hard material matters

CERATIZIT

HyperCoat CTPM125

EN

CERATIZIT – secrets of success

Secrets of success

- CERATIZIT is your partner for exceptional hard material solutions. Hard materials and tools from CERATIZIT - our solutions to complex problems are an integral part of our customers' success. Our products guarantee: economy - long life - speed! And it is precisely this combination which gives our business partners a direct competitive advantage.
- Premier performance is only possible through a total appreciation of the requirements of our business partners. A performance achieved through flexible thinking and continuous dialogue with our customers. A pioneering spirit and a deep understanding of powder metallurgy characterize the history of CERATIZIT. One of the attributes of our company philosophy is the search for perfection: target oriented - sustainably - passionately!
- Intensive research and development activities, taking into account the precise requirements and working processes of the customer, are today's investment for the solutions of tomorrow - and beyond.

Corporate values

- The views and focus of our business partners matter
- Innovative and flexible thinking matters
- Communication matters
- Employee development matters
- Professionalism matters
- Our environment matters

Tailored cutting tool solutions

- Cutting materials, coatings, inserts, tooling systems and machining solutions - all this is included in the cutting tool division at CERATIZIT.
- Worldwide well-known companies process advanced materials applying cutting tool products from CERATIZIT: from the automotive industry to the aerospace industry, mechanical engineering, and tool construction to the oil industry.
- The basis of these long-term business relations is the faith of the customers in the extensive know-how of the carbide specialists.

E – TECHSTORE

www.ceratizit.com

SPEED

> Configurate over 11,000 products online and order immediately
> Immediate order confirmation
> Online check regarding delivery status of product
> Rapid product search via material numbers and ISO designations
> Orders placed by 6 p.m. (CET) will be dispatched on the same day

INFORMATION

> Up-to-date CERATIZIT product catalogue including all technical details and graphic illustrations
> Create more than 100,000 tool combinations online
> Accessories and tool alternatives
> Well-structured navigation, easy user guidance

SERVICES

> 98 % delivery availability for online orders
> Available around the clock
> Direct link to your personal contact person
> 1:1 dxf true-to-scale drawings for download
> Service support through the E-SOLUTIONS Centre
> Optimum safety by means of SSL-encoding and personal access authorisation

BUSINESS

> Order online at individual net prices and conditions
> Check invoices, consignments and payments
> 'Last-minute' changes of open orders possible
> Usage of personal order templates possible
> Shipment tracking via Internet (Track & Trace)

HYPERCOAT

CTPM125

CTPM125 covers a variety of turning applications in the stainless steel range: from finishing to roughing, with outstanding security and durability.

A specially developed carbide substrate and an innovative PVD coating provide the new grade with excellent toughness without detriment to the hot hardness and wear resistance.

Both low and high cutting speeds, continuous or interrupted cut in the ISO M25 application range – no problem for the new CTPM125.

Product advantages	YOUR benefits
High resistance to flank wear	High cutting speed possible Increased productivity
Reduced built-up edge	Maximum surface quality Close tolerances on the work piece
Good resistance to notching	Process security Improved machine utilization

Product characteristics

Chip grooves

-F30 – 'the fine-cutting one'

Finish machining and light cuts

Sharp cutting edges	⇨	For precise cuts When excellent surface finish is required
Highly positive rake angles	⇨	For swarf problems For work pieces with small quantities of material to be removed

-M30 – 'the smooth-cutting one'

