–			

Available range



Turning steel pos medium “P35”

Insert	Designation	Chipbreaker	Available
	CCMT 21.51-WM+ ICCP135		•
	CCMT 21.52-WM+ ICCP135		•
	CCMT 32.51-WM+ ICCP135		•
	CCMT 32.52-WM+ ICCP135		•
	DCMT 21.51-WM+ ICCP135		•
	DCMT 21.52-WM+ ICCP135		•
	DCMT 32.51-WM+ ICCP135		•
	DCMT 32.52-WM+ ICCP135		•
	RCMT 0803MO-WM+ ICCP135 (ISO metric)		•
	RCMT 1003MO-WM+ ICCP135 (ISO metric)		•
	RCMT 1204MO-WM+ ICCP135 (ISO metric)		•
	SCMT 32.52-WM+ ICCP135	...-WM+	•
	SCMT 432-WM+ ICCP135		•
	SCMT 433-WM+ ICCP135		•
	TCMT 21.51-WM+ ICCP135		•
	TCMT 21.52-WM+ ICCP135		•
	TCMT 32.51-WM+ ICCP135		•
	TCMT 32.52-WM+ ICCP135		•
	VCMT 221-WM+ ICCP135		•
	VCMT 222-WM+ ICCP135		•
	VCMT 331-WM+ ICCP135		•
	VCMT 332-WM+ ICCP135		•

New chipbreaker

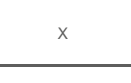
Optimized by FEM:

- ▲ Positive Masterfinish Geometry
- ▲ High surface quality

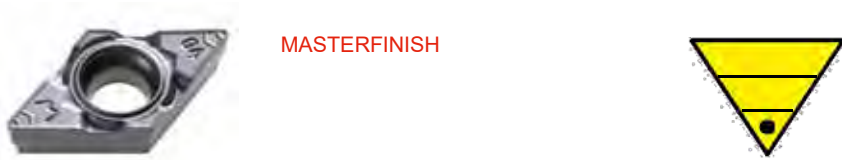


Cutting data

General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness	ICCP125 v _c	ICPM135M v _c	Application	Depth of cut and feed rate		
		HB	[sfm]	[sfm]	Chip groove	a _p [inch]	f [inch]	
P	Non alloyed steel 0 - 0.45 % C	150 – 250	558 – 787	558 – 623	PWX	0.039 to 0.138	0.012 to 0.006	
	Low alloyed steel	250 – 300	328 – 623	295 – 492	Ex: CCMX 32.52-PWX for 304 Different in each application			
	High alloyed steel	200	427 – 689	394 – 656				
	Corrosion resistant steel	200	427 – 689	459 – 591				
M	steel							
	Ferritic	200	459 – 689	459 – 656	Consistent cutting depth	Inconsistent cutting depth	Interrupted cut	
	Austenitic	180	328 – 689	361 – 623				
	Martensitic	230 – 260	–	262 – 492				
K	Duplex	330	230 – 328	180 – 246				
	Ca iron							
	st	Grey cast iron	180	427 – 689				–
	n	Spheroidal	160	394 – 787				–
	Malleable/Tempered iron	130	492 – 820	–				

Available range



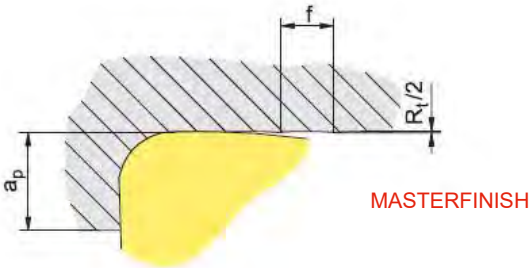
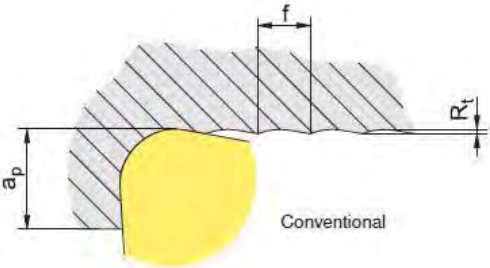
Heavy turning steel pos "P35" – Masterfinish

Insert	Designation	Chipbreaker	Available
	CCMX 32.51-PWX ICPM135M	...-PWX	•
	CCMX 32.52-PWX ICPM135M		•
	DCMX 32.51-PWX ICPM135M		•
	DCMX 32.52-PWX ICPM135M		•

Operating principle

Improved surface finish

With the same feed rate an insert with „Masterfinish“ cutting edge reaches a roughness value R_a which is many times higher than the one of a conventional insert.



Cutting data



General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide		Application	Depth of cut and feed rate	
			ICP2120 V _c [sfm]			a _p [inch]	f [inch]
M	steel	Ferritic	200	492 – 656	FN-EF	0.002 to 0.053	0.001 to 0.004
		Austenitic	180	394 – 656			
		Martensitic	230 – 260	295 – 525			
		Duplex	330	197 – 262			
K	Cast iron	Grey cast iron	180	394 – 525			
		Spheroidal	160	394 – 525			
		Malleable / Tempered iron	130	459 – 722			
N	NonFerrous		100	328 – 1312		X	X
			130	328 – 1312			
			90	328 – 1969			
			100	328 – 1312			
S	Exotic	Fe base	200	66 – 164		X	X
		Nickel or Kobalt base	280	66 – 164			
		Nickel or Kobalt base	250	49 – 131			
		Nickel or Kobalt base		66 – 115			
		Titanium	Rm 440*	262 – 459			

Available range



Turning stainless steel pos "Extreme finishing"

Insert	Designation	Chipbreaker	Available
	CCGT 21.5X0FN-EF ICP2120	...	•
	CCGT 21.50FN-EF ICP2120		•
	CCGT 32.5X0FN-EF ICP2120		•
	CCGT 32.50FN-EF ICP2120		•
	DCGT 21.5X0FN-EF ICP2120	...-FN-EF	•
	DCGT 21.50FN-EF ICP2120		•
	DCGT 32.5X0FN-EF ICP2120		•
	DCGT 32.50FN-EF ICP2120		•
	VCGT 22X0FN-EF ICP2120		•
	VCGT 220EN-EF ICP2120		•
	VCGT 33X0FN-EF ICP2120		•
	VCGT 330FN-EF ICP2120		•

New chipbreaker

Optimized by FEM:

- ▲ Increased life expectancy
- ▲ Small feedrate in bar turning



Cutting data

General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide		Application	Depth of cut and feed rate	
			IC1279 V _c [sfm]			Chip groove	a _p [inch] f [inch]
K	Grey cast iron	180	–		LMF+ Ex: CCGT 432FN-LMF+ for 304 Different in each application		
	ironSpheroidal	160	–				
	CastMalleable/Tempered iron	130	–				
N	AluCulvire	100	328– 6562				
		130	328– 2625				
		90	328– 1969				
S	Fe base	200	328 – 984				
	Nickel or Kobalt base	280	66– 115				
	Nickel or Kobalt base	250	66– 115				
	Exotic Nickel or Kobalt base		59 – 98				
	Titanium	Rm 440*	197 – 394				

Available range



Turning stainless steel pos finishing "M15"

Insert	Designation	Chipbreaker	Available
	CCGT 21.50FN-LMF+ IC1279		•
	CCGT 21.5.5FN-LMF+ IC1279		•
	CCGT 21.51FN-LMF+ IC1279		•
	CCGT 32.5.5FN-LMF+ IC1279		•
	CCGT 32.51FN-LMF+ IC1279		•
	CCGT 32.52FN-LMF+ IC1279		•
	CCGT 431FN-LMF+ IC1279		•
	CCGT 432FN-LMF+ IC1279		•
	DCGT 21.50FN-LMF+ IC1279		•
	DCGT 21.5.5FN-LMF+ IC1279		•
	DCGT 21.51FN-LMF+ IC1279		•
	DCGT 32.5.5FN-LMF+ IC1279		•
	DCGT 32.51FN-LMF+ IC1279		•
	DCGT 32.52FN-LMF+ IC1279		•
	SCGT 32.51FN-LMF+ IC1279	...-LMF+	•
	SCGT 32.52FN-LMF+ IC1279		•
	SCGT 432FN-LMF+ IC1279		•
	TCGT 21.51FN-LMF+ IC1279		•
	VCGT 22.5FN-LMF+ IC1279		•
	VCGT 221FN-LMF+ IC1279		•
	VCGT 130302FN-LMF+ IC1279 (ISO metric)		•
	VCGT 130304FN-LMF+ IC1279 (ISO metric)		•
	VCGT 331FN-LMF+ IC1279		•
	VCGT 332FN-LMF+ IC1279 VCGT 333FN-LMF+ IC1279		• •

New chipbreaker

Optimized by FEM:

- ▲ Increase life time
- ▲ Small feedrate in bar turning



Cutting data

General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness	Cermet	Application	Depth of cut and feed rate		
		HB	ICM10 V _c [sfm]	Chip groove	a _p [inch]	f [inch]	
P	Steel	Non alloyed steel 0 - 0.45 % C	150 – 250	755 – 886	JF	0.004 to 0.065	0.008 to 0.002
		Low alloyed steel	250 – 300	591 – 755	Ex: CCMT 32.51-JF Different in each application		
		High alloyed steel	200	525 – 656			
		Corrosion resistant steel	200	755 – 886			
M	steel	Ferritic	200	558 – 787			
		Austenitic	180	656 – 787			
		Martensitic	230 – 260	–			
		Duplex					
K	Cast iron		330	427 – 525			
		Grey cast iron	180	–			
		Spheroidal	160	722 – 984			
		Malleable/Tempered iron	130	820 – 1148			

● available from stock, ◻ available upon request
TOOL SOLUTIONS BY ICE

Available range



Turning stainless steel pos finishing "CERMET"

Insert	Designation	Chipbreaker	Available
	CCMT 21.51-JF ICM10	...-JF	•
	CCMT 32.51-JF ICM10		•
	DCMT 21.51-JF ICM10		•
	DCMT 32.51-JF ICM10		•
	TCGT 21.5.5-JF ICM10		•
	TCMT 21.51-JF ICM10		•
	WCGT 020102-JF TCM10 (ISO metric)		•

New chipbreaker

WSF+:

