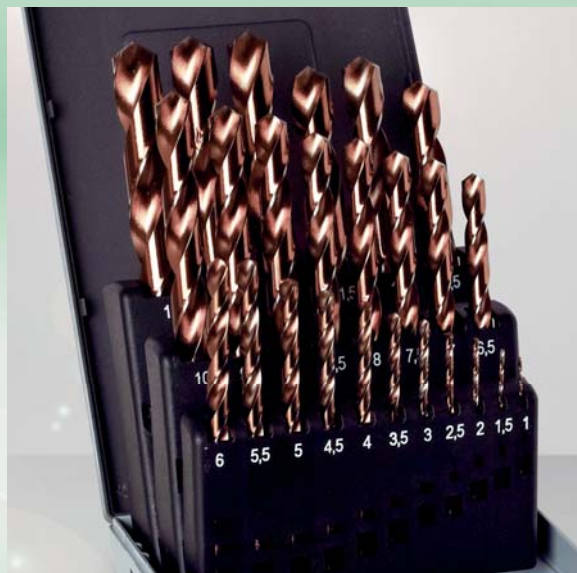


# HARTNER

Precision Cutting Tools

## M42 Twist Drills

WITH SPLIT POINT TO NAS 907








- + highest wear resistance due to 8% cobalt-alloyed high speed steel
- + useful both in hand drills and machine tools

# ISO code

<b>P</b>	Steel, high-alloyed steel
<b>M</b>	Stainless steel
<b>K</b>	Grey cast iron, spher. graphite iron/malleable cast iron
<b>N</b>	Aluminium and other non-ferrous metals
<b>S</b>	Special, super and titanium alloys
<b>H</b>	Hardened steel and chilled cast iron

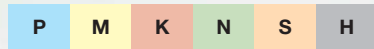
# Pictograms

Tool material	<b>M42</b>
	High speed steel
Surface	  
	bright nanoFIRE bronze temper
Type	<b>N</b>
Drilling depth	<b>~5xD</b>
Standard	<b>DIN 338</b>
Point angle	 <b>135°</b>
Tolerance on Ø	<b>h8</b>
Cutting direction	
	right
Shank form	 <b>Cyl</b>
	cylindrical
Web thinning	
	with web thinning
Internal coolant	
	without IC

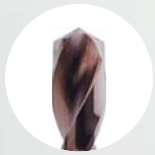


## M42 Twist Drills cylindrical

page 4

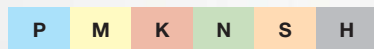


- ▶ Ø 1.0 – 14.0 mm
- ▶ DIN 338
- ▶ bright finish



## M42 Twist Drills cylindrical

page 7

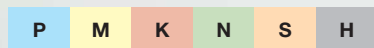


- ▶ Ø 1.0 – 13.0 mm
- ▶ DIN 338
- ▶ Surface bronze tempered

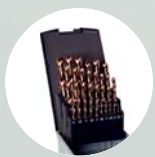


## M42 Twist Drills cylindrical

page 10

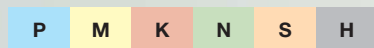


- ▶ Ø 1.0 – 16.0 mm
- ▶ DIN 338
- ▶ nanoFIRE coated

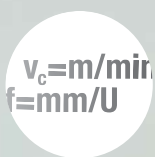


## M42 Set of jobber drills

page 13



- ▶ Ø 1.0 – 10.0 mm; in increments of 0.5 mm
- ▶ Ø 1.0 – 13.0 mm; in increments of 0.5 mm
- ▶ DIN 338
- ▶ Surface bronze tempered



## Technical Part

page 16

- ▶ Application recommendations

# M42 Twist Drills cylindrical

- high speed steel with 8% cobalt for maximum performance at high temperatures
- reliable and economic drilling also in challenging materials
- split point to NAS 907 for exact pilot drilling with minimum feed forces
- suitable for machine tools or hand drills
- for general application and repair jobs, for example in the aviation industry

