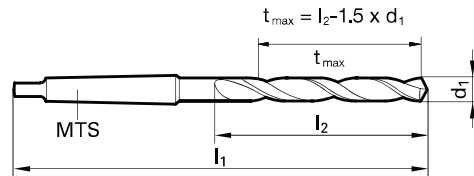


Tool material **HSS**

Surface

- P** Steel ● web thinning ≥ Ø 14.100 • relieved cone • for drilling through drill bushes
  - M** Stainless steel
  - K** Cast iron ● alloyed/unalloyed steel and cast steel • grey cast iron, malleable and spheroidal iron • sintered powder metal, German silver and graphite
  - N** Aluminum ○
  - S** Titanium alloys
  - H** Hardened steel
- =Optimal  
○=Limited



Speeds and feeds information on pg. 482

Diameter (d <sub>1</sub> )			Shank Size	l <sub>1</sub> mm	t <sub>max</sub> mm	l <sub>2</sub> mm	EDP #
inch	wire/ltr	mm					
0.1575		4.00	MTS 1	145.00	58.00	64.00	900257004000
0.2008		5.10	MTS 1	155.00	66.35	74.00	9002570051000
0.2520		6.40	MTS 1	167.00	76.40	86.00	9002570064000
0.2559		6.50	MTS 1	167.00	76.25	86.00	9002570065000
0.2657	17/64	6.75	MTS 1	174.00	82.88	93.00	9002570067500
0.3228		8.20	MTS 1	181.00	87.70	100.00	9002570082000
0.3346		8.50	MTS 1	181.00	87.25	100.00	9002570085000
0.3740		9.50	MTS 1	188.00	92.75	107.00	9002570095000
0.3937		10.00	MTS 1	197.00	101.00	116.00	9002570100000
0.3976		10.10	MTS 1	197.00	100.85	116.00	9002570101000
0.4016		10.20	MTS 1	197.00	100.70	116.00	9002570102000
0.4035		10.25	MTS 1	197.00	100.63	116.00	9002570102500
0.4055		10.30	MTS 1	197.00	100.55	116.00	9002570103000
0.4094		10.40	MTS 1	197.00	100.40	116.00	9002570104000
0.4134		10.50	MTS 1	197.00	100.25	116.00	9002570105000
0.4173		10.60	MTS 1	197.00	100.10	116.00	9002570106000
0.4213		10.70	MTS 1	206.00	108.95	125.00	9002570107000
0.4232		10.75	MTS 1	206.00	108.88	125.00	9002570107500
0.4252		10.80	MTS 1	206.00	108.80	125.00	9002570108000
0.4291		10.90	MTS 1	206.00	108.65	125.00	9002570109000
0.4331		11.00	MTS 1	206.00	108.50	125.00	9002570110000
0.4370		11.10	MTS 1	206.00	108.35	125.00	9002570111000
0.4409		11.20	MTS 1	206.00	108.20	125.00	9002570112000
0.4429		11.25	MTS 1	206.00	108.13	125.00	9002570112500
0.4449		11.30	MTS 1	206.00	108.05	125.00	9002570113000
0.4488		11.40	MTS 1	206.00	107.90	125.00	9002570114000
0.4528		11.50	MTS 1	206.00	107.75	125.00	9002570115000
0.4567		11.60	MTS 1	206.00	107.60	125.00	9002570116000
0.4626		11.75	MTS 1	206.00	107.38	125.00	9002570117500
0.4646		11.80	MTS 1	206.00	107.30	125.00	9002570118000
0.4685		11.90	MTS 1	215.00	116.15	134.00	9002570119000
0.4724		12.00	MTS 1	215.00	116.00	134.00	9002570120000
0.4764		12.10	MTS 1	215.00	115.85	134.00	9002570121000
0.4803		12.20	MTS 1	215.00	115.70	134.00	9002570122000
0.4823		12.25	MTS 1	215.00	115.63	134.00	9002570122500
0.4843	31/64	12.30	MTS 1	215.00	115.55	134.00	9002570123000
0.4882		12.40	MTS 1	215.00	115.40	134.00	9002570124000
0.4921		12.50	MTS 1	215.00	115.25	134.00	9002570125000
0.4961		12.60	MTS 1	215.00	115.10	134.00	9002570126000
0.5000	1/2	12.70	MTS 1	215.00	114.95	134.00	9002570127000
0.5020		12.75	MTS 1	215.00	114.88	134.00	9002570127500
0.5039		12.80	MTS 1	215.00	114.80	134.00	9002570128000
0.5118		13.00	MTS 1	215.00	114.50	134.00	9002570130000

