

# ARNO<sup>®</sup>

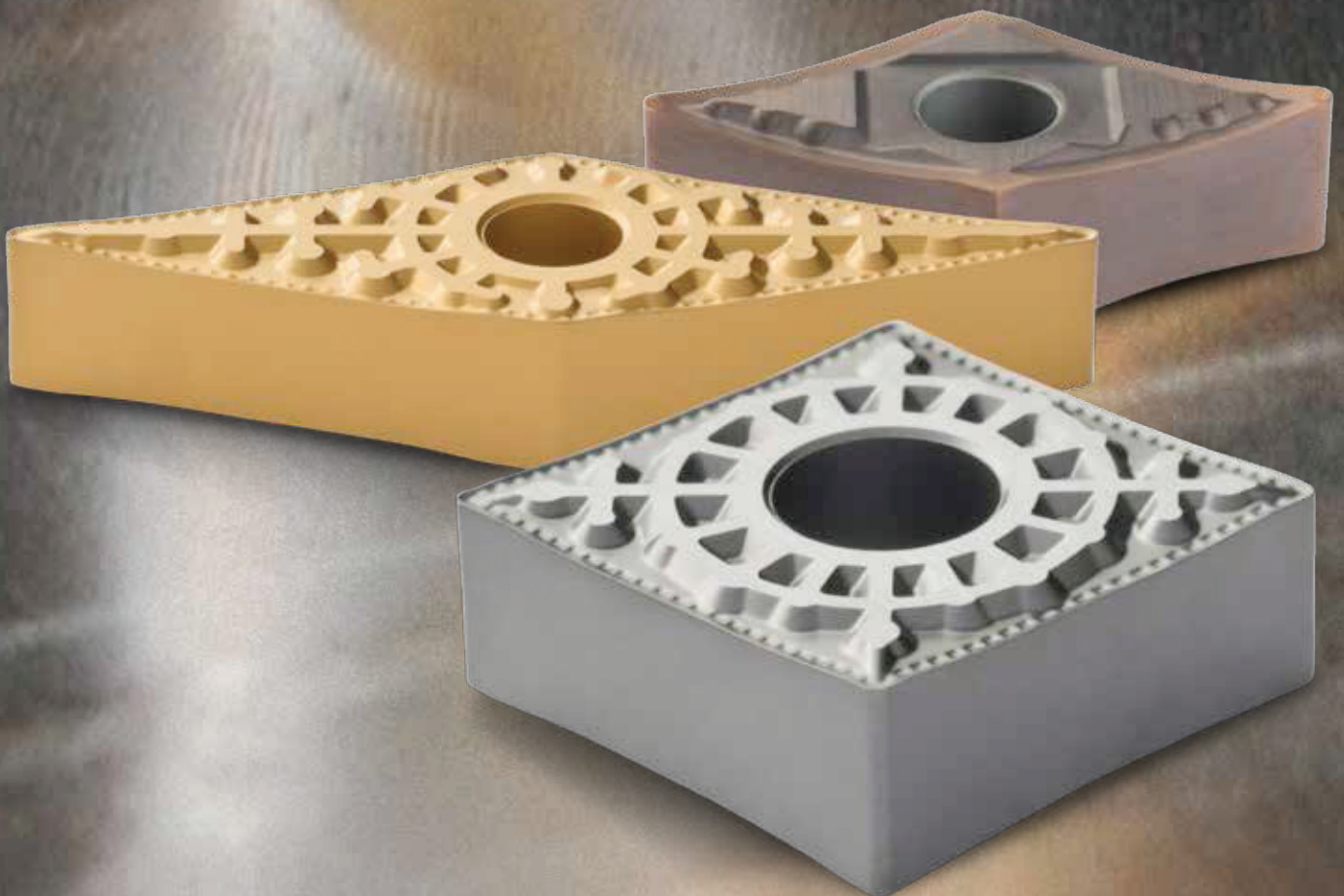
## WERKZEUGE

We have a passion for precision.

