

hard material matters



## 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

- 1 The views and focus of our business partners matter
- 2 Innovative and flexible thinking matters
- 3 Communication matters
- 4 Employee development matters
- 5 Professionalism matters
- 6 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.



**- TECHSTORE**

www.ceratizit.com



## SPEED

- > Configure 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)



# Security for your work piece

**HYPER COAT**

## 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 cutting edges

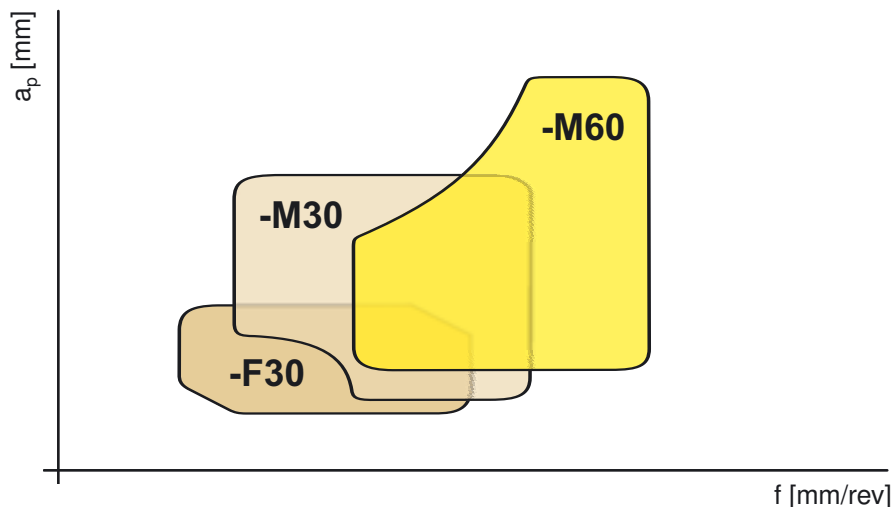


Process security also in case of heavy skin  
and cast irregular skin  
Suitable for interrupted cut

Positive rake angles



Minimized built-up edge



Finish machining



Medium machining



Medium machining and light roughing

# Stainless steel

## Main groups

- Ferritic stainless steels
- Austenitic stainless steels
- Martensitic 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

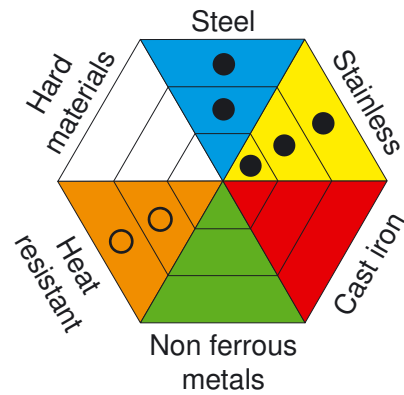


# Application

## CTPM125



- 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:**  $v_c = 160 \text{ m/min}$   
 $a_p = 2.50 \text{ mm}$   
 $f = 0.27 \text{ mm/rev}$



**Competitor/benchmark**  
Tool life: 4 parts



**CERATIZIT CTPM125**  
Tool life: 6 parts

**SPACER BUSH** X5CrNi18-10  
**Longitudinal turning**

**Cutting data:**  $v_c = 220 \text{ m/min}$   
 $a_p = 3.0 \text{ mm}$   
 $f = 0.35 \text{ mm/rev}$



**Competitor/benchmark**  
Tool life: 50 parts



**CERATIZIT CTPM125**  
Tool life: 65 parts



# CERATIZIT designation system

# CTP M125

**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

## 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 (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

## ISO 513 Application range

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

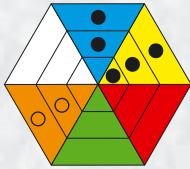
## Main application (machining method)

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

# Grade description

## CTPM125

HC-P35  
HC-M25



### Composition:

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

### Grain size:

1 - 2  $\mu\text{m}$

### Hardness:

HV 1460

### Coating specification:

TiN / TiAlN; 6  $\mu\text{m}$

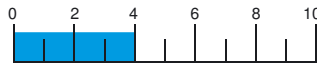
### Steel



#### Toughness



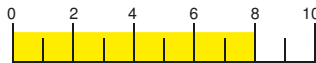
#### Wear resistance



### Stainless



#### Toughness



#### Wear resistance



## Application range F30 / M30 / M60

	Chip groove	Material	Machining situation and stability				Machining type F / M / R
 <b>F30</b> $\gamma = 15^\circ$		  			—	—	<b>F</b> $a_p: 0,8 - 2,5 \text{ mm}$ $f: 0,1 - 0,35 \text{ mm}$
 <b>M30</b> $\gamma = 10^\circ$		  				—	<b>M</b> $a_p: 1,0 - 4,5 \text{ mm}$ $f: 0,15 - 0,4 \text{ mm}$
 <b>M60</b> $\gamma = 6^\circ$		  					<b>M</b> $a_p: 1,5 - 6,0 \text{ mm}$ $f: 0,25 - 0,5 \text{ mm}$

