GUHRING

NEW

EXTENDED PROGRAM



Countersinks with convex cutting edges

- round, precise and chatter-free countersinking
- reduction of feed force by 60 %
- reduction of radial force by 50 %

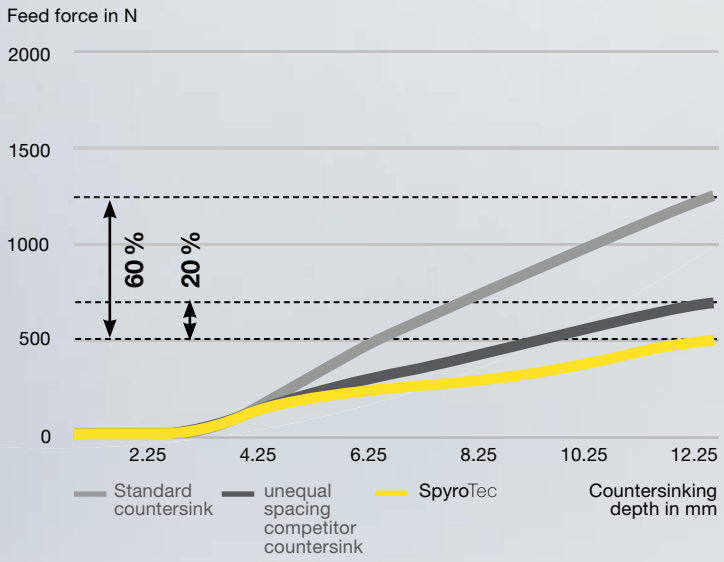
SpyroTec | Twisted HSS and HSCO countersink

GUHRING – YOUR WORLDWIDE PARTNER

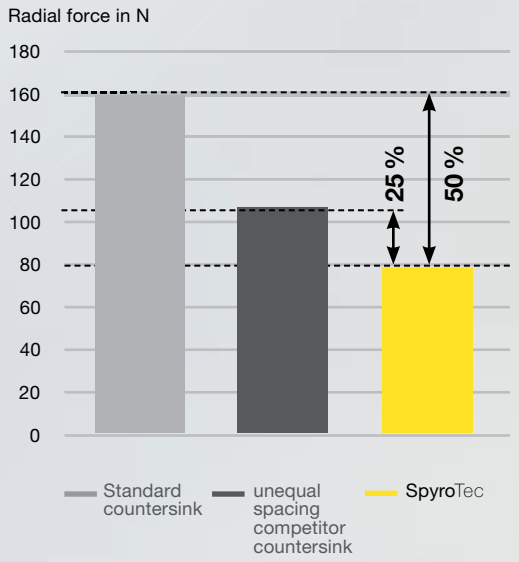
SpyroTec

THE INNOVATIVE, TWISTED HSS AND HSCO COUNTERSINK

The axial and radial forces that occur during countersinking operations are significantly reduced due to the unique geometry of the SpyroTec cutting edges. The convex form and variable pitch of the helical cutting edges results in a stable countersinking process with minimal vibration, even when using a hand drill. Round, precise, chatter-free countersinking is guaranteed. The TiAlN coating ensures higher wear resistance and thermal protection, which guarantees longer tool life in many different materials and applications.



LOWER FEED FORCE BY APPROX. 60%
COMPARED TO STANDARD COUNTERSINKS



LOWER RADIAL FORCE BY APPROX. 50%
COMPARED TO STANDARD COUNTERSINKS

- standard program
- 90°, 82°, and 60° countersinks
- round shank version
- tri-flat shank version
- long length round shank version


Countersinking with standard countersink


SpyroTec



CONVEX CUTTING EDGES

Three different convex cutting edges in combination with three unequal helix angles enable extremely stable and low-vibration cutting processes without any chatter marks.

TiAlN COATING

The TiAlN coating provides high hardness and excellent thermal protection.

CUTTING MATERIAL

The high-quality HSS and HSCO substrates hold up well in high-temperature applications, providing long tool life in a wide variety of materials.