## Relieved cone geometry with split point to NAS 907

lowest feed forces and pinpoint accuracy for pilot drilling without punch-mark or previous centering

## Tool material

high speed steel with 8% cobalt for maximum performance and high heat resistance also working in challenging materials

## Flutes

optimised flute design for correct chip formation and good chip removal



M42



N

~5xD

DIN 338

135°

h8

R

Cyl





## Jobber drills

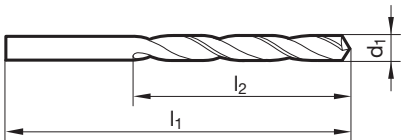
Article no. 81012



P	M	K	N	S	H
●	○	○	●	○	○



web thinning  $\geq \varnothing 1.000$  • relieved cone geometry with split point to NAS 907 • high Co- and Mo-content • especially high wear resistance



d1 mm	l1 mm	l2 mm	d1 mm	l1 mm	l2 mm
1.000	34.000	12.000	5.200	86.000	52.000
1.100	36.000	14.000	5.300	86.000	52.000
1.200	38.000	16.000	5.400	93.000	57.000
1.300	38.000	16.000	5.500	93.000	57.000
1.400	40.000	18.000	5.600	93.000	57.000
1.500	40.000	18.000	5.700	93.000	57.000
1.600	43.000	20.000	5.800	93.000	57.000
1.700	43.000	20.000	5.900	93.000	57.000
1.800	46.000	22.000	6.000	93.000	57.000
1.900	46.000	22.000	6.100	101.000	63.000
2.000	49.000	24.000	6.200	101.000	63.000
2.100	49.000	24.000	6.300	101.000	63.000
2.200	53.000	27.000	6.400	101.000	63.000
2.300	53.000	27.000	6.500	101.000	63.000
2.400	57.000	30.000	6.600	101.000	63.000
2.500	57.000	30.000	6.700	101.000	63.000
2.600	57.000	30.000	6.800	109.000	69.000
2.700	61.000	33.000	6.900	109.000	69.000
2.800	61.000	33.000	7.000	109.000	69.000
2.900	61.000	33.000	7.100	109.000	69.000
3.000	61.000	33.000	7.200	109.000	69.000
3.100	65.000	36.000	7.300	109.000	69.000
3.200	65.000	36.000	7.400	109.000	69.000
3.300	65.000	36.000	7.500	109.000	69.000
3.400	70.000	39.000	7.600	117.000	75.000
3.500	70.000	39.000	7.700	117.000	75.000
3.600	70.000	39.000	7.800	117.000	75.000
3.700	70.000	39.000	7.900	117.000	75.000
3.800	75.000	43.000	8.000	117.000	75.000
3.900	75.000	43.000	8.100	117.000	75.000
4.000	75.000	43.000	8.200	117.000	75.000
4.100	75.000	43.000	8.300	117.000	75.000
4.200	75.000	43.000	8.400	117.000	75.000
4.300	80.000	47.000	8.500	117.000	75.000
4.400	80.000	47.000	8.600	125.000	81.000
4.500	80.000	47.000	8.700	125.000	81.000
4.600	80.000	47.000	8.800	125.000	81.000
4.700	80.000	47.000	8.900	125.000	81.000
4.800	86.000	52.000	9.000	125.000	81.000
4.900	86.000	52.000	9.100	125.000	81.000
5.000	86.000	52.000	9.200	125.000	81.000
5.100	86.000	52.000	9.300	125.000	81.000



## Jobber drills

d1 mm	l1 mm	l2 mm	d1 mm	l1 mm	l2 mm
9.400	125.000	81.000	12.500	151.000	101.000
9.500	125.000	81.000	13.000	151.000	101.000
9.600	133.000	87.000	14.000	160.000	108.000
9.700	133.000	87.000			
9.800	133.000	87.000			
9.900	133.000	87.000			
10.000	133.000	87.000			
10.200	133.000	87.000			
10.500	133.000	87.000			
11.000	142.000	94.000			
11.500	142.000	94.000			
12.000	151.000	101.000			