**MasterGuide:**  
 Steel  
 Stainless  
 Heat resistant  
 Main application  
 Extended application

**Machining situation and stability:**  
 excellent  
 good  
 acceptable  
 difficult

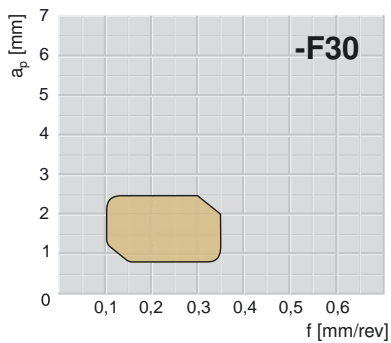
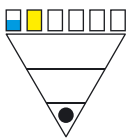
**Recommendation:**  
 ideal  
 good  
 still possible

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

# Grade overview

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

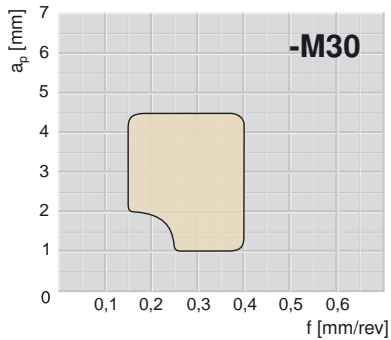
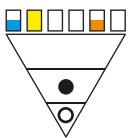
## Chip groove application range



### Application range:

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

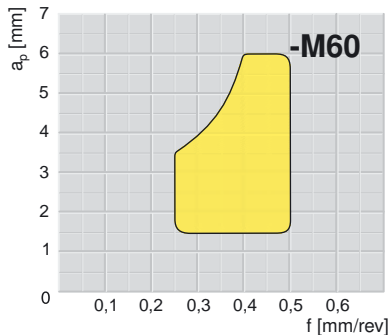
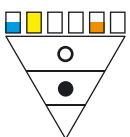
- Stainless steel
- Steel in general



### 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

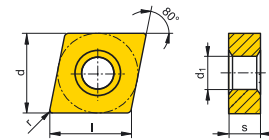


-M60

r [mm]	Type, description	LNR 	CTPM125			l [mm]	d [mm]	s [mm]	d <sub>1</sub> [mm]
0,40	CNMG 120404EN-F30	N	●			12,90	12,70	4,76	5,16
	CNMG 120408EN-F30	N	●			12,90	12,70	4,76	5,16
0,80	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

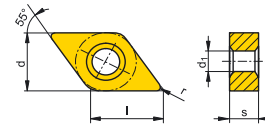


-M60

r [mm]	Type, description	L N R 	CTPM125				l [mm]	d [mm]	s [mm]	d <sub>1</sub> [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



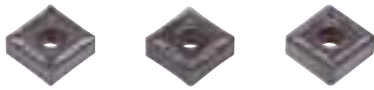
Steel	●			
Stainless	●			
Cast iron				
Non ferrous metals				
Heat resistant	○			
Hard materials				



- Main application
- Extended application
- International CERATIZIT range, for present availability see price list

Ordering example: 10 pieces DNMG 110404EN-F30 CTPM125

# Inserts SNMG



-F30

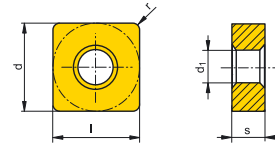
-M30

-M60

r [mm]	Type, description	LNR 	CTPM125				l [mm]	d [mm]	s [mm]	d <sub>1</sub> [mm]
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

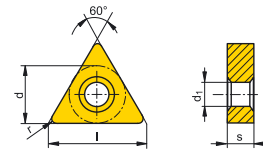


-M60

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

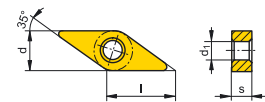


-M30

r [mm]	Type, description	LNR 	CTPM125			l [mm]	d [mm]	s [mm]	d <sub>1</sub> [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

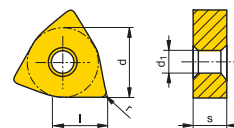


-M60

r [mm]	Type, description	L N R 	CTPM125				l [mm]	d [mm]	s [mm]	d <sub>1</sub> [mm]
0,40	WNMG 060404EN-F30	N	●				6,50	9,52	4,76	3,81
	WNMG 060408EN-F30	N	●				6,50	9,52	4,76	3,81
0,80	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	Hardness HB	CTPM125 $v_c$ [m/min]
<b>A</b>	Non alloyed steel	annealed	$\leq 0.15\% \text{ C}$	1	125	120 - 280
		annealed	0.15% - 0.45% C	2	150 - 250	130 - 250
		tempered	$\geq 0.45\% \text{ C}$	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
<b>R</b>	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

## 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.

## Find your personal distribution partner at:

[www.ceratizit.com](http://www.ceratizit.com)



- CERATIZIT worldwide production sites and support centres
- CERATIZIT worldwide sales centres
- CERATIZIT worldwide distribution partner network

## CERATIZIT worldwide

### Parent company in Luxembourg

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Fax: +352 311 911  
E-mail: [info@ceratizit.com](mailto:info@ceratizit.com)  
[www.ceratizit.com](http://www.ceratizit.com)

### Contact for further information:

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Fax: +43 (5672) 200-502  
E-mail: [info.austria@ceratizit.com](mailto:info.austria@ceratizit.com)  
[www.ceratizit.com](http://www.ceratizit.com)



546

[www.ceratizit.com](http://www.ceratizit.com) - just a click.



hard material matters



546 EN 08.11  
7002467

We reserve the right to make technical changes for improvement of the product.