FOR UNC/UNF FLAT HEAD SOCKET CAP SCREWS

SpyroTec 82°

Ideal for fasteners with 82° heads.

from p. 17



NEW

SpyroTec **82°**
including sets

FOR METRIC FLAT HEAD SOCKET CAP SCREWS

SpyroTec 90°

Ideal for fasteners with 90° heads.
Perfect choice for general deburring and chamfering of holes.

from p. 8



NEW

SpyroTec **90°**
Sets now with Ø 25mm

FOR METRIC FLAT HEAD SOCKET CAP SCREWS

SpyroTec 60°

Ideal for fasteners with 60° heads.

from p. 13



NEW

SpyroTec 60°
now available
as a set.

SPECIAL TOOL

SpyroTec 120°

Ideal for sheet metal rivets.

For further information please contact us!



NEW

SpyroTec 120°
available
as special tool

90° Countersinks, spiral-fluted

Series **5500**

DIN 335 | 90° | C

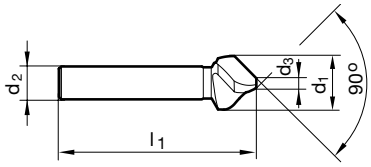
Material		Suitability
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Ni / Ti alloys	○
H	Hardened steel	

●=Optimal ○=Secondary

Operating parameters pg. 22

Tool material	**HSCO**
Coating	TiAlN (A)
Shank form	cyl.

- 3 different convex cutting edges
- low-vibration cutting processes
- for round and chatter-free countersinking
- considerably lower feed force required
- for universal application





d1	d2	d3	l1	Z	Code no.	EDP Number
mm	mm	mm	mm			
6.300	5.000	1.500	45.000	3	6.300	**9055000063000**
8.000	6.000	2.000	50.000	3	8.000	**9055000080000**
8.300	6.000	2.000	50.000	3	8.300	**9055000083000**
10.000	6.000	2.500	50.000	3	10.000	**9055000100000**
10.400	6.000	2.500	50.000	3	10.400	**9055000104000**
11.500	8.000	2.800	56.000	3	11.500	**9055000115000**
12.400	8.000	2.800	56.000	3	12.400	**9055000124000**
15.000	10.000	3.200	60.000	3	15.000	**9055000150000**
16.500	10.000	3.200	60.000	3	16.500	**9055000165000**
19.000	10.000	3.500	63.000	3	19.000	**9055000190000**
20.500	10.000	3.500	63.000	3	20.500	**9055000205000**
23.000	10.000	3.800	67.000	3	23.000	**9055000230000**
25.000	10.000	3.800	67.000	3	25.000	**9055000250000**
31.000	12.000	4.200	71.000	3	31.000	**9055000310000**
40.000	12.000	10.000	75.000	3	40.000	**9055000400000**

90° Countersinks, spiral-fluted

Series **5501**

DIN 335 | 90° | C

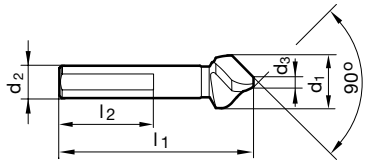
Tool material	HSCO
Coating	TiAlN A
Shank form	tri-flat

Material		Suitability
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Ni / Ti alloys	○
H	Hardened steel	

●=Optimal ○=Secondary

Operating parameters pg. 22

- 3 different convex cutting edges
- tri-flat shank prevents slipping in the chuck
- perfect for hand drills
- low-vibration cutting processes
- for round and chatter-free countersinking
- considerably lower feed force required
- for universal application





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8.000	6.000	2.000	50.000	30.000	3	8.000	**9055010080000**
8.300	6.000	2.000	50.000	30.000	3	8.300	**9055010083000**
10.000	6.000	2.500	50.000	30.000	3	10.000	**9055010100000**
10.400	6.000	2.500	50.000	30.000	3	10.400	**9055010104000**
11.500	8.000	2.800	56.000	30.000	3	11.500	**9055010115000**
12.400	8.000	2.800	56.000	30.000	3	12.400	**9055010124000**
15.000	10.000	3.200	60.000	30.000	3	15.000	**9055010150000**
16.500	10.000	3.200	60.000	30.000	3	16.500	**9055010165000**
19.000	10.000	3.500	63.000	30.000	3	19.000	**9055010190000**
20.500	10.000	3.500	63.000	30.000	3	20.500	**9055010205000**
23.000	10.000	3.800	67.000	30.000	3	23.000	**9055010230000**
25.000	10.000	3.800	67.000	30.000	3	25.000	**9055010250000**
31.000	12.000	4.200	71.000	30.000	3	31.000	**9055010310000**
40.000	12.000	10.000	75.000	30.000	3	40.000	**9055010400000**

90° Countersinks, spiral-fluted

Series **5503**

Tool material	**HSS**
Coating	TiAlN (A)
Shank form	cyl.