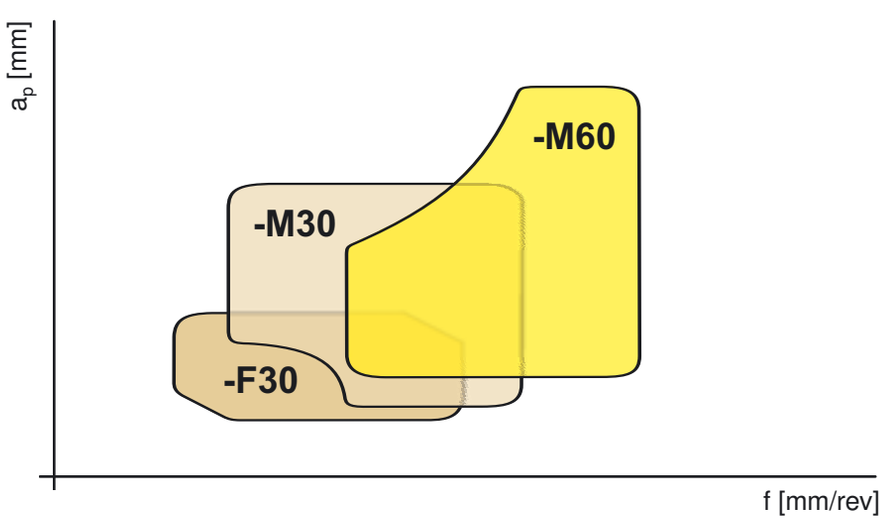
Medium machining

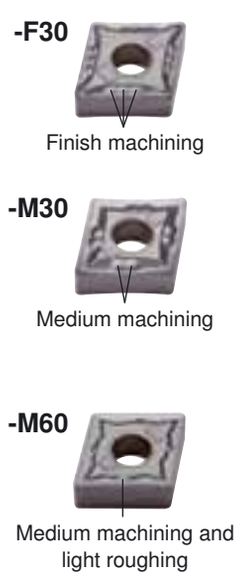
Sharp positive cutting edges	⇨	Reduced formation of burrs Good surface finish Low cutting forces
Curved cutting edge	⇨	Excellent swarf control For unstable machines

-M60 – 'the universal one'

Medium machining and light roughing

Reinforced cuttin edges	⇨	Process security also in case of heavy skin and cast irregular skin Suitable for interrupted cut
Positive rake angles	⇨	Minimized built-up edge





Stainless steel

Main groups

- **Ferritic stainless steels**
- **Martensitic stainless steels**
- **Austenitic stainless steels**
- **Duplex (ferritic – austenitic) stainless steels**

Industries

- Ship building
- Oil industry
- Aerospace
- Medical systems
- Food industry
- Transport industry
- Mechanical engineering




Typical components

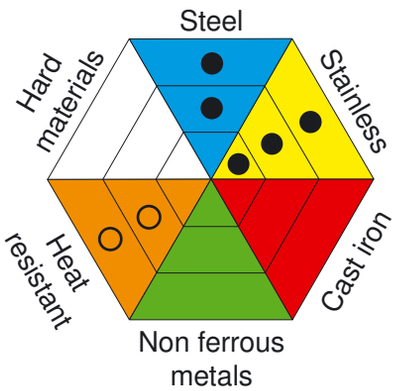
- Pumps
- Bearings
- Fixation parts
- Agitators
- Medical implants
- Flanges
- Tube couplings
- Heat exchangers




CTPM125

ISO M25

- Turning
- Finishing to roughing
- Continuous and interrupted cut



● Main application
○ Extended application

Type/recommendation		
F	M	R
●●	●●●	●●

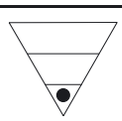
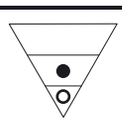
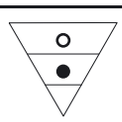
F Fine machining
M Medium machining
R Rough machining

●●● ideal
●● good
● still possible

Machining type/stability			
○	◔	◔	◌
●●	●●●	●●●	●●

○ excellent
◔ good
◔ acceptable
◌ difficult

Recommended application

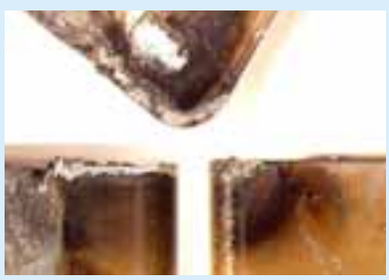
Chip groove		Machining type	Material	Consistent cutting depth	Inconsistent cutting depth	Interrupted cutting depth
-F30			○	CTPM125	CTPM125	–
			●	CTPM125	CTPM125	–
				–	–	–
				–	–	–
				–	–	–
-M30			○	CTPM125	CTPM125	CTPM125
			●	CTPM125	CTPM125	CTPM125
				–	–	–
				–	–	–
			○	–	CTPM125	–
-M60			○	CTPM125	CTPM125	CTPM125
			●	CTPM125	CTPM125	CTPM125
				–	–	–
				–	–	–
			○	–	CTPM125	CTPM125