# M42 Twist Drills cylindrical



- high speed steel with 8% cobalt for maximum performance at high temperatures
- bronze tempered surface finish for perfect chip removal
- reliable and economic drilling also in challenging materials
- split point to NAS 907 for exact pilot drilling with minimum feed forces
- preferably useable with hand drills
- for general application and repair jobs, for example in the aviation industry

## Reduced core

significantly reduced tapered core compared with article no. 81012 for additional stability whilst ensuring to keep the forces low

## Relieved cone geometry with split point to NAS 907

lowest feed forces and pinpoint accuracy for pilot drilling without punch-mark or previous centering

## Tool material

high speed steel with 8% cobalt for maximum performance and high heat resistance also working in challenging materials

## Flutes

optimised flute design for correct chip formation and good chip removal

## Bronze-oxide surface

for perfect chip removal and resistance to formation of built-up edge



M42



N

~5xD

DIN 338

135°

h8

R

Cyl





## Jobber drills

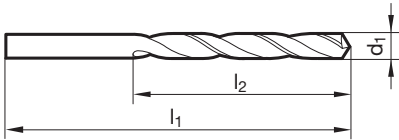
Article no. 81018



P	M	K	N	S	H
●	○	○	●	●	○



relieved cone geometry with split point to NAS 907 • high Co- and Mo-content • especially high wear resistance • significantly reduced tapered core



d1 mm	l1 mm	l2 mm	d1 mm	l1 mm	l2 mm
1.000	34.000	12.000	4.400	80.000	47.000
1.100	36.000	14.000	4.500	80.000	47.000
1.200	38.000	16.000	4.600	80.000	47.000
1.300	38.000	16.000	4.700	80.000	47.000
1.400	40.000	18.000	4.760	86.000	52.000
1.500	40.000	18.000	4.800	86.000	52.000
1.590	43.000	20.000	4.900	86.000	52.000
1.600	43.000	20.000	5.000	86.000	52.000
1.700	43.000	20.000	5.100	86.000	52.000
1.800	46.000	22.000	5.160	86.000	52.000
1.900	46.000	22.000	5.200	86.000	52.000
1.980	49.000	24.000	5.300	86.000	52.000
2.000	49.000	24.000	5.400	93.000	57.000
2.100	49.000	24.000	5.500	93.000	57.000
2.200	53.000	27.000	5.560	93.000	57.000
2.300	53.000	27.000	5.600	93.000	57.000
2.380	57.000	30.000	5.700	93.000	57.000
2.400	57.000	30.000	5.800	93.000	57.000
2.500	57.000	30.000	5.900	93.000	57.000
2.600	57.000	30.000	5.950	93.000	57.000
2.700	61.000	33.000	6.000	93.000	57.000
2.780	61.000	33.000	6.100	101.000	63.000
2.800	61.000	33.000	6.200	101.000	63.000
2.900	61.000	33.000	6.300	101.000	63.000
3.000	61.000	33.000	6.350	101.000	63.000
3.100	65.000	36.000	6.400	101.000	63.000
3.170	65.000	36.000	6.500	101.000	63.000
3.200	65.000	36.000	6.600	101.000	63.000
3.250	65.000	36.000	6.700	101.000	63.000
3.300	65.000	36.000	6.800	109.000	69.000
3.400	70.000	39.000	6.900	109.000	69.000
3.500	70.000	39.000	7.000	109.000	69.000
3.570	70.000	39.000	7.100	109.000	69.000
3.600	70.000	39.000	7.140	109.000	69.000
3.700	70.000	39.000	7.200	109.000	69.000
3.800	75.000	43.000	7.300	109.000	69.000
3.900	75.000	43.000	7.400	109.000	69.000
3.970	75.000	43.000	7.500	109.000	69.000
4.000	75.000	43.000	7.540	117.000	75.000
4.100	75.000	43.000	7.600	117.000	75.000
4.200	75.000	43.000	7.700	117.000	75.000
4.300	80.000	47.000	7.800	117.000	75.000