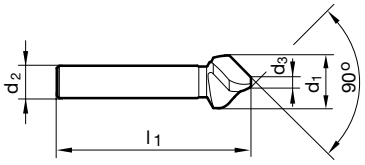
WN | 90° | C

Material		Suitability
P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	○
S	Ni / Ti alloys	○
H	Hardened steel	

●=Optimal ○=Secondary

Operating parameters pg. 22

- long version for recessed machining points
- 3 different convex cutting edges
- low-vibration cutting processes
- for round and chatter-free countersinking
- considerably lower feed force required
- for universal application





d1	d2	d3	l1	Z	Code no.	EDP Number
mm	mm	mm	mm			
6.300	5.000	1.500	104.000	3	6.300	**9055030063000**
8.300	6.000	2.000	105.000	3	8.300	**9055030083000**
10.400	6.000	2.500	107.000	3	10.400	**9055030104000**
12.400	8.000	2.800	108.000	3	12.400	**9055030124000**
16.500	10.000	3.200	111.000	3	16.500	**9055030165000**
20.500	10.000	3.500	114.000	3	20.500	**9055030205000**
25.000	10.000	3.800	118.000	3	25.000	**9055030250000**
31.000	12.000	4.200	140.000	3	31.000	**9055030310000**

90° Countersink sets, spiral-fluted

Series **5538**

DIN 335 | 90° | C

Tool material	**HSCO**
Coating	TiAlN (A)
Shank form	cyl.

Material		Suitability
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Ni / Ti alloys	○
H	Hardened steel	

●=Optimal ○=Secondary

- consisting of art. no. 5500
- 3 different convex cutting edges
- low-vibration cutting processes
- for round and chatter-free countersinking
- considerably lower feed force required
- for universal application



Operating parameters pg. 22

Ø-range mm	Pieces/set	Code no.	EDP Number
6,3/8,3/10,4/12,4/16,5/20,5	6	1.000	**9055380010000**
6,3/10,4/16,5/20,5/25.0	5	2.000	**9055380020000**

90° Countersink sets, spiral-fluted

Series **5539**

DIN 335 | 90° | C

Material		Suitability
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Ni / Ti alloys	○
H	Hardened steel	

●=Optimal ○=Secondary

Operating parameters pg. 22

- consisting of art. no. 5501
- 3 different convex cutting edges
- tri-flat shank prevents slipping in the chuck
- perfect for hand drills
- low-vibration cutting processes
- for round and chatter-free countersinking
- considerably lower feed force required
- for universal application

Tool material	**HSCO**
Coating	TiAlN (A)
Shank form	tri-flat



Ø-range mm	Pieces/set	Code no.	EDP Number
6,3/8,3/10,4/12,4/16,5/20,5	6	1.000	**9055390010000**
6,3/10,4/16,5/20,5/25.0	5	2.000	**9055390020000**

60° Countersinks, spiral-fluted

Series **5670**

DIN 334 | 60° | C

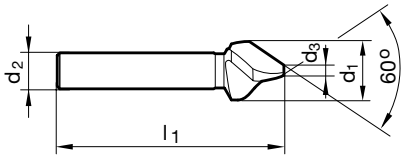
Tool material	**HSS**
Coating	TiAlN (A)
Shank form	cyl.

Material		Suitability
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Ni / Ti alloys	○
H	Hardened steel	

●=Optimal ○=Secondary

- 3 different convex cutting edges
- low-vibration cutting processes
- for round and chatter-free countersinking
- considerably lower feed force required
- for universal application

Operating parameters pg. 22





d1	d2	d3	l1	Z	Code no.	EDP Number
mm	mm	mm	mm			
6.300	5.000	1.600	45.000	3	6.300	**9056700063000**
8.000	6.000	2.000	50.000	3	8.000	**9056700080000**
10.000	6.000	3.200	56.000	3	10.000	**9056700100000**
12.500	8.000	3.200	56.000	3	12.500	**9056700125000**
16.000	10.000	4.000	63.000	3	16.000	**9056700160000**
20.000	10.000	5.000	67.000	3	20.000	**9056700200000**
25.000	10.000	6.300	71.000	3	25.000	**9056700250000**