## CARBIDE INSERTS

For turning exotic materials

- The solution for turning exotic materials
- Also very suitable for stainless steel
- Notch and heat resistant for very good tool life



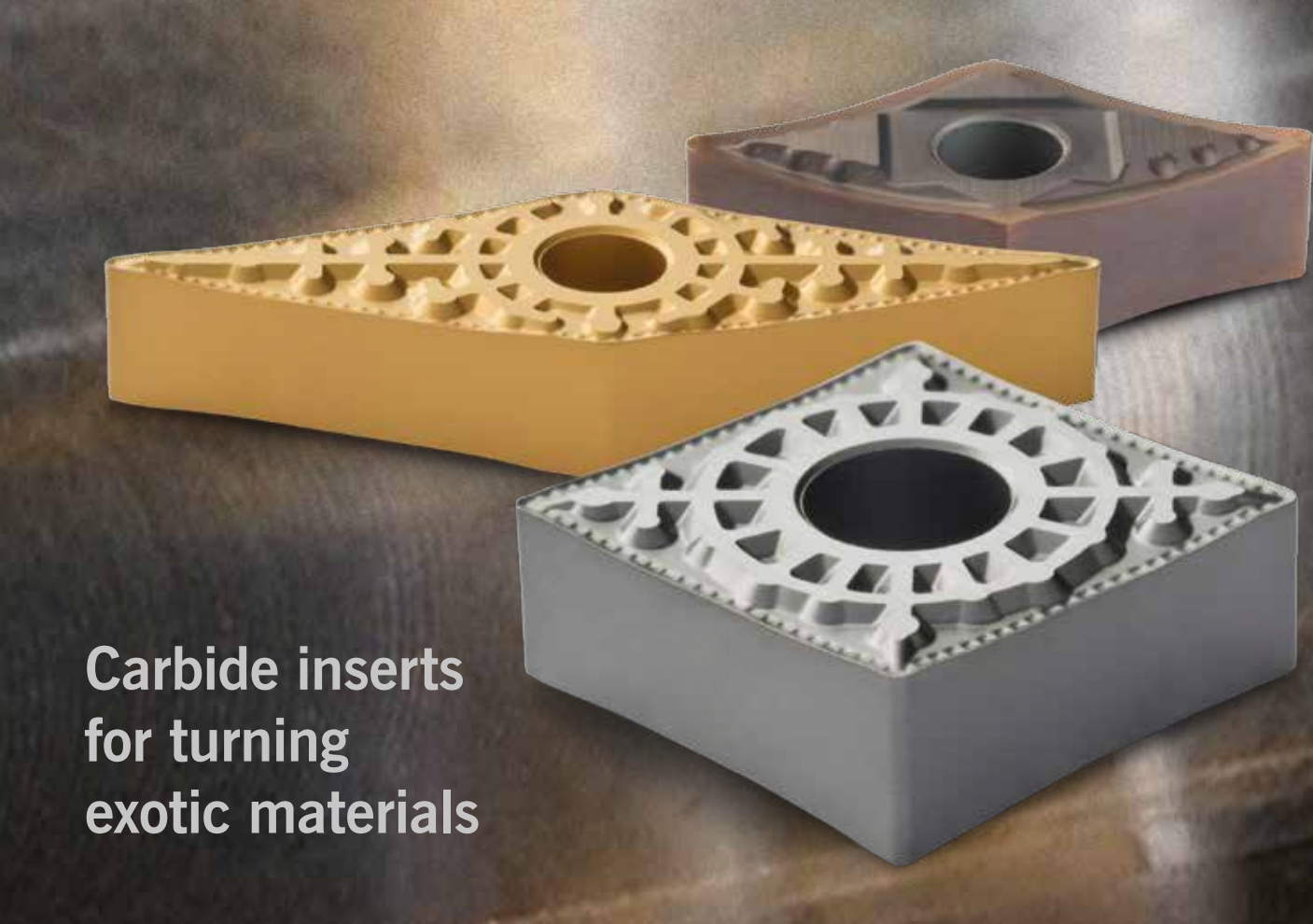
# For the most demanding applications: High positive inserts