## Jobber drills

d1 mm	l1 mm	l2 mm	d1 mm	l1 mm	l2 mm
7.900	117.000	75.000	9.900	133.000	87.000
7.940	117.000	75.000	9.920	133.000	87.000
8.000	117.000	75.000	10.000	133.000	87.000
8.100	117.000	75.000	10.100	133.000	87.000
8.200	117.000	75.000	10.200	133.000	87.000
8.300	117.000	75.000	10.300	133.000	87.000
8.330	117.000	75.000	10.320	133.000	87.000
8.400	117.000	75.000	10.500	133.000	87.000
8.500	117.000	75.000	10.720	142.000	94.000
8.600	125.000	81.000	10.800	142.000	94.000
8.700	125.000	81.000	11.000	142.000	94.000
8.730	125.000	81.000	11.110	142.000	94.000
8.800	125.000	81.000	11.500	142.000	94.000
8.900	125.000	81.000	11.510	142.000	94.000
9.000	125.000	81.000	11.910	151.000	101.000
9.100	125.000	81.000	12.000	151.000	101.000
9.130	125.000	81.000	12.200	151.000	101.000
9.200	125.000	81.000	12.300	151.000	101.000
9.300	125.000	81.000	12.500	151.000	101.000
9.500	125.000	81.000	12.700	151.000	101.000
9.520	133.000	87.000	12.800	151.000	101.000
9.600	133.000	87.000	13.000	151.000	101.000
9.700	133.000	87.000			
9.800	133.000	87.000			

# M42 Twist Drills cylindrical



- high speed steel with 8% cobalt for maximum performance at high temperatures
- highest tool life due to nanoFIRE coat
- reliable and economic drilling also in challenging materials
- split point to NAS 907 for exact pilot drilling with minimum feed forces
- suitable for machine tools or hand drills
- for general application and repair jobs, for example in the aviation industry

## Flutes

optimised flute design for correct chip formation and good chip removal

## Relieved cone geometry with split point to NAS 907

lowest feed forces and pinpoint accuracy for pilot drilling without punch-mark or previous centering

## Tool material

high speed steel with 8% cobalt for maximum performance and high heat resistance also working in challenging materials

## nanoFIRE coating

for highest tool life at simultaneously higher speed and feed rates



M42



N



DIN 338



h8





## Jobber drills

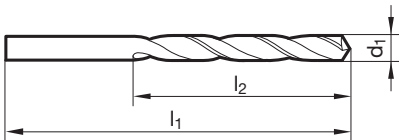
Article no. 81019



P	M	K	N	S	H
●	○	○	●	●	○



relieved cone geometry with split point to NAS 907 • high Co- and Mo-content • especially high wear resistance