▲ To optimize the control of the chip



Cutting data

General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide		Application	Depth of cut and feed rate	
			ICPM125 V _c [sfm]	ICPM135 V _c [sfm]			
P	Non alloyed steel 0 - 0.45 % C	150 – 250	427 – 820	558 – 623	WSF+ Ex: CCMT 32.51-WSF+ Different in each application	a _p [inch] 0.02 to 0.089	f [inch] 0.006 to 0.003
	Low alloyed steel	250 – 300	197 – 591	295 – 492			
	High alloyed steel	200	262 – 656	394 – 656			
	Corrosion resistant steel	200	328 – 656	459 – 591			
M	Ferritic	200	394 – 820	459 – 656	Consistent cutting depth Inconsistent cutting depth Interrupted cut • ○ x		
	Austenitic	180	328 – 722	361 – 623			
	Duplex	230 – 260	197 – 525	262 – 492			
	Martensitic	330	131 – 328	180 – 246			

Available range



Turning steel pos finishing “M25”

Insert	Designation	Chipbreaker	Available
	CCMT 21.5.5-WSF+ ICPM125	...	•
	CCMT 21.51-WSF+ ICPM125		•
	CCMT 32.5.5-WSF+ ICPM125		•
	CCMT 32.51-WSF+ ICPM125		•
	CCMT 32.52-WSF+ ICPM125	...-WSF+	•
	DCMT 21.5.5-WSF+ ICPM125		•
	DCMT 21.51-WSF+ ICPM125		•
	DCMT 32.5.5-WSF+ ICPM125		•
	DCMT 32.51-WSF+ ICPM125	...	•
	DCMT 32.52-WSF+ ICPM125		•
	TCMT 21.5.5-WSF+ ICPM125		•
	VCMT 22.5-WSF+ ICPM125		•
	VCMT 221-WSF+ ICPM125	...	•
	VCMT 331-WSF+ ICPM125		•

New chipbreaker

Optimized by FEM:

- ▲ Increase life time
- ▲ Reduce temperature and stresses
- ▲ Universal application



Cutting data

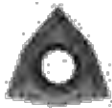
General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide		Application	Depth of cut and feed rate	
			ICPM125 V _c [sfm]	ICPM135 V _c [sfm]		Chip groove a _p [inch]	f [inch]
P	Non alloyed steel 0 - 0.45	150 – 250	427 – 820	558 – 623	WM+ Ex: CCMT 32.51-WM+ for 304 Different in each application		
	% C Low alloyed steel	250 – 300	197 – 591	295 – 492			
	High alloyed steel	200	262 – 656	394 – 656			
	Corrosion resistant steel	200	328 – 656	459 – 591			
M	Ferritic	200	394 – 820	459 – 656	Consistent cutting depth		
	Austenitic	180	328 – 722	361 – 623			
	Duplex	230 – 260	197 – 525	262 – 492			
	Martensitic	330	131 – 328	180 – 246			

Available range



Turning stainless steel pos "M25"

Insert	Designation	Chipbreaker	Available
	CCMT 21.51-WM+ ICPM125		•
	CCMT 21.52-WM+ ICPM125		•
	CCMT 32.51-WM+ ICPM125		•
	CCMT 32.52-WM+ ICPM125		•
	CCMT 431-WM+ ICPM125		•
	CCMT 432-WM+ ICPM125		•
	CCMT 433-WM+ ICPM125		•
	DCMT 21.51-WM+ ICPM125		•
	DCMT 21.52-WM+ ICPM125		•
	DCMT 32.51-WM+ ICPM125		•
	DCMT 32.52-WM+ ICPM125		•
	SCMT 32.51-WM+ ICPM125		•
	SCMT 32.52-WM+ ICPM125		•
	SCMT 431-WM+ ICPM125		•
	SCMT 432-WM+ ICPM125		•
	SCMT 433-WM+ ICPM125		•
	TCMT 1.81.51-WM+ ICPM125	...-WM+	•
	TCMT 21.51-WM+ ICPM125		•
	TCMT 21.52-WM+ ICPM125		•
	TCMT 32.51-WM+ ICPM125		•
	TCMT 32.52-WM+ ICPM125		•
	TCMT 32.53-WM+ ICPM125		•
	VCMT 221-WM+ ICPM125		•
	VCMT 222-WM+ ICPM125		•
	VCMT 331-WM+ ICPM125		•
	VCMT 332-WM+ ICPM125		•
	WCMT 21.51-WM+ ICPM125		•
	WCMT 21.52-WM+ ICPM125		•
	WCMT 32.51-WM+ ICPM125		•
	WCMT 32.52-WM+ ICPM125		•
	WCMT 431-WM+ ICPM125		•
	WCMT 432-WM+ ICPM125		•
	WCMT 433-WM+ ICPM125		•

New chipbreaker

Optimized by FEM:

- ▲ Increase life time
- ▲ Reduce temperature and stresses
- ▲ Universal application



Cutting data

General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide		Application	Depth of cut and feed rate	
			ICPM125 V _c [sfm]	ICPM135M V _c [sfm]		a _p [inch]	f [inch]
P	Non alloyed steel 0 - 0.45 % C	150 – 250	427 – 820	558 – 623	WM+	0.02 to 0.118	0.008 to 0.005
	Low alloyed steel	250 – 300	197 – 591	295 – 492	Ex: CCMT 32.51-WM+ for 304 Different in each application		
	High alloyed steel	200	262 – 656	394 – 656			
	Corrosion resistant steel	200	328 – 656	459 – 591			
M	Ferritic	200	394 – 820	459 – 656		Consistent cutting depth	Inconsistent cutting depth
	Austenitic	180	328 – 722	361 – 623			
	Duplex	230 – 260	197 – 525	262 – 492			
	Martensitic	330	131 – 328	180 – 246			

Available range



Turning stainless steel pos

Insert	Designation	Chipbreaker	Available
	CCMT 32.51-WM+ ICPM135M	...-WM+	•
	CCMT 32.52-WM+ ICPM135M		•
	DCMT 32.51-WM+ ICPM135M		•
	DCMT 32.52-WM+ ICPM135M		•
	TCMT 21.51-WM+ ICPM135M		•
	TCMT 21.52-WM+ ICPM135M		•
	VCMT 221-WM+ ICPM135M		•
	VCMT 222-WM+ ICPM135M		•

New chipbreaker

Optimized by FEM:

- ▲ Increase life time
- ▲ Reduce temperature and stresses
- ▲ Universal application



Cutting data

General cutting parameters depending on the application

Work piece material	Type of treatment/ally	Hardness HB	Coated carbide		Application	Depth of cut and feed rate	
			ICCK 120 V _c [m/min]			a _p [inch]	f [inch]
P	Non alloyed steel 0 - 0.45 % C	150 – 250	656 – 1116	WM+	Ex: CCMT 32.52-WM+ for GG25 Different in each application	0.039 to 0.118	0.016 to 0.009
	Low alloyed steel	250 – 300	492 – 951				
	High alloyed steel	200	492 – 951				
	Corrosion resistant steel	200	525 – 951				
K	Grey cast iron	180	492 – 1312				
	Spheroidal	160	656 – 1476				
	Malleable/Tempered iron	130	656 – 1805				

Available range



Turning cast iron pos “K20”

Insert	Designation	Chipbreaker	Available
	CCMT 21.51-WM+ ICCK120		•
	CCMT 32.51-WM+ ICCK120		•
	CCMT 32.52-WM+ ICCK120		•
	CCMT 432-WM+ ICCK120		•
	DCMT 21.51-WM+ ICCK120		•
	DCMT 32.51-WM+ ICCK120		•
	DCMT 32.52-WM+ ICCK120		•
	SCMT 32.51-WM+ ICCK120	...-WM+	•
	SCMT 32.52-WM+ ICCK120		•
	SCMT 432-WM+ ICCK120		•
	TCMT 1.81.51-WM+ ICCK120		•
	TCMT 21.51-WM+ ICCK120		•
	TCMT 21.52-WM+ ICCK120		•
	TCMT 32.51-WM+ ICCK120		•
	TCMT 32.52-WM+ ICCK120		•

Cutting data



General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness	Uncoated carbide ICH216T _v	Application	Depth of cut and feed rate		
		HB	[sfm]	Chip groove	a _p [inch]	f [inch]	
K	Ca st iron	Grey cast iron	180	394 – 525	LMF+	0.059 to 0.256	0.02 to 0.008
		Spheroidal	160	427 – 558	Ex: CCGT 432FN-LMF+ for AlMg1 Different in each application		
		Malleable/Tempered iron	130	459 – 656			
N	AluCuivre	Aluminium wrought alloys	100	328 – 6562			
		Aluminium cast alloys	130	328 – 2625			
		Copper and copper alloys	90	328 – 1969	Consistent cutting depth	Inconsistent cutting depth	Interrupted cut
		Non-metallic materials Fe	100	328 – 984			
S	Exotic	base	200	98 – 148			
		Nickel or Kobalt base	280	66 – 115			
		Nickel or Kobalt base	250	66 – 115			
		Nickel or Kobalt base	–59 – 98				
		Titanium	Rm 440*	197 – 394			

Available range



Turning non-ferrous pos “K15”

Insert	Designation	Chipbreaker	Available
	CCGT 21.50FN-LMF+ ICH216T		•
	CCGT 21.5.5FN-LMF+ ICH216T		•
	CCGT 21.51FN-LMF+ ICH216T		•
	CCGT 32.5.5FN-LMF+ ICH216T		•
	CCGT 32.51FN-LMF+ ICH216T		•
	CCGT 32.52FN-LMF+ ICH216T		•
	CCGT 431FN-LMF+ ICH216T		•
	CCGT 432FN-LMF+ ICH216T		•
	DCGT 21.50FN-LMF+ ICH216T		•
	DCGT 21.5.5FN-LMF+ ICH216T		•
	DCGT 21.51FN-LMF+ ICH216T		•
	DCGT 21.52FN-LMF+ ICH216T		•
	DCGT 32.5.5FN-LMF+ ICH216T	...-LMF+	•
	DCGT 32.51FN-LMF+ ICH216T		•
	DCGT 32.52FN-LMF+ ICH216T		•
	SCGT 32.51FN-LMF+ ICH216T		•
	SCGT 32.52FN-LMF+ ICH216T		•
	TCGT 21.51FN-LMF+ ICH216T		•
	TCGT 32.51FN-LMF+ ICH216T		•
	TCGT 32.52FN-LMF+ ICH216T		•
	VCGT 22.5FN-LMF+ ICH216T		•
	VCGT 221FN-LMF+ ICH216T		•
	VCGT 130302FN-LMF+ ICH216T (ISO metric)		•
	VCGT 130304FN-LMF+ ICH216T (ISO metric)		•
	VCGT 331FN-LMF+ ICH216T		•
	VCGT 332FN-LMF+ ICH216T		•
	VCGT 333FN-LMF+ ICH216T		•
	VCGT 43.57.5FN-LMF+ ICH216T		•
			•
			•