**Ideal for applications in:**  
Medical-, automotive-, aerospace- and  
precision equipment industries

New technologies and the growing diversity of material grades create the need for new tools and cutting materials. With the ARNO® developed special high positive geometry and the use of different kinds of coatings we provide best cutting performance in a multitude of materials.

- **Special geometries for chip contraction**
- **Polished surface for optimal chip flow**
- **High positive chip angle for soft cutting and reliable productivity**



## Carbide inserts for turning exotic materials

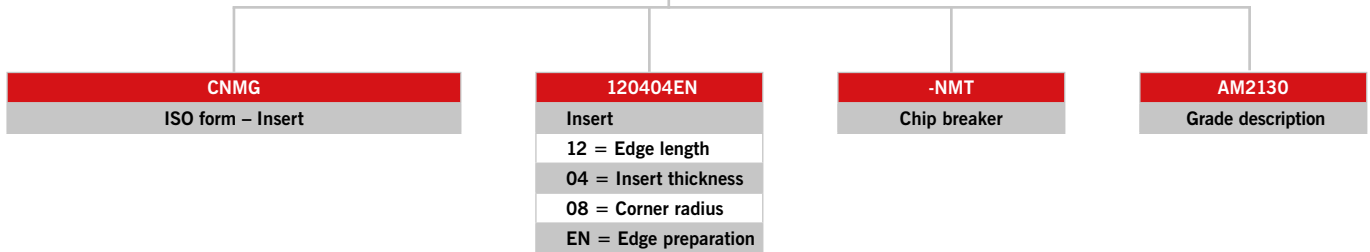
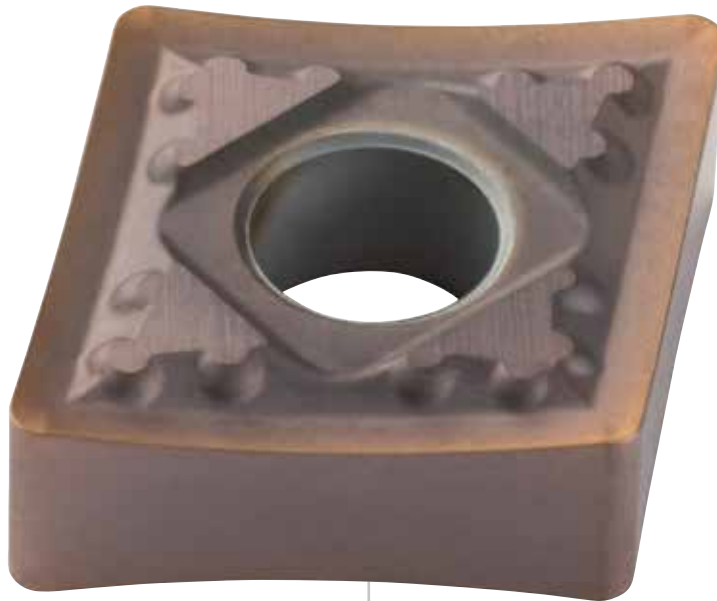
### Introduction

High temperature alloys, super alloys, exotic materials from various manufacturers, for example: Inconel and Hastelloy are due to their high nickel and chrome contents often considered as hard to machine materials. Carbide inserts often fail on these tough materials with breakage, early notch wear or poor chip control. These materials, with their reduced weight and higher heat resistance are becoming more and more universally used in all industries. ARNO®-Werkzeuge is offering reliable tools which are suitable for the materials.