d1 mm	l1 mm	l2 mm	d1 mm	l1 mm	l2 mm
1.000	34.000	12.000	4.760	86.000	52.000
1.100	36.000	14.000	4.800	86.000	52.000
1.200	38.000	16.000	4.900	86.000	52.000
1.300	38.000	16.000	5.000	86.000	52.000
1.400	40.000	18.000	5.100	86.000	52.000
1.500	40.000	18.000	5.160	86.000	52.000
1.590	43.000	20.000	5.200	86.000	52.000
1.600	43.000	20.000	5.300	86.000	52.000
1.700	43.000	20.000	5.400	93.000	57.000
1.800	46.000	22.000	5.500	93.000	57.000
1.900	46.000	22.000	5.600	93.000	57.000
2.000	49.000	24.000	5.700	93.000	57.000
2.100	49.000	24.000	5.800	93.000	57.000
2.200	53.000	27.000	5.900	93.000	57.000
2.300	53.000	27.000	5.950	93.000	57.000
2.380	57.000	30.000	6.000	93.000	57.000
2.400	57.000	30.000	6.100	101.000	63.000
2.500	57.000	30.000	6.200	101.000	63.000
2.600	57.000	30.000	6.300	101.000	63.000
2.700	61.000	33.000	6.350	101.000	63.000
2.800	61.000	33.000	6.400	101.000	63.000
2.900	61.000	33.000	6.500	101.000	63.000
3.000	61.000	33.000	6.600	101.000	63.000
3.100	65.000	36.000	6.700	101.000	63.000
3.170	65.000	36.000	6.750	109.000	69.000
3.200	65.000	36.000	6.800	109.000	69.000
3.300	65.000	36.000	6.900	109.000	69.000
3.400	70.000	39.000	7.000	109.000	69.000
3.500	70.000	39.000	7.100	109.000	69.000
3.600	70.000	39.000	7.200	109.000	69.000
3.700	70.000	39.000	7.300	109.000	69.000
3.800	75.000	43.000	7.400	109.000	69.000
3.900	75.000	43.000	7.500	109.000	69.000
3.970	75.000	43.000	7.600	117.000	75.000
4.000	75.000	43.000	7.700	117.000	75.000
4.100	75.000	43.000	7.800	117.000	75.000
4.200	75.000	43.000	7.900	117.000	75.000
4.300	80.000	47.000	8.000	117.000	75.000
4.400	80.000	47.000	8.100	117.000	75.000
4.500	80.000	47.000	8.200	117.000	75.000
4.600	80.000	47.000	8.300	117.000	75.000
4.700	80.000	47.000	8.400	117.000	75.000



## Jobber drills

d1 mm	l1 mm	l2 mm	d1 mm	l1 mm	l2 mm
8.500	117.000	75.000	10.100	133.000	87.000
8.600	125.000	81.000	10.200	133.000	87.000
8.700	125.000	81.000	10.500	133.000	87.000
8.730	125.000	81.000	10.800	142.000	94.000
8.800	125.000	81.000	11.000	142.000	94.000
8.900	125.000	81.000	11.200	142.000	94.000
9.000	125.000	81.000	11.500	142.000	94.000
9.100	125.000	81.000	11.800	142.000	94.000
9.200	125.000	81.000	11.910	151.000	101.000
9.300	125.000	81.000	12.000	151.000	101.000
9.400	125.000	81.000	12.200	151.000	101.000
9.500	125.000	81.000	12.500	151.000	101.000
9.600	133.000	87.000	13.000	151.000	101.000
9.700	133.000	87.000	14.000	160.000	108.000
9.800	133.000	87.000	15.000	169.000	114.000
9.900	133.000	87.000	16.000	178.000	120.000
9.920	133.000	87.000			
10.000	133.000	87.000			

# M42 Set of jobber drills in cases



- with twist drills article no. 81018
- bronze tempered surface finish for perfect chip removal
- preferably useable with hand drills
- for general application and repair jobs also in difficult-to-machine materials





# HARTNER

## Set of jobber drills

Article no. 88018

P	M	K	N	S	H
●	○	○	●	●	○



M42		N	~5xD	DIN 338		h8		Cyl	
-----	--	---	------	---------	--	----	--	-----	--

containing M42 jobber drills article no. 81018

d1	increasing by mm	Pieces/set	Code no.
1.0-10.0	0,5	19	0.013
1.0-13.0	0,5	25	0.014



# HARTNER

Precision Cutting Tools

## Set of Machine Taps, Core Hole Drills and Countersinks



### Article no. 88020 1.000

Set of 14 tools in plastic case consisting of:

HSS-E blind hole taps, article no. 80730  
1 piece each M3/M4/M5/M6/M8/M10

HSS core hole jobber drills TiN-tip, article no. 84406  
1 piece each Ø 2.50/3.30/4.20/5.00/6.80/8.50

HSS countersinks, article no. 88200  
1 piece each Ø 6.3/12.4



## Application recommendations Twist Drills

Article no.
Standard/DIN
Tool material
Surface finish
Type
Std. range page

Tools with bold feed column no. are preferred choice.