Negative Size Turning NST



New chipbreaker

Optimized by FEM:

- ▲ Masterfinish Geometry
- ▲ High surface quality



Cutting data

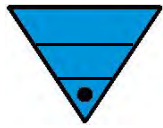
General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide			Application	Depth of cut and feed rate	
			ICCP115 V _c [sfm]	ICCP125 V _c [sfm]	ICCP135 V _c [sfm]		Chip groove	a _p [inch] f [inch]
P	Non alloyed steel 0 - 0.45 % C	150 – 250	722 – 1312	558 – 787	558 – 623	SWX	Ex: Ex: CNMX 432-SWX Different in each application	0.02 to 0.118 0.014 to 0.006
	Low alloyed steel	250 – 300	656 – 1050	328 – 623	295 – 492			
	High alloyed steel	200	591 – 1050	427 – 689	394 – 656			
	Corrosion resistant steel	200	656 – 1050	427 – 689	459 – 591			
M	Ferritic	200	722 – 1050	459 – 689	459 – 656	Consistent cutting depth Inconsistent cutting depth Interrupted cut	  	  
	Austenitic	180	–	328 – 689	361 – 623			
	Martensitic	230 – 260	–	–	262 – 492			
	Duplex	330	–	230 – 328	180 – 246			
K	Grey cast iron	180	459 – 1214	427 – 689	–	  	  	  
	Spheroidal	160	623 – 1411	394 – 787	–			
	Malleable/Tempered iron	130	591 – 1706	492 – 820	–			

Available range



MASTERFINISH



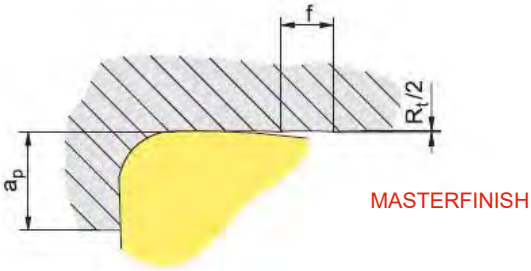
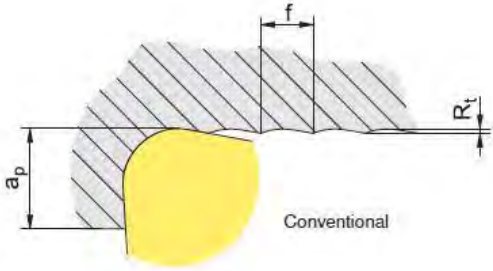
Heavy turning steel neg "P15" – Masterfinish

Insert	Designation	Chipbreaker	Available
	CNMX 431-SWX+ ICCP115	...-SWX+	•
	CNMX 432-SWX+ ICCP115		•
	DNMX 441-SWX+ ICCP115		•
	DNMX 442-SWX+ ICCP115		•
	WNMX 431-SWX+ ICCP115		•
	WNMX 432-SWX+ ICCP115		•

Operating principle

Improved surface finish

With the same feed rate an insert with „Masterfinish“ cutting edge reaches a roughness value R_a which is many times higher than the one of a conventional insert.



Cutting data



General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Cermets ICM10 V _c [sfm]	Application Chip groove	Depth of cut and feed rate	
					a _p [inch]	f [inch]
P	Non alloyed steel 0 - 0.45 % C	150 – 250	755 – 886	JF	0.004 to 0.079	0.008 to 0.002
	Low alloyed steel	250 – 300	591 – 755	Ex: CNMG 431EN-JF for CK60 Different in each application		
	High alloyed steel	200	525 – 656			
	Corrosion resistant steel	200	755 – 886			
M	Ferritic	200	558 – 787			
	Austenitic	180	656 – 787			
	Duplex	230 – 260	–			
	Martensitic	330	427 – 525			
K	Grey cast iron	180	–			
	Spheroidal	160	722 – 984			
	Malleable/Tempered iron	130	820 – 1148			

Available range



Turning steel neg finishing “CERMET”

Insert	Designation	Chipbreaker	Available
	CNMG 431EN-JF ICM10	...~JF+	
	CNMG 432EN-JF ICM10		
	DNMG 331EN-JF ICM10		
	DNMG 441EN-JF ICM10		

New chipbreaker

Optimized by FEM:

- ▲ Increase life time
- ▲ Reduce temperature and stresses



Cutting data

General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide			Application	Depth of cut and feed rate	
			ICCP115	ICCP125	ICCP135			
			V _c [sfm]	V _c [sfm]	V _c [sfm]		Chip groove	a _p [inch] f [inch]
P	Non alloyed steel 0 - 0.45 % C	150 – 250	722 – 1312	558 – 787	558 – 623	WL+	Ex: CNMG 432-WL+ for CK60 Different in each application	0.02 to 0.079 0.008 to 0.004
	Low alloyed steel	250 – 300	656 – 1050	328 – 623	295 – 492			
	High alloyed steel	200	591 – 1050	427 – 689	394 – 656			
	Corrosion resistant steel	200	656 – 1050	427 – 689	459 – 591			
M	Steel	200	722 – 1050	459 – 689	459 – 656	Consistent cutting depth	Inconsistent cutting depth	Interrupted cut
		180	–	328 – 689	361 – 623			
		230 – 260	–	–	262 – 492			
		330	–	230 – 328	180 – 246			
K	Grey cast iron	180	–	–	–	•	○	X
	Spheroidal	160	–	–	–			
	Malleable/Tempered iron	130	–	–	–			

Available range



Heavy turning steel neg "P15"

Insert	Designation	Chipbreaker	Available
	CNMG 321EN-WL+ ICCP115	...-WL+	•
	CNMG 431EN-WL+ ICCP115		•
	CNMG 432EN-WL+ ICCP115		•
	DNMG 331EN-WL+ ICCP115		•
	DNMG 441EN-WL+ ICCP115		•
	DNMG 442EN-WL+ ICCP115		•
	VNMG 331EN-WL+ ICCP115		•
	WNMG 331EN-WL+ ICCP115		•
	WNMG 431EN-WL+ ICCP115		•

Heavy turning steel neg "P25"

Insert	Designation	Chipbreaker	Available
	CNMG 431EN-WL+ ICCP125	...-WL+	•
	CNMG 432EN-WL+ ICCP125		•
	DNMG 331EN-WL+ ICCP125		•

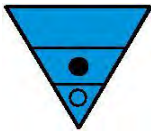
Cutting data



General cutting parameters depending on the application

Work piece material	Type of treatment/ally	Hardness HB	Coated carbide			Application	Depth of cut and feed rate	
			ICCP115 V _c [sfm]	ICCP125 V _c [sfm]	ICCP135 V _c [sfm]		Chip groove a _p [inch]	f [inch]
P	Non alloyed steel 0 - 0.45 % C	150 – 250	722 – 1312	558 – 787	558 – 623	WM+ Ex: CNMG 432-WM+ for CK60 Different in each application		
	Low alloyed steel	250 – 300	656 – 1050	328 – 623	295 – 492			
	High alloyed steel	200	591 – 1050	427 – 689	394 – 656			
	Corrosion resistant steel	200	656 – 1050	427 – 689	459 – 591			
M	Ferritic	200	722 – 1050	459 – 689	459 – 656			
	Austenitic	180	–	328 – 689	361 – 623			
	Martensitic Duplex	230 – 260 ³³⁰	–	230 – 328	180 – 246 ²⁶² – 492			
K	Grey cast iron	180	459 – 1214	427 – 689	–			
	Spheroidal	160	623 – 1411	394 – 787	–			
	Malleable/Tempered iron	130	591 – 1706	492 – 820	–			

Available range



Turning steel neg semi finishing “P15”

Insert	Designation	Chipbreaker	Available
	CNMG 431-WM+ ICCP115	...-WM+	•
	CNMG 432-WM+ ICCP115		•
	CNMG 433-WM+ ICCP115		•
	DNMG 331-WM+ ICCP115		•
	DNMG 332-WM+ ICCP115		•
	DNMG 441-WM+ ICCP115		•
	DNMG 442-WM+ ICCP115		•
	DNMG 443-WM+ ICCP115		•
	SNMG 432-WM+ ICCP115		•
	SNMG 433-WM+ ICCP115		•
	TNMG 331-WM+ ICCP115		•
	TNMG 332-WM+ ICCP115		•
	TNMG 333-WM+ ICCP115		•
	VNMG 331-WM+ ICCP115		•
	VNMG 332-WM+ ICCP115		•
	WNMG 331-WM+ ICCP115		•
	WNMG 332-WM+ ICCP115		•
	WNMG 431-WM+ ICCP115		•
	WNMG 432-WM+ ICCP115		•
	WNMG 433-WM+ ICCP115		•

Cutting data



General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide			Application	Depth of cut and feed rate	
			ICCP115	ICCP125	ICCP135		Chip groove	a _p [inch]
			V _c [sfm]	V _c [sfm]	V _c [sfm]			
P	Non alloyed steel 0 - 0.45 % C	150 – 250	722 – 1312	558 – 787	558 – 623	WM+		0.039 to 0.157
	Low alloyed steel	250 – 300	656 – 1050	328 – 623	295 – 492			
	High alloyed steel	200	591 – 1050	427 – 689	394 – 656			
	Corrosion resistant steel	200	656 – 1050	427 – 689	459 – 591			
M	Ferritic	200	722 – 1050	459 – 689	459 – 656	Ex: CNMG 432-WM+ for CK60 Different in each application		0.017 to 0.009
	Austenitic	180	–	328 – 689	361 – 623			
	Duplex	230 – 260	–	–	262 – 492			
	Martensitic	330	–	230 – 328	180 – 246			
K	Cast iron							
	Grey cast iron	180	459 – 1214	427 – 689	–			
	Spheroidal	160	623 – 1411	394 – 787	–			
	Malleable/Tempered iron	130	591 – 1706	492 – 820	–			

Available range



Turning steel neg medium “P25”