Practical tests

Practical examples

FLANGE X2CrNiMo18-14-3
Longitudinal turning + face turning

Cutting data: v_c = 160 m/min
a_p = 2.50 mm
f = 0.27 mm/rev



Competitor/benchmark
Tool life: 4 parts

CERATIZIT CTPM125
Tool life: 6 parts

SPACER BUSH X5CrNi18-10
Longitudinal turning

Cutting data: v_c = 220 m/min
a_p = 3.0 mm
f = 0.35 mm/rev

Competitor/benchmark
Tool life: 50 parts

CERATIZIT CTPM125
Tool life: 65 parts

CERATIZIT designation system

C T P M 1 2 5

Manufacturer: CERATIZIT

Cutting material

W - Uncoated carbide
C - CVD coated carbide
P - PVD coated carbide
T - Uncoated cermet
E - Coated cermet
N - Uncoated silicon nitride
M - Coated silicon nitride
S - Mixed ceramic
I - Sialon
D - PCD
B - CBN
L - CBN coated
H - Sintered HSS

ISO 513 Application range

For example:
05 - ISO K05/P05
10 -
15 -
25 -

Main application (material) Variant 1: number

1 - Steel
2 - Stainless steel
3 - Cast iron
4 - Light and non ferrous metals, non metals
5 - Heat resistant alloys, titanium
6 - Hard materials
7 - Universal grade for a variety of applications

Main application (machining method)

1 - Turning
2 - Milling
3 - Parting and grooving
4 - Drilling
5 - Threading
6 - Others
7 - Universal grade for a variety of applications

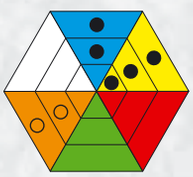
Main application (material) Variant 2: ISO letter

P - Steel
M - Stainless steel
K - Cast iron
N - Light and non ferrous metals, non metals
S - Heat resistant alloys, titanium
H - Hard materials
X - Universal grade for a variety of applications

Grade description

CTPM125

HC-P35
HC-M25



Composition:
Co 9.6%; mixed carbides 7.8%; others 0.4%; WC balance

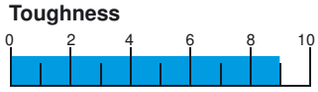
Grain size:
1 - 2 µm

Hardness:
HV 1460

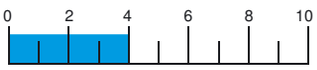
Coating specification:
TiN / TiAlN; 6 µm

Steel

Toughness

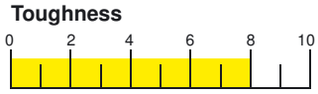


Wear resistance



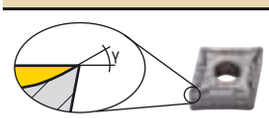
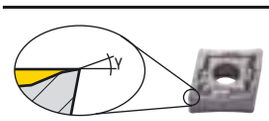
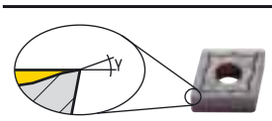
Stainless

Toughness



Wear resistance

Application range F30 / M30 / M60

Chip groove	Material	Machining situation and stability				Machining type F / M / R
		○	◔	◔	◔	
 F30 γ = 15°		●●●	●●	–	–	**F** a_p: 0,8 – 2,5 mm f: 0,1 – 0,35 mm
 M30 γ = 10°		●●●	●●●	●	–	**M** a_p: 1,0 – 4,5 mm f: 0,15 – 0,4 mm
 M60 γ = 6°		●●	●●●	●●●	●●	**M** a_p: 1,5 – 6,0 mm f: 0,25 – 0,5 mm