60° Countersinks, spiral-fluted

Series **5671**

DIN 334 | 60° | C

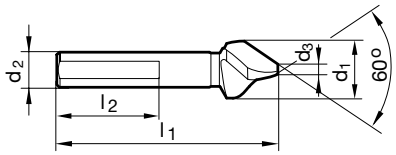
Tool material	**HSS**
Coating	TiAlN (A)
Shank form	tri-flat

Material		Suitability
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Ni / Ti alloys	○
H	Hardened steel	

●=Optimal ○=Secondary

- 3 different convex cutting edges
- tri-flat shank prevents slipping in the chuck
- perfect for hand drills
- low-vibration cutting processes
- for round and chatter-free countersinking
- considerably lower feed force required
- for universal application

Operating parameters pg. 23





d1	d2	d3	l1	l2	Z	Code no.	EDP Number
mm	mm	mm	mm	mm			
6.300	5.000	1.600	45.00	30	3	6.300	**9056710063000**
8.000	6.000	2.000	50.00	30	3	8.000	**9056710080000**
10.000	6.000	3.200	56.00	30	3	10.000	**9056710100000**
12.500	8.000	3.200	56.00	30	3	12.500	**9056710125000**
16.000	10.000	4.000	63.00	30	3	16.000	**9056710160000**
20.000	10.000	5.000	67.00	30	3	20.000	**9056710200000**
25.000	10.000	6.300	71.00	30	3	25.000	**9056710250000**

60° Countersink sets, spiral-fluted

Series **5672**

DIN 334 | 60° | C

Tool material	**HSS**
Coating	TiAlN (A)
Shank form	cyl.

Material		Suitability
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Ni / Ti alloys	○
H	Hardened steel	

●=Optimal ○=Secondary

- consisting of art. no. 5670
- 3 different convex cutting edges
- low-vibration cutting processes
- for round and chatter-free countersinking
- considerably lower feed force required
- for universal application

NEW



Operating parameters pg. 23

Ø-range inch	Pieces/set	Code no.	EDP Number
6.3/8.0/10.0/12.5/16.0/20.0	6	1.000	**9056720010000**

60° Countersink sets, spiral-fluted

Series **5673**

DIN 334 | 60° | C

Tool material	HSS
Coating	TiAlN (A)
Shank form	cyl.

Material		Suitability
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Ni / Ti alloys	○
H	Hardened steel	

●=Optimal ○=Secondary

Operating parameters pg. 23

- consisting of art. no. 5671
- 3 different convex cutting edges
- tri-flat shank prevents slipping in the chuck
- perfect for hand drills
- low-vibration cutting processes
- for round and chatter-free countersinking
- considerably lower feed force required
- for universal application

NEW



Ø-range inch	Pieces/set	Code no.	EDP Number
6.3/8.0/10.0/12.5/16.0/20.0	6	1.000	**9056730010000**

82° Countersinks, SpyroTec

Series **5674**

Tool material	**HSCO**
Coating	TiAlN A
Shank form	cyl.

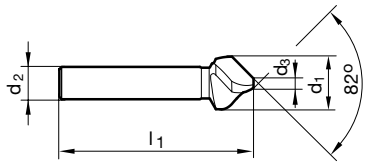
WN | 82° | C

Material		Suitability
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Ni / Ti alloys	○
H	Hardened steel	

●=Optimal ○=Secondary

- 3 different convex cutting edges
- low-vibration cutting processes
- for round and chatter-free countersinking
- considerably lower feed force required
- for universal application

Operating parameters pg. 22





d1	d2	d3	l1	Z	Code no.	EDP Number
frac.	inch	inch	inch			
1/4	0.2500	0.0600	2.000	3	6.350	**9056740063500**
5/16	0.2500	0.0800	2.000	3	7.938	**9056740079380**
3/8	0.2500	0.0900	2.000	3	9.525	**9056740095250**
1/2	0.3750	0.1500	2.250	3	12.700	**9056740127000**
5/8	0.3750	0.1800	2.250	3	15.875	**9056740158750**
3/4	0.5000	0.2100	2.750	3	19.050	**9056740190500**
7/8	0.5000	0.2300	2.750	3	22.225	**9056740222250**
1	0.5000	0.2500	2.750	3	25.400	**9056740254000**
1 1/4	0.5000	0.3700	3.000	3	31.750	**9056740317500**