Insert	Designation	Chipbreaker	Available
	CNMG 431-WM+ ICCP125		•
	CNMG 432-WM+ ICCP125		•
	CNMG 433-WM+ ICCP125		•
	DNMG 331-WM+ ICCP125		•
	DNMG 332-WM+ ICCP125		•
	DNMG 431-WM+ ICCP125		•
	DNMG 432-WM+ ICCP125		•
	DNMG 441-WM+ ICCP125		•
	DNMG 442-WM+ ICCP125		•
	DNMG 443-WM+ ICCP125		•
	SNMG 432-WM+ ICCP125	...-WM+	•
	SNMG 433-WM+ ICCP125		•
	TNMG 331-WM+ ICCP125		•
	TNMG 332-WM+ ICCP125		•
	TNMG 333-WM+ ICCP125		•
	TNMG 431-WM+ ICCP125		•
	TNMG 432-WM+ ICCP125		•
	VNMG 331-WM+ ICCP125		•
	VNMG 332-WM+ ICCP125		•
	WNMG 331-WM+ ICCP125		•
	WNMG 332-WM+ ICCP125		•
	WNMG 431-WM+ ICCP125		•
	WNMG 432-WM+ ICCP125		•
	WNMG 433-WM+ ICCP125		•

Cutting data



General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	ICCP125HP v _c [sfm]	Application Chip groove	Depth of cut and feed rate	
					a _p [inch]	f [inch]
P	Non alloyed steel 0 - 0.45 % C	150 – 250	560 – 890	WM+ Ex: CNMG 432-WM+ for CK60 Different in each application		
	Low alloyed steel	250 – 300	330 – 690			
	High alloyed steel	200	430 – 750			
	Corrosion resistant steel	200	430 – 750			
M	steel Ferritic	200	460 – 690			
	Austenitic	180	330 – 690			
	Duplex	230 – 260	–			
	Martensitic	330	230 – 330			
K	iron Grey cast iron	180	430 – 690			
	Spheroidal	160	390 – 790			
	Malleable/Tempered iron	130	490 – 820			

Available range



Insert	Designation	Chipbreaker	Available
	CNMG 432-WM+ ICCP125HP	...-WM+	•
	CNMG 433-WM+ ICCP125HP		•
	DNMG 442-WM+ ICCP125HP		•
	TNMG 332-WM+ ICCP125HP		•
	SNMG 432-WM+ ICCP125HP		•
	WNMG 432-WM+ ICCP125HP		•
	WNMG 433-WM+ ICCP125HP		•

Cutting data



General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide			Application	Depth of cut and feed rate	
			ICCP115	ICCP125	ICCP135		Chip groove	a _p [inch]
			V _c [m/min]	V _c [sfm]	V _c [sfm]			
P	Non alloyed steel 0 - 0.45 % C	150 – 250	722 – 1312	558 – 787	558 – 623	WM+ Ex: CNMG 432-WM+ for CK60 Different in each application		
	Low alloyed steel	250 – 300	656 – 1050	328 – 623	295 – 492			
	High alloyed steel	200	591 – 1050	427 – 689	394 – 656			
	Corrosion resistant steel	200	656 – 1050	427 – 689	459 – 591			
M	Ferritic	200	722 – 1050	459 – 689	459 – 656	Consistent cutting depth		
	Austenitic	180	–	328 – 689	361 – 623			
	Duplex	230 – 260	–	–	262 – 492			
	Martensitic	330	–	230 – 328	180 – 246			
K	Grey cast iron	180	459 – 1214	427 – 689	–	•	•	•
	Spheroidal	160	623 – 1411	394 – 787	–			
	Malleable/Tempered iron	130	591 – 1706	492 – 820	–			

Available range



Turning steel neg medium roughing "P35"

Insert	Designation	Chipbreaker	Available
	CNMG 432-WM+ ICCP135	...-WM+	•
	CNMG 433-WM+ ICCP135		•
	DNMG 332-WM+ ICCP135		•
	DNMG 442-WM+ ICCP135		•
	DNMG 443-WM+ ICCP135		•
	SNMG 432-WM+ ICCP135		•
	SNMG 433-WM+ ICCP135		•
	TNMG 332-WM+ ICCP135		•
	WNMG 432-WM+ ICCP135		•
	WNMG 433-WM+ ICCP135		•

Cutting data



General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide			Application	Depth of cut and feed rate	
			ICCP115 V _c [sfm]	ICCP125 V _c [sfm]	ICCP135 V _c [sfm]		Chip groove	f [inch]
P	Non alloyed steel 0 - 0.45 % C	150 – 250	722 – 1312	558 – 787	558 – 623	WR+	0.059 to 0.197	0.02 to 0.012
	Low alloyed steel	250 – 300	656 – 1050	328 – 623	295 – 492			
	High alloyed steel	200	591 – 1050	427 – 689	394 – 656			
	Corrosion resistant steel	200	656 – 1050	427 – 689	459 – 591			
M	Ferritic	200	722 – 1050	459 – 689	459 – 656	Ex: CNMG 432-WR+ for CK60 Different in each application		
	Austenitic	180	–	328 – 689	361 – 623			
	Martensitic	330	–	230 – 328	180 – 246			
	Duplex	230 – 260	–	–	262 – 492			
K	Grey cast iron	180	459 – 1214	427 – 689	–			
	Spheroidal	160	623 – 1411	394 – 787	–			
	Malleable/Tempered iron	130	591 – 1706	492 – 820	–			

Available range



Turning steel neg roughing "P15"

Insert	Designation	Chipbreaker	Available
	CNMG 432EN-WR+ ICCP115	...-WR+	•
	DNMG 442EN-WR+ ICCP115		•
	DNMG 443EN-WR+ ICCP115		•

Turning steel neg roughing "P25"

Insert	Designation	Chipbreaker	Available
	CNMG 432EN-WR+ ICCP125	...-WR+	•
	CNMG 433EN-WR+ ICCP125		•
	DNMG 442EN-WR+ ICCP125		•
	DNMG 443EN-WR+ ICCP125		•
	SNMG 432EN-WR+ ICCP125		•
	SNMG 433EN-WR+ ICCP125		•
	TNMG 332EN-WR+ ICCP125		•
	TNMG 333EN-WR+ ICCP125		•
	WNMG 432EN-WR+ ICCP125		•
	WNMG 433EN-WR+ ICCP125		•

Turning steel neg roughing "P35"

Insert	Designation	Chipbreaker	Available
	DNMG 442EN-WR+ ICCP135	...-WR+	•
	DNMG 443EN-WR+ ICCP135		•

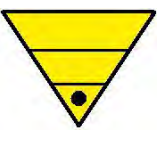
Cutting data



General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide		Application	Depth of cut and feed rate	
			ICP2120				
			v _c [m/min]	Chip groove		a _p [inch]	f [inch]
M	steel	Ferritic	200	492 – 656	EXK+ Ex: CNGP 432-EXK+ for 304 Different in each application	0.02 to 0.098	0.01 to 0.004
		Austenitic	180	394 – 656			
		Martensitic					
		Duplex	230 – 260	295 – 525			
K	Grey cast iron		330	197 – 262			
		ironSpheroidal	180	394 – 525			
		CastMalleable / Tempered iron	160	394 – 525			
N	Ferrous		130	459 – 722	Consistent cutting depth	Inconsistent cutting depth	Interrupted cut
			100	328 – 1312			
			130	328 – 1312			
			90	328 – 1969			
S	Non Fe base		100	328 – 1312			X
			200	66 – 164			
		Nickel or Kobalt base	280	66 – 164			
		Nickel or Kobalt base	250	49 – 131			
		ExoticTitanium		66 – 115			
			Rm 440*	262 – 459			

Available range



Turning stainless steel neg finishing "M25"

Insert	Designation	Chipbreaker	Available
	CNGP 43.5FN-EXK+ ICP2120	...-EXK+	•
	CNGP 431FN-EXK+ ICP2120		•
	CNGP 432FN-EXK+ ICP2120		•
	CNGP 433FN-EXK+ ICP2120		•
	DNGP 431FN-EXK+ ICP2120		•
	DNGP 44.5FN-EXK+ ICP2120		•
	DNGP 441FN-EXK+ ICP2120		•
	DNGP 442FN-EXK+ ICP2120		•
	VNGP 33.5FN-EXK+ ICP2120		•
	VNGP 331FN-EXK+ ICP2120		•
	WNGP 431FN-EXK+ ICP2120		•
	WNGP 432FN-EXK+ ICP2120		•

New chipbreaker

Sharp positive cutting edges:

- ▲ Reduced formation of burrs
- ▲ Good surface finish
- ▲ Low cutting forces



Cutting data

General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide		Application	Depth of cut and feed rate	
			ICPM125	ICPM135		Chip groove	a _p [inch]
P	Non alloyed steel 0 - 0.45	150 – 250	427 – 820	558 – 623	IPK+ Ex: CNMG 432-IPK+ for 304 Different in each application		
	% C Low alloyed steel	250 – 300	197 – 591	295 – 492			
	High alloyed steel	200	262 – 656	394 – 656			
	Corrosion resistant steel	200	328 – 656	459 – 591			
M	Ferritic	200	394 – 820	459 – 656	Consistent cutting depth		
	Austenitic	180	328 – 722	361 – 623			
	Duplex	230 – 260	197 – 525	262 – 492			
	Martensitic	330	131 – 328	180 – 246			

Available range



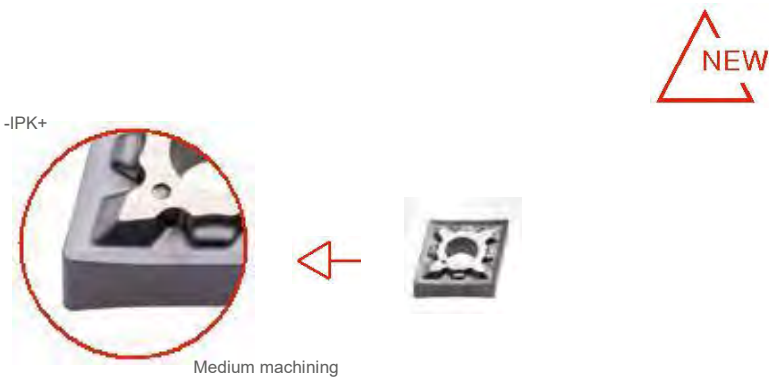
Turning stainless steel neg medium "M25"