### Your advantages:

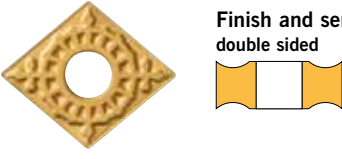
- The solution for turning exotic materials
- Reliable performance
- Notch and heat resistant for very good tool life
- Process secure performance with excellent chip control
- ISO designation code carbide inserts

ISO designation code – carbide inserts



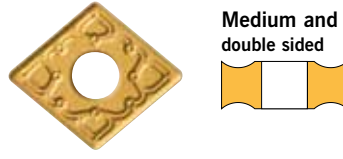
Geometry description

**- NFT**  
**For finishing and semi-finish turning.**  
 Main application area for exotic materials and high temperature titanium and nickel alloys. Can also be used for machining stainless steel. Chip angle 20°.



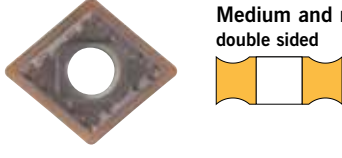
Finish and semi-finish turning  
double sided

**- NMT1**  
**For medium and rough turning.**  
 Main application area for exotic materials and high temperature titanium and nickel alloys. Can also be used for machining stainless steel. Chip angle 30°.



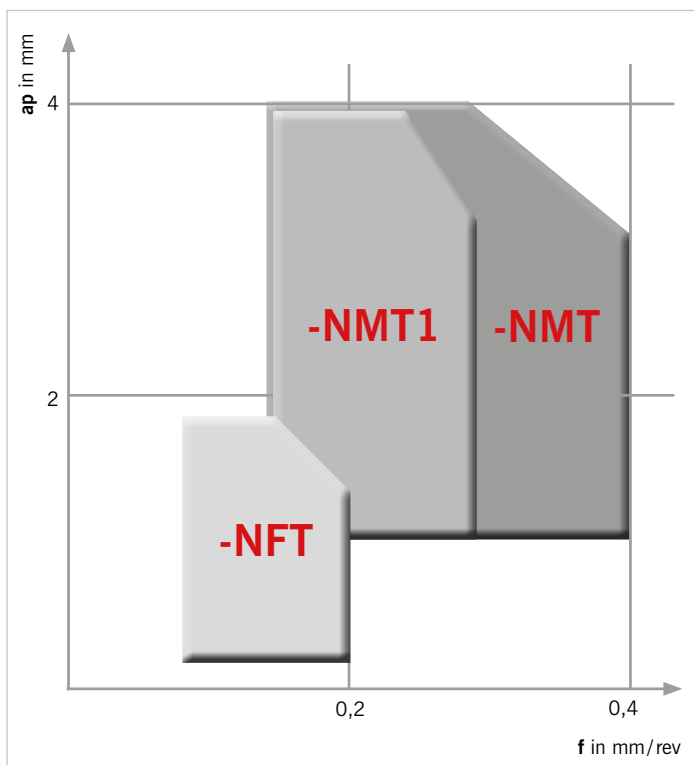
Medium and rough turning  
double sided

**- NMT**  
**For medium and rough turning.**  
 Main application area for exotic materials and high temperature titanium and nickel alloys. Can also be used for machining stainless steel. Chip angle 10°.



Medium and rough turning  
double sided

Feed rate and cutting depth recommendation



Geometry	ap in mm	f in mm/rev
-NFT	0,25 – 1,7	0,08 – 0,2
-NMT1	1 – 4	0,15 – 0,3
-NMT	1 – 4	0,15 – 0,4

## Coated

### AM2130

#### CVD multilayer coating

Main grade for medium to rough machining of stainless steel. Due to the very hard and micro fine coating this grade offer improved wear resistance and long tool life.

### AM5110

#### PVD multilayer coating

Grade for finish machining of VA-steel, nickel and titanium alloys and exotic materials. Also suitable for abrasive and naturally hardened materials such as CoCrMo or hard cast iron.