Diameter (d <sub>1</sub> )			Shank Size	l <sub>1</sub> mm	t <sub>max</sub> mm	l <sub>2</sub> mm	EDP #
inch	wire/ltr	mm					
0.5157	33/64	13.10	MTS 1	215.00	114.35	134.00	9002570131000
0.5197		13.20	MTS 1	215.00	114.20	134.00	9002570132000
0.5217		13.25	MTS 1	223.00	122.13	142.00	9002570132500
0.5236		13.30	MTS 1	223.00	122.05	142.00	9002570133000
0.5311	17/32	13.49	MTS 1	223.00	121.77	142.00	9002570134900
0.5315		13.50	MTS 1	223.00	121.75	142.00	9002570135000
0.5354		13.60	MTS 1	223.00	121.60	142.00	9002570136000
0.5413		13.75	MTS 1	223.00	121.38	142.00	9002570137500
0.5433		13.80	MTS 1	223.00	121.30	142.00	9002570138000
0.5472		13.90	MTS 1	223.00	121.15	142.00	9002570139000
0.5512		14.00	MTS 1	223.00	121.00	142.00	9002570140000
0.5551		14.10	MTS 2	245.00	125.85	147.00	9002570141000
0.5591		14.20	MTS 2	245.00	125.70	147.00	9002570142000
0.5610		14.25	MTS 2	245.00	125.63	147.00	9002570142500
0.5626	9/16	14.29	MTS 2	245.00	125.57	147.00	9002570142900
0.5630		14.30	MTS 2	245.00	125.55	147.00	9002570143000
0.5709		14.50	MTS 2	245.00	125.25	147.00	9002570145000
0.5807		14.75	MTS 2	245.00	124.88	147.00	9002570147500
0.5827		14.80	MTS 2	245.00	124.80	147.00	9002570148000
0.5866		14.90	MTS 2	245.00	124.65	147.00	9002570149000
0.5906		15.00	MTS 2	245.00	124.50	147.00	9002570150000
0.5937	19/32	15.08	MTS 2	251.00	130.38	153.00	9002570150800
0.5945		15.10	MTS 2	251.00	130.35	153.00	9002570151000
0.5984		15.20	MTS 2	251.00	130.20	153.00	9002570152000
0.6004		15.25	MTS 2	251.00	130.13	153.00	9002570152500
0.6024		15.30	MTS 2	251.00	130.05	153.00	9002570153000
0.6102		15.50	MTS 2	251.00	129.75	153.00	9002570155000
0.6142		15.60	MTS 2	251.00	129.60	153.00	9002570156000
0.6201		15.75	MTS 2	251.00	129.38	153.00	9002570157500
0.6220		15.80	MTS 2	251.00	129.30	153.00	9002570158000
0.6250	5/8	15.87	MTS 2	251.00	129.20	153.00	9002570158700
0.6299		16.00	MTS 2	251.00	129.00	153.00	9002570160000
0.6339		16.10	MTS 2	257.00	134.85	159.00	9002570161000
0.6398		16.25	MTS 2	257.00	134.63	159.00	9002570162500
0.6406	41/64	16.27	MTS 2	257.00	134.60	159.00	9002570162700
0.6457		16.40	MTS 2	257.00	134.40	159.00	9002570164000
0.6496		16.50	MTS 2	257.00	134.25	159.00	9002570165000
0.6563	21/32	16.67	MTS 2	257.00	134.00	159.00	9002570166700
0.6594		16.75	MTS 2	257.00	133.88	159.00	9002570167500
0.6693		17.00	MTS 2	257.00	133.50	159.00	9002570170000
0.6791		17.25	MTS 2	263.00	139.13	165.00	9002570172500
0.6874	11/16	17.46	MTS 2	263.00	138.81	165.00	9002570174600
0.6890		17.50	MTS 2	263.00	138.75	165.00	9002570175000