Insert	Designation	Chipbreaker	Available
	CNMG 321-IPK+ ICPC125		•
	CNMG 322-IPK+ ICPC125		•
	CNMG 431-IPK+ ICPC125		•
	CNMG 432-IPK+ ICPC125		•
	DNMG 331-IPK+ ICPC125	...-IPK+	•
	DNMG 332-IPK+ ICPC125		•
	DNMG 431-IPK+ ICPC125		•
	DNMG 432-IPK+ ICPC125		•
	DNMG 441-IPK+ ICPC125		•
	DNMG 442-IPK+ ICPC125		•
	SNMG 432-IPK+ ICPC125		•
	TNMG 331-IPK+ ICPC125		•
	TNMG 332-IPK+ ICPC125		•
	VNMG 332-IPK+ ICPC125		•
	WNMG 331-IPK+ ICPC125		•
	WNMG 332-IPK+ ICPC125		•
	WNMG 431-IPK+ ICPC125		•
	WNMG 432-IPK+ ICPC125		•
	WNMG 433-IPK+ ICPC125		•
	WNMG 433-IPK+ ICPC125		•

New chipbreaker

Sharp positive cutting edges:

- ▲ Reduced formation of burrs
- ▲ Good surface finish
- ▲ Low cutting forces



Cutting data

General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide ICCM120HP v _c [m/min]	Application Chip groove	Depth of cut and feed rate	
					a _p [inch]	f [inch]
P	Non alloyed steel 0 - 0.45 % C	150 – 250	430 – 820	IPK+	0.039 to 0.165	0.016 to 0.009
	Low alloyed steel	250 – 300	200 – 260	Ex: CNMG 431-IPK+ for 304 Different in each application		
	High alloyed steel	200	260 – 660			
	Corrosion resistant steel	200	330 – 660			
M	Ferritic	200	390 – 820			
	Austenitic	180	390 – 720	Consistent cutting depth	Inconsistent cutting depth	Interrupted cut
	Duplex	230 – 260	–	•	○	x
	Martensitic	330	–			

Available range



Insert	Designation	Chipbreaker	Available
	CNMG 431-IPK+ ICCM120HP	...-IPK+	•
	CNMG 432-IPK+ ICCM120HP		•
	DNMG 441-IPK+ ICCM120HP		•
	DNMG 442-IPK+ ICCM120HP		•
	WNMG 431-IPK+ ICCM120HP		•
	WNMG 432-IPK+ ICCM120HP		•

New chipbreaker

Sharp positive cutting edges:

- ▲ Reduced formation of burrs
- ▲ Good surface finish
- ▲ Low cutting forces



Cutting data

General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide		Application	Depth of cut and feed rate	
			ICPM125 V _c [sfm]	ICPM135 V _c [sfm]		Chip groove a _p [inch]	f [inch]
P	Non alloyed steel 0 - 0.45	150 – 250	427 – 820	558 – 623	IPR+ Ex: CNMG 432-IPK+ for 304 Different in each application		0.059 to 0.236
	% C Low alloyed steel	250 – 300	197 – 591	295 – 492			
	High alloyed steel	200	262 – 656	394 – 656			
	Corrosion resistant steel	200	328 – 656	459 – 591			
M	Ferritic	200	394 – 820	459 – 656	Consistent cutting depth Inconsistent cutting depth Interrupted cut		0.02 to 0.01
	Austenitic	180	328 – 722	361 – 623			
	Duplex	230 – 260	197 – 525	262 – 492			
	Martensitic	330	131 – 328	180 – 246			

Available range



Turning stainless steel neg roughing “M25”

Insert	Designation	Chipbreaker	Available
	CNMG 432-IPR+ ICPC125	...-IPR+	•
	CNMG 433-IPR+ ICPC125		•
	DNMG 442-IPR+ ICPC125		•
	DNMG 443-IPR+ ICPC125		•
	TNMG 332-IPR+ ICPC125		•
	TNMG 333-IPR+ ICPC125		•
	WNMG 432-IPR+ ICPC125		•
	WNMG 433-IPR+ ICPC125		•

Cutting data



General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide	Application	Depth of cut and feed rate	
			ICCK 120 V _c [m/min]		a _p [inch]	f [inch]
P	Non alloyed steel 0 - 0.45 % C	150 – 250	656 – 1116	WM+	0.039 to 0.157	0.017 to 0.009
	Low alloyed steel	250 – 300	492 – 951	Ex: CNMG 432-WM+ for GC25 Different in each application		
	High alloyed steel	200	492 – 951			
	Corrosion resistant steel	200	525 – 951			
K	Grey cast iron	180	492 – 1312	Consistent cutting depth	Inconsistent cutting depth	Interrupted cut
	Spheroidal	160	656 – 1476	•	○	x
	Malleable/Tempered iron	130	656 – 1805			

Available range



Turning cast iron neg “K20”

Insert	Designation	Chipbreaker	Available
	CNMG 432-WM+ ICCK120	...-WM+	•
	CNMG 433-WM+ ICCK120		•
	DNMG 442-WM+ ICCK120		•
	DNMG 443-WM+ ICCK120		•
	SNMG 432-WR+ ICCK120		•
	TNMG 332-WM+ ICCK120		•
	TNMG 333-WM+ ICCK120		•
	TNMG 432-WM+ ICCK120		•
	WNMG 432-WM+ ICCK120		•
	WNMG 433-WM+ ICCK120		•

Cutting data



General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide	Application	Depth of cut and feed rate	
			ICCK 120 V _c [sfm]		a _p [inch]	f [inch]
P	Non alloyed steel 0 - 0.45 % C	150 – 250	656 – 1116	909+	0.079 to 0.189	0.019 to 0.012
	Low alloyed steel	250 – 300	492 – 951	Ex: CNMG 432-909 for GC25 Different in each application		
	High alloyed steel	200	492 – 951			
	Corrosion resistant steel	200	525 – 951			
K	Grey cast iron	180	492 – 1312	Consistent cutting depth	Inconsistent cutting depth	Interrupted cut
	Spheroidal	160	656 – 1476	•	•	X
	Malleable/Tempered iron	130	656 – 1805			Only .NMA

Available range



Turning cast iron neg “K20”

Insert	Designation	Geometry		Available
	CNMG 432-909+ ICCK120	...-909+		•
	CNMG 433-909+ ICCK120			•
	CNMG 543-909+ ICCK120			•
	DNMG 442-909+ ICCK120			•
	SNMG 432-909+ ICCK120			•
	TNMG 332-909+ ICCK120			•
	WNMG 432-909+ ICCK120			•
	WNMG 433-909+ ICCK120			•
	CNMA 432EN ICCK120	...-EN		•
	CNMA 433EN ICCK120			•
	CNMA 434EN ICCK120			•
	SNMA 432EN ICCK120			•
	TNMA 332EN ICCK120			•
	WNMA 432EN ICCK120			•

Cutting data



General cutting parameters depending on the application

Work piece material		Hardness	Coated carbide ICCK110HP V _c	Application	Depth of cut and feed rate		
Type of treatment/alloy		HB	[sfm]	Chip groove	a _p [inch]	f [inch]	
P	Steel						
	Non alloyed steel 0 - 0.45 % C	150 – 250	720 – 1310	909+	0.079 to 0.189	0.019 to 0.012	
	Low alloyed steel	250 – 300	560 – 1120	Ex: CNM. 432-909+ for GC25 Different in each application	   	  X  Only .NMA	
	High alloyed steel	200	560 – 1120				
Corrosion resistant steel	200	660 – 980					
K	Cast iron						
	Grey cast iron	180	560 – 1480	Consistent cutting depth	Inconsistent cutting depth	Interrupted cut	Interrupted cut
	Spheroidal	160	720 – 1410			X	 Only .NMA
	Malleable/Tempered iron	130	720 – 1310				

Available range



Insert	Designation	Chipbreaker	Available
	CNMG 432-909+ ICCK110HP		•
	CNMG 433-909+ ICCK110HP		•
	CNMG 543-909+ ICCK110HP		•
	SNMG 433-909+ ICCK110HP	...-909+	•
	WNMG 432-909+ ICCK110HP		•
	WNMG 433-909+ ICCK110HP		•
	CNMA 432EN ICCK110HP		•
	WNMA 433EN ICCK110HP	-	•

Cutting data



General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide		Application Chip groove	Depth of cut and feed rate		
			ICP5110 V _c [sfm]	ICP5115 V _c [sfm]		a _p [inch]	f [inch]	
M	steel	Ferritic	200	492– 755	427– 722	IPE+ Ex: CNMG 432-IPE+ for Super Alliage Different in each application	0.031 to 0.118	0.012 to 0.004
	Austenitic	180	459– 623	394– 591				
	Martensitic							
	Duplex	230 – 260	197– 328	164– 295				
			330	–	–			
S	Febase	200	262– 394	262– 394				
	Nickel or Kobalt base	280	197– 328	197– 328	Consistent cutting depth	Inconsistent cutting depth	Interrupted cut	
	Nickel or Kobalt base	250	115– 295	115– 295				
	Nickel or Kobalt base							
	ExoticTitanium							
		Rm 440*	230– 394	230– 394			X	

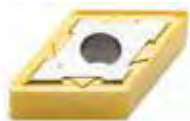
Available range



Turning titanium “S10”

Insert	Designation	Chipbreaker	Available
	CNMG 431-IPE+ ICP5110	...-IPE+	•
	CNMG 432-IPE+ ICP5110		•
	DNMG 442-IPE+ ICP5110		•
	SNMG 432-IPE+ ICP5110		•
	TNMG 332-IPE+ ICP5110		•
	VNMG 332-IPE+ ICP5110		•
	WNMG 432-IPE+ ICP5110		•

Turning Titanium “S15”



Insert	Designation	Chipbreaker	Available
	CNMG 431-IPE+ ICP5115	...-IPE+	•
	CNMG 432-IPE+ ICP5115		•
	DNMG 442-IPE+ ICP5115		•
	SNMG 432-IPE+ ICP5115		•
	TNMG 332-IPE+ ICP5115		•
	VNMG 332-IPE+ ICP5115		•
	WNMG 432-IPE+ ICP5115		•