MasterGuide:
- ▼ Steel
- ▼ Stainless
- ▼ Heat resistant
- ▼ Main application
- ▽ Extended application

Machining situation and stability:
- ○ excellent
- ○ good
- ◔ acceptable
- ◔ difficult

Recommendation:
- ●●● ideal
- ●● good
- ● still possible

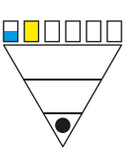
Machining type:
F Fine machining
M Medium machining
R Rough machining

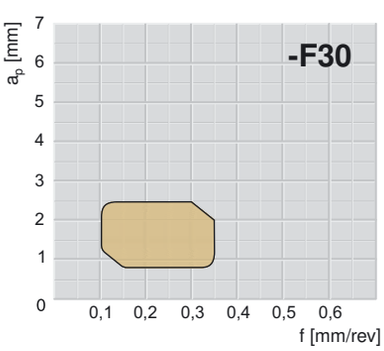
Grade overview

Grade designation	Standard designation	Cutting material	Application range	A Steel	R Stainless	F Cast iron	N Non ferrous metals	S Heat resistant	H Hard materials
CTPM125	HC-P35	P	01 05 10 15 20 25 30 35 40 45 50	●					
	HC-M25	P	01 05 10 15 20 25 30 35 40 45 50		●			○	

● Main application
○ Extended application

Chip groove application range

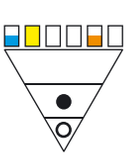


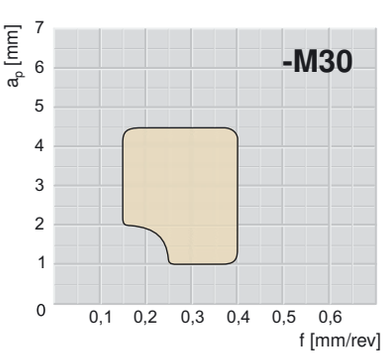


Application range:

CNMG 120408EN-F30
a_p: 0,8 – 2,5 mm
f: 0,1 – 0,35 mm

- **Stainless steel**
- Steel in general

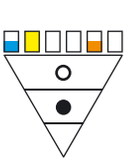


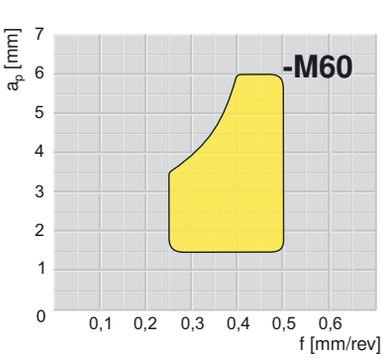


Application range:

CNMG 120408EN-M30
a_p: 1,0 – 4,5 mm
f: 0,15 – 0,4 mm

- **Stainless steel**
- Steel in general
- Super alloys





Application range:

CNMG 120408EN-M60
a_p: 1,5 – 6,0 mm
f: 0,25 – 0,5 mm

- **Stainless steel**
- Steel in general
- Super alloys

Inserts
CNMG

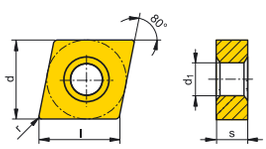

-F30


-M30


-M60

r [mm]	Type, description	L N R	CTPM125				l [mm]	d [mm]	s [mm]	d_1 [mm]	
0,40	CNMG 120404EN-F30	N	●				12,90	12,70	4,76	5,16	
0,80	CNMG 120408EN-F30	N	●				12,90	12,70	4,76	5,16	
	CNMG 120408EN-M30	N	●				12,90	12,70	4,76	5,16	
	CNMG 120408EN-M60	N	●				12,90	12,70	4,76	5,16	
1,20	CNMG 120412EN-M30	N	●				12,90	12,70	4,76	5,16	
	CNMG 120412EN-M60	N	●				12,90	12,70	4,76	5,16	
1,60	CNMG 120416EN-M30	N	●				12,90	12,70	4,76	5,16	
	CNMG 120416EN-M60	N	●				12,90	12,70	4,76	5,16	