82° Countersinks, SpyroTec

Series **5675**

Tool material	**HSCO**
Coating	TiAlN (A)
Shank form	tri-flat

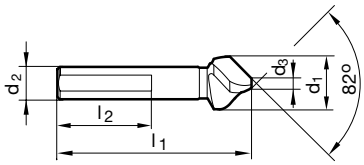
WN | 82° | C

Material		Suitability
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Ni / Ti alloys	○
H	Hardened steel	

●=Optimal ○=Secondary

- 3 different convex cutting edges
- tri-flat shank prevents slipping in the chuck
- perfect for hand drills
- low-vibration cutting processes
- for round and chatter-free countersinking
- considerably lower feed force required
- for universal application

Operating parameters pg. 22





d1	d2	d3	l1	l2	Z	Code no.	EDP Number
frac.	inch	inch	inch	inch			
1/4	0.2500	0.0600	2.000	1.18	3	6.350	**9056750063500**
5/16	0.2500	0.0800	2.000	1.18	3	7.938	**9056750079380**
3/8	0.2500	0.0900	2.000	1.18	3	9.525	**9056750095250**
1/2	0.3750	0.1500	2.250	1.18	3	12.700	**9056750127000**
5/8	0.3750	0.1800	2.250	1.18	3	15.875	**9056750158750**
3/4	0.5000	0.2100	2.750	1.18	3	19.050	**9056750190500**
7/8	0.5000	0.2300	2.750	1.18	3	22.225	**9056750222250**
1	0.5000	0.2500	2.750	1.18	3	25.400	**9056750254000**
1 1/4	0.5000	0.3700	3.000	1.18	3	31.750	**9056750317500**

82° Countersink sets, SpyroTec

Series **5676**

WN | 82° | C

Tool material	HSCO
Coating	TiAlN A
Shank form	cyl.

Material		Suitability
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Ni / Ti alloys	○
H	Hardened steel	

●=Optimal ○=Secondary

- consisting of art. no. 5674
- 3 different convex cutting edges
- low-vibration cutting processes
- for round and chatter-free countersinking
- considerably lower feed force required
- for universal application



Operating parameters pg. 22

Ø-range inch	Pieces/set	Code no.	EDP Number
1/4, 5/16, 3/8, 1/2, 5/8, 3/4	6	1.000	**9056760010000**

82° Countersink sets, SpyroTec

Series **5677**

Tool material	**HSCO**
Coating	TiAlN (A)
Shank form	tri-flat

WN | 82° | C

Material		Suitability
P	Steel	●
M	Stainless steel	●
K	Cast iron	●
N	Aluminum	○
S	Ni / Ti alloys	○
H	Hardened steel	

●=Optimal ○=Secondary

Operating parameters pg. 22

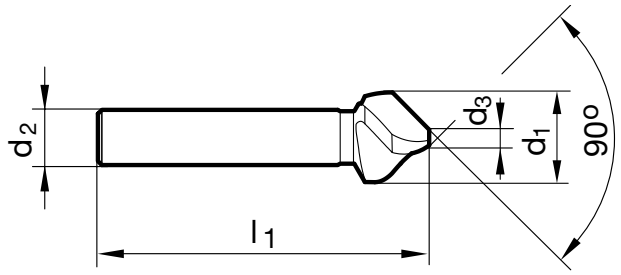
- consisting of art. no. 5675
- 3 different convex cutting edges
- tri-flat shank prevents slipping in the chuck
- perfect for hand drills
- low-vibration cutting processes
- for round and chatter-free countersinking
- considerably lower feed force required
- for universal application



Ø-range inch	Pieces/set	Code no.	EDP Number
1/4, 5/16, 3/8, 1/2, 5/8, 3/4	6	1.000	**9056770010000**

SPYROTEC – SPIRAL-FLUTED COUNTERSINKS

Suitable for countersinking the smallest allowable hole diameters and screw sizes listed below.