Heavy Duty Turning HDT



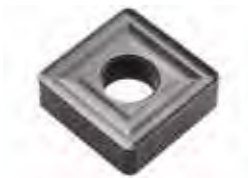
Cutting data



General cutting parameters depending on the application

Work piece material	Type of treatment/ally	Hardness HB	Coated carbide			Application	Depth of cut and feed rate	
			ICCP115 V _c [sfm]	ICCP125 V _c [sfm]	ICCP135 V _c [sfm]		Chip groove	a _p [inch] f [inch]
P	Non alloyed steel 0 - 0.45 % C	150 – 250	722 – 1312	558 – 787	558 – 623	TCH	0.098 to 0.394	0.024 to 0.012
	Low alloyed steel	250 – 300	656 – 1050	328 – 623	295 – 492	Different in each application		
	High alloyed steel	200	591 – 1050	427 – 689	394 – 656			
	Corrosion resistant steel	200	656 – 1050	427 – 689	459 – 591			
M	Ferritic	200	722 – 1050	459 – 689	459 – 656	  	Consistent cutting depth	Inconsistent cutting depth
	Austenitic	180	–	328 – 689	361 – 623			
	Martensitic	330	–	230 – 328	180 – 246			
	Duplex	230 – 260	–	–	262 – 492			
K	Grey cast iron	180	459 – 1214	427 – 689	–	  	Consistent cutting depth	Inconsistent cutting depth
	Spheroidal	160	623 – 1411	394 – 787	–			
	Malleable/Tempered iron	130	591 – 1706	492 – 820	–			

Available range



Heavy turning steel neg "P25"

Insert	Designation	Chipbreaker	Available
	SNMM 644EN-TCH ICCP125	...-TCH	•
	SNMM 866EN-TCH ICCP125		•

New chipbreaker

Sharp positive cutting edges:

- ▲ Single Sided roughing geometry
- ▲ Good chip control
- ▲ For steels with high strength (800N/mm²)



Cutting data

General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide			Application	Depth of cut and feed rate		
			ICCP115	ICCP125	ICCP135		Chip groove	a _p [inch]	f [inch]
			V _c [sfm]	V _c [sfm]	V _c [sfm]				
P	Non alloyed steel 0 - 0.45 % C	150 – 250	722 – 1312	558 – 787	558 – 623	HD2	0.059 to 0.472	0.02 to 0.035	
	Low alloyed steel	250 – 300	656 – 1050	328 – 623	295 – 492	Ex: CNMM 432-HD2 for CK60 Different in each application			
	High alloyed steel	200	591 – 1050	427 – 689	394 – 656				
	Corrosion resistant steel	200	656 – 1050	427 – 689	459 – 591				
M	Steel	Ferritic	200	722 – 1050	459 – 689	459 – 656			
		Austenitic	180	–	328 – 689	361 – 623	Consistent cutting depth	Inconsistent cutting depth	Interrupted cut
		Martensitic	230 – 260	–	262 – 492				
		Duplex		330	–	230 – 328	180 – 246		
K	Cast iron	Grey cast iron	180	459 – 1214	427 – 689	–			
		Spheroidal	160	623 – 1411	394 – 787	–			
		Malleable/Tempered iron	130	591 – 1706	492 – 820	–			

Available range



Heavy turning steel neg "P15"

Insert	Designation	Chipbreaker		Available
	CNMM 432EN-HD2 ICCP115	HD2		•
	DNMM 442EN-HD2 ICCP115			•

Heavy turning steel neg "P25"

Insert	Designation	Chipbreaker	Available
	CNMM 432EN-HD2 ICCP125	...-HD2	•
	CNMM 433EN-HD2 ICCP125		•
	DNMM 442EN-HD2 ICCP125		•

Heavy turning steel neg "P35"

Insert	Designation	Chipbreaker		Available
	CNMM 432EN-HD2 ICCP135	HD2		•
	DNMM 442EN-HD2 ICCP135			•

Cutting data



General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide			Application	Depth of cut and feed rate	
			ICCP115 V _c [sfm]	ICCP125 V _c [sfm]	ICCP135 V _c [sfm]		Chip groove	a _p [inch] f [inch]
P	Non alloyed steel 0 - 0.45 % C	150 – 250	722 – 1312	558 – 787	558 – 623	HD5		0.079 to 0.472 0.031 to 0.012
	Low alloyed steel	250 – 300	656 – 1050	328 – 623	295 – 492			
	High alloyed steel	200	591 – 1050	427 – 689	394 – 656			
	Corrosion resistant steel	200	656 – 1050	427 – 689	459 – 591			
M	Ferritic	200	722 – 1050	459 – 689	459 – 656	Ex: CNMM 644EN-HD5 for CK60 Different in each application		
	Austenitic	180	–	328 – 689	361 – 623			
	Martensitic	330	–	230 – 328	180 – 246			
	Duplex	230 – 260	–	–	262 – 492			
K	Grey cast iron	180	459 – 1214	427 – 689	–			
	Spheroidal	160	623 – 1411	394 – 787	–			
	Malleable/Tempered iron	130	591 – 1706	492 – 820	–			

Available range



Heavy turning steel neg “P15”

Insert	Designation	Chipbreaker	Available
	CNMM 433-HD5 ICCP115	...-HD5	•
	CNMM 543-HD5 ICCP115		•
	CNMM 643-HD5 ICCP115		•
	DNMM 443-HD5 ICCP115		•

Heavy turning steel neg “P25”

Insert	Designation	Chipbreaker	Available
	CNMM 433EN-HD5 ICCP125	...-HD5	•
	CNMM 434EN-HD5 ICCP125		•
	CNMM 543EN-HD5 ICCP125		•
	CNMM 643EN-HD5 ICCP125		•
	CNMM 644EN-HD5 ICCP125		•
	CNMM 856EN-HD5 ICCP125		•
	CNMM 866EN-HD5 ICCP125		•
	DNMM 443EN-HD5 ICCP125		•
	SNMM 643EN-HD5 ICCP125		•
	SNMM 644EN-HD5 ICCP125		•
	SNMM 856EN-HD5 ICCP125		•
	SNMM 866EN-HD5 ICCP125		•

Heavy turning steel neg “P35”

Insert	Designation	Chipbreaker	Available
	CNMM 433EN-HD5 ICCP135	...-HD5	•
	CNMM 434EN-HD5 ICCP135		•
	CNMM 543EN-HD5 ICCP135		•
	DNMM 443EN-HD5 ICCP135		•

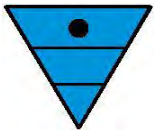
Cutting data



General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide			Application	Depth of cut and feed rate		
			ICCP115 V _c	ICCP125 V _c	ICCP135 V _c		Chip groove	a _p [inch]	f [inch]
			[sfm]	[sfm]	[sfm]				
P	Non alloyed steel 0 - 0.45 % C	150 – 250	722 – 1312	558 – 787	558 – 623	HD8	0.098 to 0.472	0.047 to 0.014	
	Low alloyed steel	250 – 300	656 – 1050	328 – 623	295 – 492	Ex: CNMM 644-HD8 for CK60 Different in each application			
	Steel High alloyed steel	200	591 – 1050	427 – 689	394 – 656				
	Corrosion resistant steel	200	656 – 1050	427 – 689	459 – 591				
M	steel Ferritic	200	722 – 1050	459 – 689	459 – 656				Consistent cutting depth
	Austenitic	180	–	328 – 689	361 – 623				
	Martensitic	330	–	230 – 328	180 – 246				
	Duplex	230 – 260	–	–	262 – 492				
K	Ca st iron Grey cast iron	180	459 – 1214	427 – 689	–				
	Spheroidal	160	623 – 1411	394 – 787	–				
	Malleable/Tempered iron	130	591 – 1706	492 – 820	–				

Available range



Heavy turning steel neg "P25"

Insert	Designation	Chipbreaker	Available
	CNMM 644SN-HD8 ICCP125	HD8	•
	CNMM 646SN-HD8 ICCP125		•
	CNMM 866SN-HD8 ICCP125		•
	CNMM 868SN-HD8 ICCP125		•
	SNMM 644SN-HD8 ICCP125		•
	SNMM 646SN-HD8 ICCP125		•
	SNMM 866SN-HD8 ICCP125		•
	SNMM 868SN-HD8 ICCP125		•

Cutting data



General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide			Application	Depth of cut and feed rate	
			ICCP115 V _c [sfm]	ICCP125 V _c [m/min]	ICCP135 V _c [sfm]		Chip groove	a _p [inch] f [inch]
P	Non alloyed steel 0 - 0.45 % C	150 – 250	722 – 1312	558 – 787	558 – 623	909+ Ex: CNMG 644-909+ for CK60 Different in each application		0.126 to 0.299 0.039 to 0.024
	Low alloyed steel	250 – 300	656 – 1050	328 – 623	295 – 492			
	High alloyed steel	200	591 – 1050	427 – 689	394 – 656			
	Corrosion resistant steel	200	656 – 1050	427 – 689	459 – 591			
M	Ferritic	200	722 – 1050	459 – 689	459 – 656			
	Austenitic	180	–	328 – 689	361 – 623			
	Martensitic	330	–	230 – 328	180 – 246			
	Duplex	230 – 260	–	–	262 – 492			
K	Grey cast iron	180	459 – 1214	427 – 689	–			
	Spheroidal	160	623 – 1411	394 – 787	–			
	Malleable/Tempered iron	130	591 – 1706	492 – 820	–			

Available range



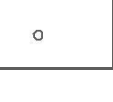
Medium and roughing turning steel

Insert	Designation	Chipbreaker	Available
	CNMG 543-909+ ICCP125	...-909+	•
	CNMG 643-909+ ICCP125		•
	CNMG 644-909+ ICCP125		•
	SNMG 543-909+ ICCP125	...-909+	•
	SNMG 643-909+ ICCP125		•
	TNMG 433-909+ ICCP125		•
	RCMT 1606MOSN-XR ICCP125 (ISO metric)	...-XR	•
	RCMT 2006MOSN-XR ICCP125 (ISO metric)		•