Steel	●			
Stainless	●			
Cast iron				
Non ferrous metals				
Heat resistant	○			
Hard materials				



● Main application

○ Extended application

● International CERATIZIT range, for present availability see price list

Ordering example: 10 pieces CNMG 120404EN-F30 CTPM125

Inserts
DNMG

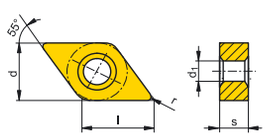

-F30


-M30


-M60

r [mm]	Type, description	L N R	CTPM125				l [mm]	d [mm]	s [mm]	d_1 [mm]	
0,40	DNMG 110404EN-F30	N	●				11,60	9,52	4,76	3,81	
0,80	DNMG 110408EN-F30	N	●				11,60	9,52	4,76	3,81	
	DNMG 110408EN-M30	N	●				11,60	9,52	4,76	3,81	
1,20	DNMG 110412EN-M30	N	●				11,60	9,52	4,76	3,81	
0,40	DNMG 150604EN-F30	N	●				15,50	12,70	6,35	5,16	
0,80	DNMG 150608EN-F30	N	●				15,50	12,70	6,35	5,16	
	DNMG 150608EN-M30	N	●				15,50	12,70	6,35	5,16	
	DNMG 150608EN-M60	N	●				15,50	12,70	6,35	5,16	
1,20	DNMG 150612EN-M30	N	●				15,50	12,70	6,35	5,16	
	DNMG 150612EN-M60	N	●				15,50	12,70	6,35	5,16	

Steel	●			
Stainless	●			
Cast iron				
Non ferrous metals				
Heat resistant	O			
Hard materials				



● Main application

○ Extended application

● International CERATIZIT range, for present availability see price list

Ordering example: 10 pieces DNMG 110404EN-F30 CTPM125

Inserts
SNMG

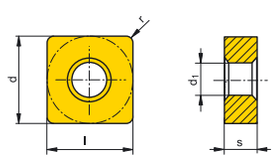

-F30


-M30


-M60

r [mm]	Type, description	L N R	CTPM125				l [mm]	d [mm]	s [mm]	d_1 [mm]	
0,40	SNMG 120404EN-F30	N	●				12,70	12,70	4,76	5,16	
0,80	SNMG 120408EN-F30	N	●				12,70	12,70	4,76	5,16	
	SNMG 120408EN-M30	N	●				12,70	12,70	4,76	5,16	
	SNMG 120408EN-M60	N	●				12,70	12,70	4,76	5,16	
1,20	SNMG 120412EN-M30	N	●				12,70	12,70	4,76	5,16	
	SNMG 120412EN-M60	N	●				12,70	12,70	4,76	5,16	
1,60	SNMG 120416EN-M60	N	●				12,70	12,70	4,76	5,16	

Steel	●			
Stainless	●			
Cast iron				
Non ferrous metals				
Heat resistant	○			
Hard materials				



● Main application

○ Extended application

● International CERATIZIT range, for present availability see price list

Ordering example: 10 pieces SNMG 120404EN-F30 CTPM125

Inserts
TNMG

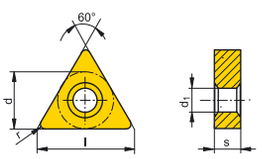

-F30


-M30


-M60

r [mm]	Type, description	L N R	CTPM125				l [mm]	d [mm]	s [mm]	d_1 [mm]	
0,40	TNMG 160404EN-F30	N	●				16,50	9,52	4,76	3,81	
0,80	TNMG 160408EN-F30	N	●				16,50	9,52	4,76	3,81	
	TNMG 160408EN-M30	N	●				16,50	9,52	4,76	3,81	
	TNMG 160408EN-M60	N	●				16,50	9,52	4,76	3,81	
1,20	TNMG 160412EN-M30	N	●				16,50	9,52	4,76	3,81	
	TNMG 160412EN-M60	N	●				16,50	9,52	4,76	3,81	

Steel	●	●	●	●
Stainless	●			
Cast iron				
Non ferrous metals				
Heat resistant	○			
Hard materials				