SpyroTec 90°

d1	smallest allowable hole Ø	for countersunk screws ISO 2009, 2010, 7046, 7047	for countersunk screws DIN 7991
6.300	2.00	-	M3
8.000	2.50	M4	-
8.300	2.50	-	M4
10.000	3.00	M5	-
10.400	3.00	-	M5
11.500	3.30	M6	-
12.400	3.30	-	M6
15.000	3.70	M8	-
16.500	3.70	-	M8
19.000	4.50	M10	-
20.500	4.50	-	M10
23.000	4.80	M12	-
25.000	4.80	-	M12
31.000	5.20	-	M16
40.000	12.00	-	M24

SpyroTec 82°

d1 frac.	Smallest hole - Ø to allow countersinking - inch
1/4	0.0830
5/16	0.1020
3/8	0.1100
1/2	0.1730
5/8	0.2010
3/4	0.2520
7/8	0.2720
1	0.2910
1 1/4	0.4090

SpyroTec 60°

d1	smallest hole - Ø to allow countersinking - mm
6.300	2.10
8.000	2.50
10.000	3.00
12.500	3.70
16.000	4.50
20.000	6.00
25.000	7.30

Series # 5500, 5501, 5538, 5539, 5674, 5675, 5676, 5677

Material group	Hardness			Feed Rate - IPR								
				6.30 mm	8.00 mm	10.00 mm	12.50 mm	16.00 mm	20.00 mm	25.00 mm	31.50 mm	41.00 mm
	HRc	Bhn	SFM	0.248 In.	0.315 In.	0.394 In.	0.492 In.	0.630 In.	0.787 In.	0.984 In.	1.240 In.	1.614 In.
Common structural steels	-	≤ 150	135	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
	≤ 32	≤ 301	130	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0060	0.0065	0.0085
Free-cutting steels	≤ 25	≤ 255	135	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
	≤ 32	≤ 301	130	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0060	0.0065	0.0085
Unalloyed heat-treatable steels	≤ 20	≤ 220	135	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
	≤ 25	≤ 255	130	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
	≤ 32	≤ 301	80	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0060	0.0065	0.0085
Alloyed heat-treatable steels	≤ 32	≤ 301	60	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
	≤ 43	≤ 402	50	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0060	0.0065	0.0085
Unalloyed case hardened steels	≤ 25	≤ 255	105	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
Alloyed case hardened steels	≤ 32	≤ 301	60	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
	≤ 43	≤ 402	45	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0060	0.0065	0.0085
Nitriding steels	≤ 32	≤ 301	60	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0060	0.0065	0.0085
	≤ 43	≤ 402	50	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0035	0.0045	0.0055
Tool steels	≤ 25	≤ 255	70	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0060	0.0065	0.0085
	≤ 43	≤ 402	60	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0035	0.0045	0.0055
High speed steels	≤ 43	≤ 402	60	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0035	0.0045	0.0055
Spring steels	≤ 38	≤ 354	45	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0035	0.0045	0.0055
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	65	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0060	0.0065	0.0085
austenitic	≤ 36	≤ 337	50	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0035	0.0045	0.0055
martensitic	≤ 46	≤ 435	60	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0035	0.0045	0.0055
Cast iron	≤ 23	≤ 242	105	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
	≤ 38	≤ 354	65	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
Spheroidal graphite iron and	≤ 23	≤ 242	90	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
malleable cast iron	≤ 38	≤ 354	80	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
Chilled cast iron	≤ 38	≤ 354	35	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0035	0.0045	0.0055
New cast materials GGV	≤ 20	≤ 220	90	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
	≤ 32	≤ 301	60	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	35	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0035	0.0045	0.0055
Ti and Ti-alloys	≤ 25	≤ 255	60	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0060	0.0065	0.0085
	≤ 43	≤ 402	45	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0035	0.0045	0.0055
Aluminium and Al-alloys	-	≤ 120	375	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
Al wrought alloys	-	≤ 200	290	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
Al cast alloys ≤ 10 % Si	-	≤ 180	165	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
> 10 % Si	-	≤ 180	130	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
Magnesium alloys	-	≤ 120	415	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
Copper, low-alloyed	-	≤ 150	250	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
Brass, short-chipping	-	≤ 180	330	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
long-chipping	-	≤ 180	210	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
Bronze, short-chipping	-	≤ 180	130	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
	≤ 25	≤ 255	110	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
Bronze, long-chipping	≤ 25	≤ 255	100	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
	≤ 32	≤ 301	80	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
Duroplastics			130	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
Thermoplastics			165	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												