Cutting data



General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide			Application	Depth of cut and feed rate	
			ICCP115 V _c [sfm]	ICCP125 V _c [sfm]	ICCP135 V _c [sfm]		Chip groove	a _p [inch] f [inch]
P	Non alloyed steel 0 - 0.45 % C	150 – 250	722 – 1312	558 – 787	558 – 623	909+ Ex: CNMM 644-909+ for CK60 Different in each application		0.126 to 0.299 0.039 to 0.024
	Low alloyed steel	250 – 300	656 – 1050	328 – 623	295 – 492			
	High alloyed steel	200	591 – 1050	427 – 689	394 – 656			
	Corrosion resistant steel	200	656 – 1050	427 – 689	459 – 591			
M	Ferritic	200	722 – 1050	459 – 689	459 – 656			
	Austenitic	180	–	328 – 689	361 – 623			
	Martensitic Duplex	330 230 – 260	–	230 – 328	180 – 246 262 – 492			
K	Grey cast iron	180	459 – 1214	427 – 689	–			
	Spheroidal	160	623 – 1411	394 – 787	–			
	Malleable/Tempered iron	130	591 – 1706	492 – 820	–			

Available range



Medium and roughing turning steel

Insert	Designation	Chipbreaker	Available
	CNMG 542-909+ ICCP135	...-909+	•
	CNMG 543-909+ ICCP135		•
	CNMG 643-909+ ICCP135		•
	CNMG 644-909+ ICCP135		•
	SNMG 543-909+ ICCP135		•
	SNMG 643-909+ ICCP135		•
	RCMT 1606MOSN-XR ICCP135 (ISO metric)	...-XR	•
	RCMT 2006MOSN-XR ICCP135 (ISO metric)		•

Cutting data



General cutting parameters depending on the application

Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide	Application	Depth of cut and feed rate	
			ICCK 120 V _c [sfm]		a _p [inch]	f [inch]
P	Non alloyed steel 0 - 0.45 % C	150 – 250	656 – 1116	909+	0.126 to 0.22	0.024 to 0.015
	Low alloyed steel	250 – 300	492 – 951	Ex: CNMG 543-909+ for GC25 Different in each application		
	High alloyed steel	200	492 – 951			
	Corrosion resistant steel	200	525 – 951			
K	Grey cast iron	180	492 – 1312			
	Spheroidal	160	656 – 1476			
	Malleable/Tempered iron	130	656 – 1805			

Available range



Turning cast iron neg “K20”

Insert	Designation	Chipbreaker	Available
	CNMG 542-909+ ICCK120		•
	CNMG 543-909+ ICCK120	...-909+	•
	CNMG 643-909+ ICCK120		•

Miscellaneous



Cutting data

General cutting parameters depending on the application



Work piece material	Type of treatment/alloy	Hardness HB	Coated carbide			
			ICCP115 V _c [sfm]	ICCP125 V _c [sfm]	ICLP2002 V _c [sfm]	ICLP4002 V _c [sfm]
P	Non alloyed steel 0 - 0.45 % C	150 – 250	722 – 1312	558 – 787	558 – 656	558 – 623
	Low alloyed steel	250 – 300	656 – 1050	328 – 623	295 – 525	295 – 492
	High alloyed steel	200	591 – 1050	427 – 689	427 – 558	394 – 656
	Corrosion resistant steel	200	656 – 1050	427 – 689	427 591	459 – 591
M	steel					
	Ferritic	200	722 – 1050	459 – 689	459 – 591	459 – 656
	Austenitic	180	–	328 – 689	328 – 558	361 – 623
	Martensitic					
K	Duplex	230 – 260	–	–	–	262 – 492
		330	–	230 – 328	–	180 – 246
	Ca					
	st					
K	iron					
	Grey cast iron	180	459 – 1214	427 – 689	–	–
	Spheroidal	160	623 – 1411	394 – 787	–	–
K	Malleable/Tempered iron	130	591 – 1706	492 – 820	–	–

Consistent cutting depth	Inconsistent cutting depth	Interrupted cut
•	◻	x

Available range

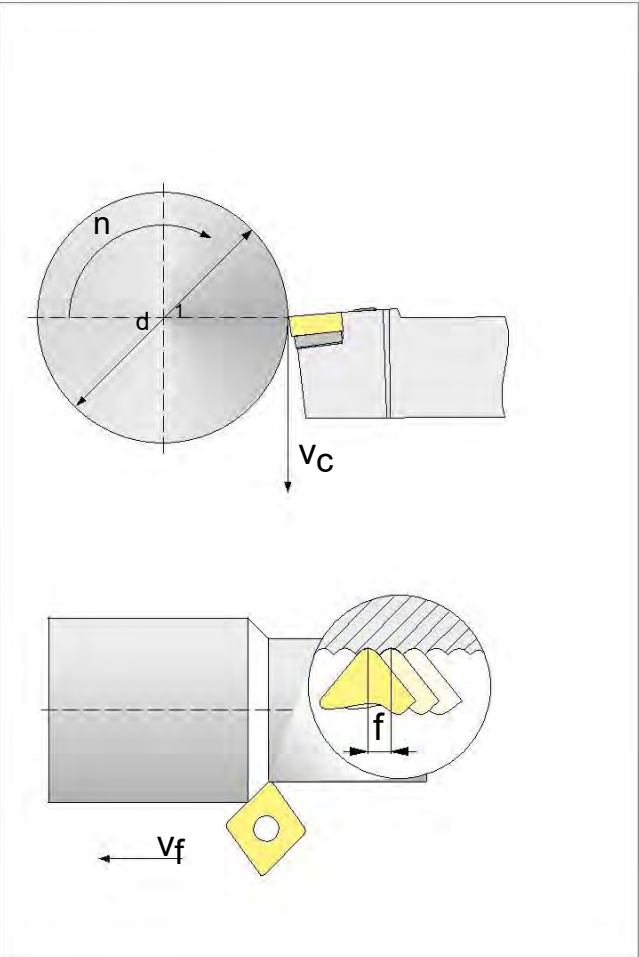
Turning steel neg medium “P25”

Insert	Designation	Chipbreaker	Available
	KNUX 160405EL-N11 ICCP125 (ISO metric)		•
	KNUX 160405ER-N11 ICCP125 (ISO metric)		•
	KNUX 160410EL-N11 ICCP125 (ISO metric)		•
	KNUX 160410ER-N11 ICCP125 (ISO metric)	...-N11	•
	KNUX 160405ER-N11 ICLP2002 (ISO metric)		•
	KNUX 160405EL-N11 ICLP2002 (ISO metric)		•
	KNUX 160405ER-N11 ICLP4002 (ISO metric)		•
	KNUX 160405EL-N11 ICLP4002 (ISO metric)		•



Technical information





Cutting speed (v_c)

$$v_c = \frac{d_1 \cdot \pi \cdot n}{1000} \text{ [sfm]}$$

Revolutions per minute (n)

$$n = \frac{v_c \cdot 1000}{d_1 \cdot \pi} \text{ [rev./min]}$$

Feed rate (v_f)

$$v_f = f \cdot n \text{ [inch/min]}$$

Type of problem											Corrective measures	
Type of wear					Work piece problems				Chip control			
Flank wear	Cratering	Edge chipping	Plastic deformation	Insert leakage	Blow - out	Vibration	Formative chip pattern	Chatter surface	Surface quality	Dimensional accuracy		Chip control (fragmentation)
												Cutting speed
≈												Feed rate
												Feed - centre area
			≈			≈						-R Chip groove 
												Corner radius 
												Cutting material 
?	≈	≈	?	≈	?	≈	?	≈	≈	?		Clamping of tool
		≈		≈		≈		≈	≈			Clamping of work piece
		≈		≈		≈						Overhang
≈		≈				≈	≈		≈			Tip height
												Cooling lubricant ?

raise, increase, large influence

raise, increase low influence

avoid, reduce large influence

avoid, reduce low influence

~ check, optimise

use

Cutting values

Selection of inserts

General criteria



Abrasion on flank, normal wear after a certain machining time.

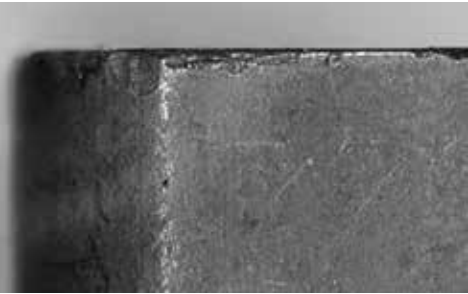
Flank wear

Reasons

- ▲ Cutting speed too high
- ▲ Carbide grade with insufficient wear resistance
- ▲ Incorrect feed rate

Remedies

- ▲ Reduce cutting speed
- ▲ Select more wear resistant carbide grade
- ▲ Adapt feed rate to cutting



Through excessive mechanical stress at the cutting edge fracture and chipping can occur.

Edge chipping

Reasons

- ▲ Grade with too high wear resistance
- ▲ Vibration
- ▲ Feed rate too high or excessive cutting depth
- ▲ Interrupted cut
- ▲ Swarf damage

Remedies

- ▲ Use tougher grade
- ▲ Use negative cutting edge geometry



The hot chip which is being evacuated causes cratering at the rake face of the cutting edge.

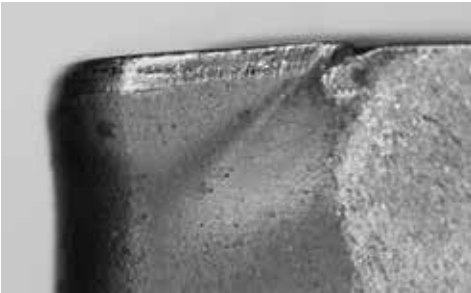
Cratering

Reasons

- ▲ Cutting speed and / or feed rate too high
- ▲ Rake angle too shallow
- ▲ Grade with low wear resistance
- ▲ Insufficient coolant supply

Remedies

- ▲ Reduce cutting speed and / or feed rate
- ▲ Increase coolant quantity and / or pressure, optimise coolant supply
- ▲ Use grade with higher resistance to cratering



High machining temperature and simultaneous mechanical stress can lead to plastic deformation.

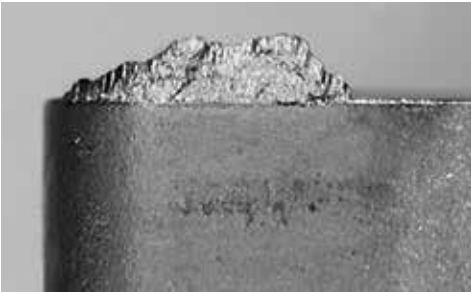
Plastic deformation

Reasons

- ▲ Too high machining temperature, resulting in softening of substrate
- ▲ Damaged coatings
- ▲ Chip too narrow

Remedies

- ▲ Reduce cutting speed
- ▲ Choose carbide grade with higher wear resistance
- ▲ Provide cooling



Built-up edge occurs when the chip is not evacuated properly due to insufficient cutting temperature.