### AM5120

#### PVD multilayer coating

Grade for roughing stainless steel, also well suited for exotic materials, heat resistant alloys and titanium alloys.

### AM5130

#### PVD multilayer coating

Universal grade for medium machining of stainless steel, alloyed steel and exotic materials.

## Uncoated

### AS1010

#### Uncoated grade

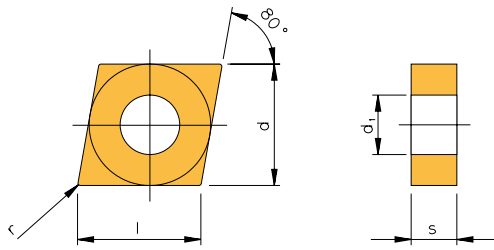
Grade for finish and light medium machining of hard to machine materials, high temperature resistant nickel and titanium alloys as well as exotic materials. Grade can also be used for finish turning of stainless steel.

### AS1020

#### Uncoated grade

Grade for medium machining of hard to machine materials, high temperature resistant nickel and titanium alloys as well as exotic materials. Grade can also be used for light medium turning of stainless steel.

CNMG

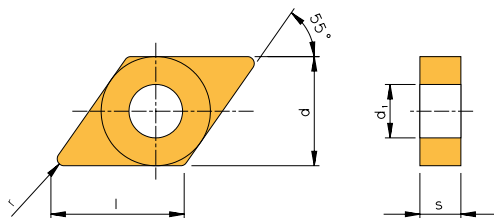


Designation	l	d	s	d <sub>1</sub>	r	PG	coated				uncoated		
							AM2130	AM5110	AM5120	AM5130	AS1010	AS1020	
CNMG 120404EN-NFT	12,90	12,700	4,76	5,2	0,4	40	●	●	●		●	●	NEW
CNMG 120408EN-NFT	12,90	12,700	4,76	5,2	0,8	40	●	●	●		●	●	NEW
CNMG 120404EN-NMT	12,90	12,700	4,76	5,2	0,4	40	●	●	●	●			
CNMG 120408EN-NMT	12,90	12,700	4,76	5,2	0,8	40	●	●	●	●			
CNMG 120412EN-NMT	12,90	12,700	4,76	5,2	1,2	40	●	●	●	●			
CNMG 120408EN-NMT1	12,90	12,700	4,76	5,2	0,8	40	●	●	●		●	●	NEW
CNMG 120412EN-NMT1	12,90	12,700	4,76	5,2	1,2	40	●	●	●		●	●	NEW

● Main application area  
○ Secondary application area

P							
M	●	●	●	●		○	○
K							
N							
S	○	●	●	●		●	●
H							

DNMG

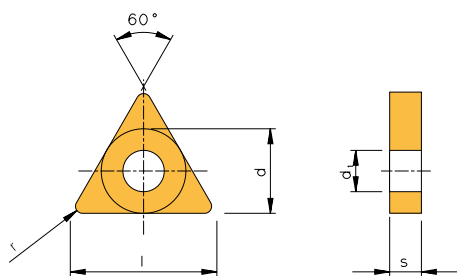


Designation	l	d	s	d <sub>1</sub>	r	PG	coated				uncoated		
							AM2130	AM5110	AM5120	AM5130	AS1010	AS1020	
DNMG 150604EN-NFT	15,50	12,700	6,35	5,2	0,4	2	●	●	●		●	●	NEW
DNMG 150608EN-NFT	15,50	12,700	6,35	5,2	0,8	2	●	●	●		●	●	NEW
DNMG 110404EN-NMT	11,60	9,525	4,76	5,2	0,4	2	●	●	●	●			
DNMG 150604EN-NMT	15,50	12,700	6,35	5,2	0,4	2	●	●	●	●			
DNMG 150608EN-NMT	15,50	12,700	6,35	5,2	0,8	2	●	●	●	●			
DNMG 150608EN-NMT1	15,50	12,700	6,35	5,2	0,8	2	●	●	●		●	●	NEW
DNMG 150612EN-NMT1	15,50	12,700	6,35	5,2	1,2	2	●	●	●		●	●	NEW