Series # 5503, 5670, 5671, 5672, 5673

Material group	Hardness			Feed Rate - IPR								
				6.30 mm	8.00 mm	10.00 mm	12.50 mm	16.00 mm	20.00 mm	25.00 mm	31.50 mm	41.00 mm
	HRc	Bhn	SFM	0.248 In.	0.315 In.	0.394 In.	0.492 In.	0.630 In.	0.787 In.	0.984 In.	1.240 In.	1.614 In.
Common structural steels	-	≤ 150	120	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
	≤ 32	≤ 301	115	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0060	0.0065	0.0085
Free-cutting steels	≤ 25	≤ 255	120	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
	≤ 32	≤ 301	115	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0060	0.0065	0.0085
Unalloyed heat-treatable steels	≤ 20	≤ 220	120	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
	≤ 25	≤ 255	115	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
	≤ 32	≤ 301	75	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0060	0.0065	0.0085
Alloyed heat-treatable steels	≤ 32	≤ 301	55	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
	≤ 43	≤ 402	45	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0060	0.0065	0.0085
Unalloyed case hardened steels	≤ 25	≤ 255	95	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
Alloyed case hardened steels	≤ 32	≤ 301	55	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
	≤ 43	≤ 402	40	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0060	0.0065	0.0085
Nitriding steels	≤ 32	≤ 301	55	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0060	0.0065	0.0085
	≤ 43	≤ 402	45	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0035	0.0045	0.0055
Tool steels	≤ 25	≤ 255	65	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0060	0.0065	0.0085
	≤ 43	≤ 402	55	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0035	0.0045	0.0055
High speed steels	≤ 43	≤ 402	55	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0035	0.0045	0.0055
Spring steels	≤ 38	≤ 354	40	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0035	0.0045	0.0055
Hardened steels	≤ 48	≤ 460										
	≤ 66	-										
Stainless steels, sulphured	≤ 28	≤ 273	60	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0060	0.0065	0.0085
austenitic	≤ 36	≤ 337	45	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0035	0.0045	0.0055
martensitic	≤ 46	≤ 435	50	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0035	0.0045	0.0055
Cast iron	≤ 23	≤ 242	95	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
	≤ 38	≤ 354	60	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
Spheroidal graphite iron and	≤ 23	≤ 242	80	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
malleable cast iron	≤ 38	≤ 354	75	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
Chilled cast iron	≤ 38	≤ 354	30	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0035	0.0045	0.0055
New cast materials GGV	≤ 20	≤ 220	80	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
	≤ 32	≤ 301	50	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
New cast materials ADI	≤ 32	≤ 301										
	≤ 43	≤ 402										
Special alloys	≤ 54	≤ 549	30	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0035	0.0045	0.0055
Ti and Ti-alloys	≤ 25	≤ 255	55	0.0030	0.0030	0.0035	0.0040	0.0045	0.0050	0.0060	0.0065	0.0085
	≤ 43	≤ 402	40	0.0015	0.0020	0.0025	0.0025	0.0030	0.0030	0.0035	0.0045	0.0055
Aluminium and Al-alloys	-	≤ 120	340	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
Al wrought alloys	-	≤ 200	265	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
Al cast alloys ≤ 10 % Si	-	≤ 180	150	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
> 10 % Si	-	≤ 180	115	0.0045	0.0050	0.0055	0.0060	0.0065	0.0070	0.0085	0.0095	0.0110
Magnesium alloys	-	≤ 120	375	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
Copper, low-alloyed	-	≤ 150	225	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
Brass, short-chipping	-	≤ 180	300	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
long-chipping	-	≤ 180	190	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
Bronze, short-chipping	-	≤ 180	115	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
	≤ 25	≤ 255	100	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
Bronze, long-chipping	≤ 25	≤ 255	90	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
	≤ 32	≤ 301	75	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
Duroplastics			115	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
Thermoplastics			150	0.0060	0.0065	0.0065	0.0075	0.0085	0.0090	0.0100	0.0120	0.0135
Reinforced plastics - Kevlar												
Reinforced plastics - GFK / CFK												



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