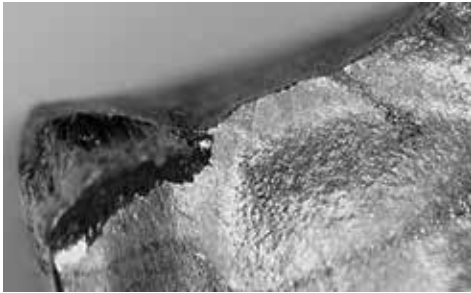
Built-up edge

Reasons

- ▲ Cutting speed too low
- ▲ Rake angle too small
- ▲ Wrong cutting material
- ▲ Lack of cooling / lubrication

Remedies

- ▲ Increase cutting speed
- ▲ Increase rake angle
- ▲ Apply TiN-coating
- ▲ Use emulsion with higher concentration



Excessive stress of the insert causes breakage.

Insert breakage

Reasons

- ▲ Excessive stress of cutting material
- ▲ Lack of stability
- ▲ Corner angle too small
- ▲ Excessive notching

Remedies

- ▲ Use tougher cutting material
- ▲ Use protective edge chamfer
- ▲ Increase honing of edge
- ▲ Use more stable geometry

Grade overview



				Application range																	P	M	K	N	S	H	
Grade designation	Standard designation		Type of cutting material																		Steel	Stainless	Cast iron	Non-ferrous metals	Heat-resistant	Hard materials	
	ISO	ANSI		01	05	10	15	20	25	30	35	40	45	50													
ICM10	HC-P15	C7	T																		●						
	HC-M10	—	T																			●					
	HC-K10	C3	T																				○				
ICCP115	HC-P15	C7	C																		●						
	HC-K25	C2	C																			●					
	HC-M10	—	C																				○				
ICCP125	HC-P25	C6	C																		●						
	HC-K30	C1	C																				●				
	HC-M20	—	C																				○				
ICCP125HP	HC-P25	—	C																		●						
	HC-K30	—	C																			○					
	HC-M20	—	C																							○	
ICCP135	HC-P35	C5	C																		●						
	HC-M25	—	C																				○				
	HC-S25	—	C																						○		
ICCM120HP	HC-M20	—	C																			●					
	HC-P25	—	C																		○						
ICPM125	HC-M25	—	P																			●					
	HC-P35	C5	P																		●						
	HC-S25	—	P																						○		
ICP2120	HC-M20	C3	P																			●					
	HC-K20	C2	P																				○				
ICPM135M	HC-M35	C5	P																		○						
	HC-P35	—	P																			●					
IC1279	HC-M15	—	P																			●					
	HC-S15	—	P																						○		
ICCK110HP	HC-K10	—	C																				●				
	HC-P05	—	C																			○					
ICCK120	HC-K20	C2	C																				●				
	HC-P10	C8	C																			○					
ICH216T	HW-N15	C3	W																					●			
	HW-K15	C3	W																					●			
ICP5110	HC-S15	—	P																						●		
	HC-M15	—	P																				○				
ICP5115	HC-S15	—	P																						●		
	HC-M15	—	P																				○				

● Main application ○ Extended application

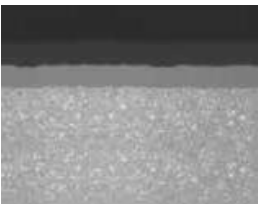
ICM10 HT-P15 | HT-M10 | HT-K10



Specification:
Composition: Cermet Co/Ni 12.2 %; WC 15.0 %; TaNbC 10.0 %; TiCN balance | Hardness: HV₃₀ 1620

Recommended application:
The uncoated cermet grade for the finishing of hardened steel.

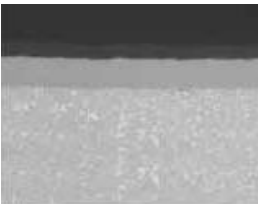
ICCP115 HC-P15 | HC-K25 | HC-M10



Specification:
Composition: Co 5.8 %; mixed carbides 6.4 %; WC balance | Grain size: 1 - 2 µm | Hardness: HV₃₀ 1550 |
Coating specification: CVD TiCN-Al₂O₃

Recommended application:
The wear-resistant high-performance grade for steel machining.

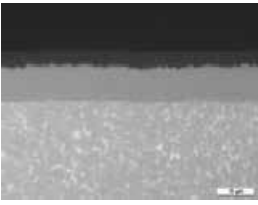
ICCP125 HC-P25 | HC-K30 | HC-M20



Specification:
Composition: Co 7.0 %; mixed carbides 8.0 %; WC balance | Grain size: 1 - 2 µm | Hardness: HV₃₀ 1450 |
Coating specification: CVD TiCN-Al₂O₃

Recommended application:
The first choice for the universal machining of steel.

ICCP135 HC-P35 | HC-M25 | HC-S25



Specification:
Composition: Co 9.6 %; mixed carbides 6.7 %; WC balance | Grain size: 1 - 2 µm | Hardness: HV₃₀ 1460 |
Coating specification: CVD TiCN-Al₂O₃ multi-layer

Recommended application:
The tough alternative for heavily interrupted cutting action.

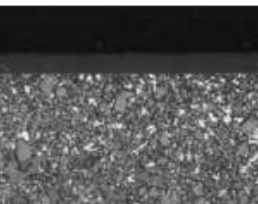
ICP2120 HC-M20 | HC-K20



Specification:
Composition: Co 10.5 %; mixed carbide 2.0 %; WC balance | Grain size: 1-2 µm | Hardness: HV₃₀ 1400 |
Coating specification: PVD TiAlTaN

Recommended application:
Particularly suitable for the wet machining of steels.

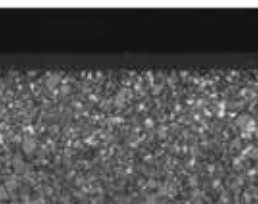
ICPM125 HC-M25 | HC-P35 | HC-S25



Specification:
Composition: Co 9.6 %; mixed carbides 7.8 %; others 0.4 %; WC balance |
Grain size: 1 - 2 µm | Hardness: HV₃₀ 1460 | Coating specification: PVD TiAlTaN

Recommended application:
The first choice for the machining of austenitic steels.

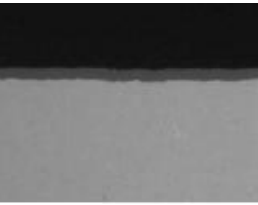
ICPM135M HC-M35 | HC-P35



Specification:
Composition: Co 8.0 %; WC balance; mixed carbides 4.2 % ; Grain
size: 1.5-3.0 µm | Hardness: HV₃₀ 1330

Recommended application:
Universal stainless steel turning grade. The best in difficult situations.

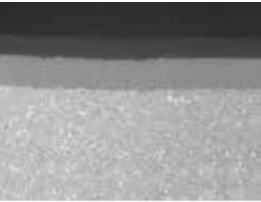
IC1279 HC-M15 | HC-S15



Specification:
Composition: Co 6.0 %; WC balance | Grain size 0.8-1.3 µm |
Hardness HV₃₀ 1630 | Coating specification PVD TiAlN

Recommended application:
The first choice for the machining of Stainless Steels and Exotic.

ICCK120



HC-K20 | HC-P10

Specification:

Composition: Co 6.0 %; TaC 2.0 %; WC balance | Grain size: 1 µm | Hardness: HV₃₀ 1630 |

Coating specification: CVD TiCN-Al₂O₃

Recommended application:

The first choice for the machining of cast iron at high cutting speeds and where high toughness is required.

ICH216T



HW-N15 | HW-K15

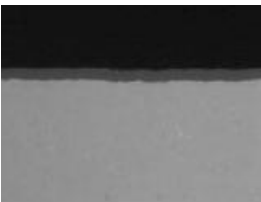
Specification:

Composition: Co 6.0 %; WC balance | Grain size: 1 µm | Hardness: HV₃₀ 1630

Recommended application:

The uncoated carbide grade for the machining of aluminium and other non-ferrous metals.

ICP5110



HC-S15 | HC-M15

Specification:

Composition: Co 6.0 %; WC balance | Grain size: 0.8 µm | Hardness: HV₃₀ 1820 | Coating specification: PVD TiAlN

Recommended application:

The alternative when machining heat-resistant materials.

ICP5115



HC-S15 | HC-M15

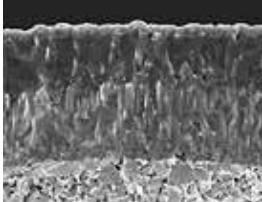
Specification:

Composition: Co 6.0 %; WC balance | Grain size: 0.8 µm | Hardness: HV₃₀ 1820 | Coating specification: PVD TiAlN-TiN

Recommended application:

The first choice for the machining of heat-resistant materials.

ICCP125HP



HC-P25 | HC-K30 | HC-20

Specification:

Composition: Co 7.6 %; mixed carbides 7.0 %; others 0.4 %; WC balance | Grain size: 1-2mm |

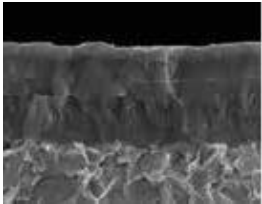
Hardness: HV₃₀ 1470 | Coating specification: CVD TiCN-Al₂O₃ Top layer

Recommended application:

The first and premium choice for the universal machining of steel.



ICCM120HP



HC-M20 | HC-P30

Specification:

Composition: Co 7.6%; mixed carbides 7.0%; others 0.4%; WC balance | Grain size: 1-2 m |

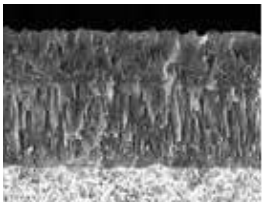
Hardness: HV₃₀ 1470 | Coating specification: CVD TiCN-Al₂O₃-Top layer.

Recommended application:

It brings advantages to dry machining, at even higher cutting speeds, and makes long tool life possible.



ICCK110HP



HC-K10 | HC-P05

Specification:

Composition: Co 5.0 %; mixed carbide 2.0 %; WC balance | Grain size: submicron | Hardness: HV₃₀ 1810 |

Coating specification: CVD TiCN-Al₂O₃

Recommended application:

The wear-resistant grade for the machining of cast iron at highcutting speed with continuous cut.





ICE

INNOVATIVE CUSTOM ENGINEERING