● Main application area  
○ Secondary application area

P							
M	●	●	●	●		○	○
K							
N							
S	○	●	●	●		●	●
H							

## TNMG

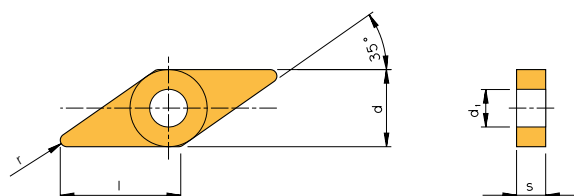


Designation	l	d	s	d <sub>1</sub>	r	PG	coated				uncoated		
							AM2130	AM5110	AM5120	AM5130	AS1010	AS1020	
TNMG 160404EN-NFT	16,50	9,525	4,76	3,81	0,4	2	●	●	●		●	●	NEW
TNMG 160408EN-NFT	16,50	9,525	4,76	3,81	0,8	2	●	●	●		●	●	NEW
TNMG 160404EN-NMT	16,50	9,525	4,76	3,81	0,4	2	●	●	●	●			
TNMG 160408EN-NMT	16,50	9,525	4,76	3,81	0,8	2	●	●	●	●			
TNMG 160408EN-NMT1	16,50	9,525	4,76	3,81	0,8	2	●	●	●		●	●	NEW
TNMG 160412EN-NMT1	16,50	9,525	4,76	3,81	1,2	2	●	●	●		●	●	NEW

- Main application area
- Secondary application area

	P	M	K	N	S	H
AM2130	●	○	○	○	○	○
AM5110	●	○	○	○	○	○
AM5120	●	○	○	○	○	○
AM5130	●	○	○	○	○	○
AS1010	○	○	○	○	○	○
AS1020	○	○	○	○	○	○

## VNMG



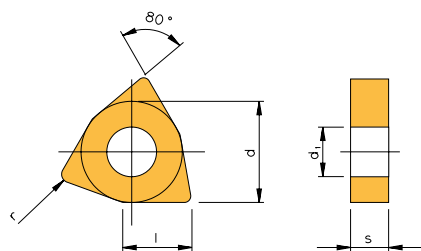
Designation	l	d	s	d <sub>1</sub>	r	PG	coated				uncoated		
							AM2130	AM5110	AM5120	AM5130	AS1010	AS1020	
VNMG 160404EN-NFT	16,50	9,525	4,76	3,81	0,4	2	●	●	●		●	●	NEW
VNMG 160408EN-NFT	16,50	9,525	4,76	3,81	0,8	2	●	●	●		●	●	NEW

- Main application area
- Secondary application area

	P	M	K	N	S	H
AM2130	●	○	○	○	○	○
AM5110	●	○	○	○	○	○
AM5120	●	○	○	○	○	○
AM5130	●	○	○	○	○	○
AS1010	○	○	○	○	○	○
AS1020	○	○	○	○	○	○



WNMG



Designation	l	d	s	d <sub>1</sub>	r	PG	coated				uncoated		
							AM2130	AM5110	AM5120	AM5130	AS1010	AS1020	
WNMG 080404EN-NFT	8,72	12,700	4,76	5,16	0,4	2	●	●	●		●	●	NEW
WNMG 080408EN-NFT	8,72	12,700	4,76	5,16	0,8	2	●	●	●		●	●	NEW
WNMG 080404EN-NMT	8,72	12,700	4,76	5,16	0,4	2	●	●	●	●			
WNMG 080408EN-NMT	8,72	12,700	4,76	5,16	0,8	2	●	●	●	●			
WNMG 080408EN-NMT1	8,72	12,700	4,76	5,16	0,8	2	●	●	●		●	●	NEW
WNMG 080412EN-NMT1	8,72	12,700	4,76	5,16	1,2	2	●	●	●		●	●	NEW