Drill Ø mm	Feed column no.								
	1	2	3	4	5	6	7	8	9
	f (mm/rev.)								
<b>0.50</b>	0.004	0.006	0.007	0.008	0.010	0.012	0.014	0.016	0.019
<b>1.00</b>	0.006	0.008	0.012	0.014	0.016	0.018	0.020	0.023	0.025
<b>2.00</b>	0.020	0.025	0.032	0.040	0.050	0.063	0.080	0.100	0.125
<b>2.50</b>	0.025	0.032	0.040	0.050	0.063	0.080	0.100	0.125	0.160
<b>3.15</b>	0.032	0.040	0.050	0.063	0.080	0.100	0.125	0.160	0.160
<b>4.00</b>	0.040	0.050	0.063	0.080	0.100	0.125	0.160	0.200	0.200
<b>5.00</b>	0.040	0.050	0.063	0.080	0.100	0.125	0.160	0.200	0.250
<b>6.30</b>	0.50	0.063	0.080	0.100	0.125	0.160	0.200	0.250	0.315
<b>8.00</b>	0.063	0.080	0.100	0.125	0.160	0.200	0.250	0.315	0.315
<b>10.00</b>	0.080	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.400
<b>12.50</b>	0.080	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.500
<b>16.00</b>	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.500	0.630
<b>20.00</b>	0.125	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.630
<b>25.00</b>	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.800	0.800
<b>31.50</b>	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.800	1.000
<b>40.00</b>	0.200	0.250	0.315	0.400	0.500	0.630	0.800	1.000	1.250
<b>50.00</b>	0.250	0.310	0.400	0.500	0.630	0.800	1.000	1.250	1.250
<b>63.00</b>	0.315	0.400	0.500	0.630	0.800	1.000	1.250	1.600	1.600
<b>80.00</b>	0.400	0.500	0.630	0.800	1.000	1.250	1.600	1.600	2.000

Material dependent coolants:

- Air
- Neat oil
- Soluble oil

Cutting direction:

- right
- left

Material group	Material examples Figures in bold = material no. to DIN EN 10 027	Tensile strength (N/mm <sup>2</sup> )	Hardness	Coolant
Common structural steels	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2)	≤500		<input type="radio"/>
	<b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤1000		<input type="radio"/>
Free-cutting steels	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36)	≤850		<input type="radio"/>
	<b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤1000		<input type="radio"/>
Unalloyed heat-treatable steels	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30)	≤700		<input type="radio"/>
	<b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45)	≤850		<input type="radio"/>
	<b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤1000		<input type="radio"/>
Alloyed heat-treatable steels	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4	≤1000		<input type="radio"/>
	<b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1400		<input type="radio"/>
Unalloyed case hard. steels	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		<input type="radio"/>
Alloyed case hardened steels	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6	≤1000		<input checked="" type="radio"/>
	<b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1400		<input checked="" type="radio"/>
Nitriding steels	<b>1.8504</b> 34CrAl6	≤1000		<input type="radio"/>
	<b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1400		<input checked="" type="radio"/>
Tool steels	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9	≤850		<input type="radio"/>
	<b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤1400		<input checked="" type="radio"/>
High speed steels	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		<input checked="" type="radio"/>
Spring steels	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	<input checked="" type="radio"/>
Hardened steels	-		≤48 HRC	<input checked="" type="radio"/>
			≤66 HRC	<input checked="" type="radio"/>
Stainless steels, sulphured	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		<input checked="" type="radio"/>
austenitic	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		<input checked="" type="radio"/>
martensitic	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		<input checked="" type="radio"/>
Cast iron	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20)		≤240 HB	<input type="radio"/>
	<b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤350 HB	<input type="radio"/>
Spheroidal graphite iron	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35)		≤240 HB	<input type="radio"/>
and malleable cast iron	<b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤350 HB	<input type="radio"/>
Chilled cast iron	-		≤350 HB	<input type="radio"/>
New cast materials GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35)		≤220 HB	<input type="radio"/>
	<b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤300 HB	<input type="radio"/>
New cast materials ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000)	≤1000		<input type="radio"/>
	<b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1400		<input type="radio"/>
Special alloys	Nimonic, Inconel, Monel, Hastelloy	≤2000		<input checked="" type="radio"/>
Ti and Ti-alloys	<b>3.7024</b> Ti99.5, <b>3.7114</b> TiAl5Sn2.5, <b>3.7124</b> TiCu2	≤850		<input checked="" type="radio"/>
	<b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2.5, - TiAl8Mo1V1	≤1400		<input checked="" type="radio"/>
Aluminium and Al-alloys	<b>3.0255</b> Al99.5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		<input type="radio"/>
Al wrought alloys	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1.5	≤650		<input type="radio"/>
Al cast alloys ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		<input type="radio"/>
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		<input type="radio"/>
Magnesium alloys	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		<input type="radio"/>
Copper, low-alloyed	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		<input type="radio"/>
Brass, short-chipping	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2	≤600		<input type="radio"/>
long-chipping	<b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0.5	≤600		<input type="radio"/>
Bronze, short-chipping	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn	≤600		<input type="radio"/>
	<b>2.0790</b> CuNi18Zn19Pb	≤850		<input checked="" type="radio"/>
Bronze, long-chipping	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10	≤850		<input checked="" type="radio"/>
	<b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤1000		<input checked="" type="radio"/>
Duroplastics	Bakelit, Resopal, Pertinax, Moltopren	≤150		<input type="radio"/>
Thermoplastics	Plexiglass, Hostalen, Novodur, Makralon	≤100		<input type="radio"/>
Kevlar	Kevlar	≤1000		<input type="radio"/>
Glass, carbon concentr. plastics	GFK/CFK	≤1000		<input type="radio"/>





# HARTNER

≤5xD

81012
338
M42
○
N
5

81019
338
M42
●
N
11

81018
338
M42
●
N
8



V <sub>c</sub> m/min	Feed column no.
35	5
30	5
40	5
40	5
40	5
40	5
35	5
20	4
16	3
36	6
20	3
15	3
16	3
12	3
15	3
12	3
15	3
8	2
4	1
18	3
14	3
16	3
35	5
30	5
30	5
28	5
10	3
8	1
10	2
6	2
90	7
90	7
80	7
70	6
70	6
40	5
60	5
40	5
35	4
33	4
20	4
15	4

V <sub>c</sub> m/min	Feed column no.
42	6
36	5
48	6
42	5
44	6
44	5
42	5
30	4
25	3
40	6
25	3
20	3
20	3
18	3
21	4
16	3
17	3
11	2
6	1
20	4
15	3
18	3
45	6
40	6
36	6
29	6
14	3
9	1
12	2
18	2
80	7
70	6
80	6
70	6
40	5
60	5
40	5
35	4
33	4
20	4
15	4

V <sub>c</sub> m/min	Feed column no.
35	6
30	5
40	6
40	5
40	5
40	5
35	4
20	4
16	3
36	6
20	3
15	3
16	4
12	3
15	3
12	3
15	3
8	2
4	1
18	3
14	3
16	3
35	6
30	6
30	6
28	6
10	3
8	1
10	2
6	2
90	7
90	7
80	7
70	6
70	6
70	6
40	5
60	5
40	5
35	4
33	4
20	4
15	4
20	4
30	5





## Our programme:



FU 500/FN 500



Gun Drills



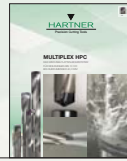
INOX Drills



Multiplex



Micro Precision Drills



Multiplex HPC



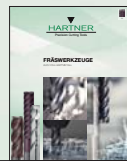
TS-Drills



TM Vending Machines



Threading Tools



Solid Carbide  
High Performance Milling Cutters



TF 100 Multi-Mill



M42 Twist Drills

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