● Main application

○ Extended application

● International CERATIZIT range, for present availability see price list

Ordering example: 10 pieces TNMG 160404EN-F30 CTPM125

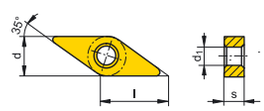
Inserts
VNMG

-F30

-M30

r [mm]	Type, description	L N R	CTPM125				l [mm]	d [mm]	s [mm]	d_1 [mm]	
0,40	VNMG 160404EN-F30	N	●				16,60	9,52	4,76	3,81	
0,80	VNMG 160408EN-F30	N	●				16,60	9,52	4,76	3,81	
	VNMG 160408EN-M30	N	●				16,60	9,52	4,76	3,81	

Steel	●			
Stainless	●			
Cast iron				
Non ferrous metals				
Heat resistant	○			
Hard materials				



● Main application

○ Extended application

● International CERATIZIT range, for present availability see price list

Ordering example: 10 pieces VNMG 160404EN-F30 CTPM125

Inserts
WNMG

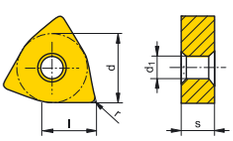

-F30


-M30


-M60

r [mm]	Type, description	L N R	CTPM125				l [mm]	d [mm]	s [mm]	d_1 [mm]	
0,40	WNMG 060404EN-F30	N	●				6,50	9,52	4,76	3,81	
0,80	WNMG 060408EN-F30	N	●				6,50	9,52	4,76	3,81	
	WNMG 060408EN-M30	N	●				6,50	9,52	4,76	3,81	
	WNMG 060408EN-M60	N	●				6,50	9,52	4,76	3,81	
1,20	WNMG 060412EN-M30	N	●				6,50	9,52	4,76	3,81	
	WNMG 060412EN-M60	N	●				6,50	9,52	4,76	3,81	
0,80	WNMG 080408EN-F30	N	●				8,69	12,70	4,76	5,16	
	WNMG 080408EN-M30	N	●				8,69	12,70	4,76	5,16	
	WNMG 080408EN-M60	N	●				8,69	12,70	4,76	5,16	
1,20	WNMG 080412EN-M30	N	●				8,69	12,70	4,76	5,16	
	WNMG 080412EN-M60	N	●				8,69	12,70	4,76	5,16	

Steel	●			
Stainless	●			
Cast iron				
Non ferrous metals				
Heat resistant	○			
Hard materials				



● Main application

○ Extended application

● International CERATIZIT range, for present availability see price list

Ordering example: 10 pieces WNMG 060404EN-F30 CTPM125

Cutting data
Grades, material

Work piece material		Type of treatment / alloy		VDI 3323 group	Hard-ness HB	CTPM125 v_c [m/min]
A	Non alloyed steel	annealed	≤ 0.15% C	1	125	120 - 280
		annealed	0.15% - 0.45% C	2	150 - 250	130 - 250
		tempered	≥ 0.45% C	3	300	100 - 180
	Low alloyed steel	annealed		6	180	130 - 200
		tempered		7 / 8	250 - 300	60 - 180
		tempered		9	350	50 - 150
	High alloyed steel	annealed		10	200	80 - 200
		tempered		11	350	40 - 140
	Corrosion resistant steel	annealed	ferritic	12	200	100 - 200
		tempered	martensitic	13	325	80 - 150
R	Stainless steel	annealed	ferritic / martensitic	14	200	120 - 250
		quenched	austenitic	14	180	100 - 220
		quenched	duplex	14	230 - 260	60 - 160
		hardened	martensitic / austenitic	14	330	40 - 100

CERATIZIT worldwide

- Production sites in the three big economic areas with a worldwide network of CERATIZIT sales and support engineers plus many CERATIZIT distribution partners guarantee customer vicinity.
- We maintain the dialogue with our customers and strive for long-term partnerships.

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- CERATIZIT worldwide sales centres
- CERATIZIT worldwide distribution partner network

CERATIZIT worldwide

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