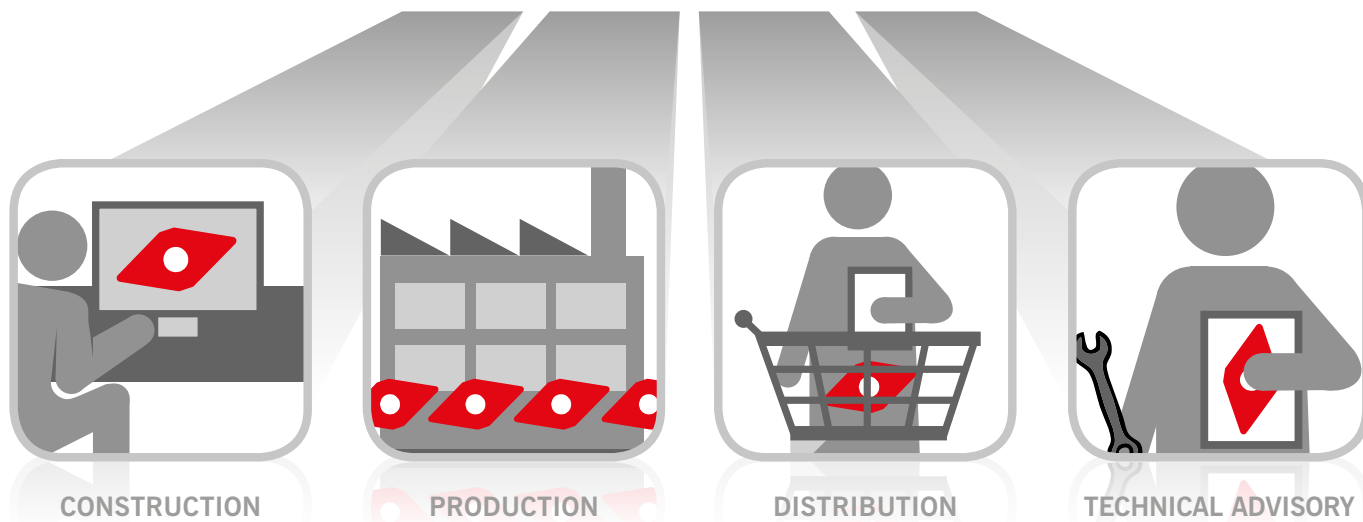
- Main application area
- Secondary application area

P												
M	●	●	●	●						○	○	
K												
N												
S	○	●	●	●						●	●	
H												

ISO	Material		Tensile strength (N/mm <sup>2</sup> )	Cutting speed V <sub>c</sub> (m/min)					
				coated				uncoated	
				AM2130	AM5110	AM5120	AM5130	AS1010	AS1020
P	Unalloyed steel and cast steel	< 0.15 % C/hardened and tempered	350	-	-	-	-	-	-
		0.15- 0.45% C/hardened and tempered	650	-	-	-	-	-	-
		> 0.45% C/hardened and tempered	1000	-	-	-	-	-	-
	Low alloyed steel and cast steel	annealed	600	-	-	-	-	-	-
		hardened and tempered	900	-	-	-	-	-	-
			1200	-	-	-	-	-	-
	High alloyed steel	annealed	700	-	-	-	-	-	-
	High alloyed tool steel and cast steel	hardened	1100	-	-	-	-	-	-
Stainless steel	ferritic, annealed	700	-	-	-	-	-	-	
Cast steel	martensitic, hardened and tempered	1000	-	-	-	-	-	-	
M	Stainless steel	ferritic / martensitic, annealed	450-600	100-140	80-180	80-160	80-150	60-130	60-120
		martensitic / austenitic, heat treated	600-900	70-140	40-140	40-130	40-120	50-120	40-110
K	Cast iron	pearlitic/ferritic	500-700	-	-	-	-	-	-
		pearlitic/martensitic	700-850	-	-	-	-	-	-
			800-1100	-	-	-	-	-	-
	Cast iron with nodular graphite	ferritic	550	-	-	-	-	-	-
		pearlitic	800	-	-	-	-	-	-
	Malleable cast iron	ferritic	450	-	-	-	-	-	-
pearlitic		750	-	-	-	-	-	-	
N	Aluminium alloys long chipping	not heat treatable	200	-	-	-	-	-	-
		heat treatable, heat treated	350	-	-	-	-	-	-
	Casted aluminium alloys	≤ 12 % Si, heat treated	250	-	-	-	-	-	-
		≤ 12 % Si, heat treatable, heat treated	300	-	-	-	-	-	-
		≤ 12 % Si, not heat treatable	450	-	-	-	-	-	-
	Copper and copper alloys (Brass/Bronze)	Lead alloys, Pb > 1 %	400	-	-	-	-	-	-
		Brass, Bronze	300	-	-	-	-	-	-
		Aluminium bronze	500	-	-	-	-	-	-
		Copper and elektrolyte copper	200	-	-	-	-	-	-
	Non-ferrous materials	Duroplastic	-	-	-	-	-	-	-
Re-inforced plastics		-	-	-	-	-	-	-	
Hard rubber		-	-	-	-	-	-	-	
S	High temperature resistant alloys	Fe-alloyed, annealed	700	20-50	20-70	20-60	20-50	20-55	20-50
		Fe-alloyed, heat treated	950	20-50	20-70	20-60	20-50	20-55	20-50
		Ni- or Co-alloyed, annealed	800	15-40	15-60	15-50	15-40	15-55	15-50
		Ni- or Co-alloyed, casting	1100	15-40	15-50	15-50	15-40	15-55	15-40
		Ni- or Co-alloyed, heat treated	1200	15-40	15-50	15-50	15-40	15-50	15-40
	Titanium alloys	Pure titan	500-700	70-130	100-210	90-180	80-170	70-120	60-100
Alpha- and Beta-alloys	heat treated	700-1000	40-70	40-90	40-80	80-170	30-80	30-70	
H	Hardened steel	hardened	55 HRC	-	-	-	-	-	-
			60 HRC	-	-	-	-	-	-
	Hard cast iron	casting	41 HRC	-	-	-	-	-	-
	Hardened cast iron	hardened	55 HRC	-	-	-	-	-	-

The recommended cutting data are only approximate values.  
It may be necessary to adjust them to each individual machining application.

**ARNO**<sup>®</sup>  
**WERKZEUGE**



**Quick, flexible and individual.**

**To have design, production and service all under one roof**

is the perfect way of providing standard and special products.

95 % of the standard programme is available from stock. Order received before 18.00 CET are dispatched the very same day and in most cases supplied next day.

Our competent team of technical sales engineers will be available to support you on site.

For more information see:  
**[www.arno.de](http://www.arno.de)**



Tools and inserts  
for parting and grooving



Tooling and indexable inserts  
for turning and threading



Milling cutters and indexable inserts  
for milling and thread milling



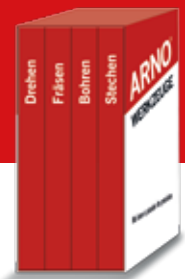
Drilling tools and indexable inserts  
for drilling

## We have a passion for precision.

With passion and enthusiasm we face the challenges of our customers, to modify, develop and precisely manufacture – this is the way of ARNO®-Werkzeuge. Every single tool contains the knowledge and experience of over 70 years traditional tool manufacturing. That is proven quality and precision at the highest level.

**ARNO®**  
WERKZEUGE

For further information please ask for our complete catalogue.



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