Morse Taper Length

Diameter (d <sub>1</sub> )			Shank Size	l <sub>1</sub> mm	t <sub>max</sub> mm	l <sub>2</sub> mm	EDP #
inch	wire/ltr	mm					
0.6988		17.75	MTS 2	263.00	138.38	165.00	9002570177500
0.7087		18.00	MTS 2	263.00	138.00	165.00	9002570180000
0.7185		18.25	MTS 2	269.00	143.63	171.00	9002570182500
0.7189	23/32	18.26	MTS 2	269.00	143.61	171.00	9002570182600
0.7283		18.50	MTS 2	269.00	143.25	171.00	9002570185000
0.7382		18.75	MTS 2	269.00	142.88	171.00	9002570187500
0.7480		19.00	MTS 2	269.00	142.50	171.00	9002570190000
0.7579		19.25	MTS 2	275.00	148.13	177.00	9002570192500
0.7677		19.50	MTS 2	275.00	147.75	177.00	9002570195000
0.7776		19.75	MTS 2	275.00	147.38	177.00	9002570197500
0.7811	25/32	19.84	MTS 2	275.00	147.24	177.00	9002570198400
0.7874		20.00	MTS 2	275.00	147.00	177.00	9002570200000
0.7972		20.25	MTS 2	282.00	153.63	184.00	9002570202500
0.8071		20.50	MTS 2	282.00	153.25	184.00	9002570205000
0.8126	13/16	20.64	MTS 2	282.00	153.04	184.00	9002570206400
0.8268		21.00	MTS 2	282.00	152.50	184.00	9002570210000
0.8465		21.50	MTS 2	289.00	158.75	191.00	9002570215000
0.8563		21.75	MTS 2	289.00	158.38	191.00	9002570217500
0.8661		22.00	MTS 2	289.00	158.00	191.00	9002570220000
0.8748	7/8	22.22	MTS 2	289.00	157.67	191.00	9002570222200
0.8760		22.25	MTS 2	289.00	157.63	191.00	9002570222500

Diameter (d <sub>1</sub> )			Shank Size	l <sub>1</sub> mm	t <sub>max</sub> mm	l <sub>2</sub> mm	EDP #
inch	wire/ltr	mm					
0.8858		22.50	MTS 2	296.00	164.25	198.00	9002570225000
0.9055		23.00	MTS 2	296.00	163.50	198.00	9002570230000
0.9154		23.25	MTS 3	319.00	163.13	198.00	9002570232500
0.9252		23.50	MTS 3	319.00	162.75	198.00	9002570235000
0.9350		23.75	MTS 3	327.00	170.38	206.00	9002570237500
0.9374	15/16	23.81	MTS 3	327.00	170.29	206.00	9002570238100
0.9449		24.00	MTS 3	327.00	170.00	206.00	9002570240000
0.9547		24.25	MTS 3	327.00	169.63	206.00	9002570242500
0.9646		24.50	MTS 3	327.00	169.25	206.00	9002570245000
0.9843	63/64	25.00	MTS 3	327.00	168.50	206.00	9002570250000
0.9941		25.25	MTS 3	335.00	176.13	214.00	9002570252500
1.0039		25.50	MTS 3	335.00	175.75	214.00	9002570255000
1.0236		26.00	MTS 3	335.00	175.00	214.00	9002570260000
1.0433		26.50	MTS 3	335.00	174.25	214.00	9002570265000
1.0630		27.00	MTS 3	343.00	181.50	222.00	9002570270000
1.0827		27.50	MTS 3	343.00	180.75	222.00	9002570275000
1.1024		28.00	MTS 3	343.00	180.00	222.00	9002570280000
1.1220		28.50	MTS 3	351.00	187.25	230.00	9002570285000
1.1417		29.00	MTS 3	351.00	186.50	230.00	9002570290000
1.1563	1 5/32	29.37	MTS 3	351.00	185.95	230.00	9002570293700

Morse Taper Length

Material group	Hardness		SFM	Feed Rate - IPR									
	HRc	Bhn		1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- 32	150 301	90 70				0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.014 0.011	0.0160 0.0125	0.0200 0.0160	0.0245 0.0200
Free-cutting steels	25 32	255 301	90 70				0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.014 0.011	0.0160 0.0125	0.0200 0.0160	0.0245 0.0200
Unalloyed heat-treatable steels	20 25 32	220 255 301	90 70				0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.011 0.011	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200
Alloyed heat-treatable steels	32 43	301 402											
Unalloyed case hardened steels	25	255	90				0.0100	0.0125	0.0125	0.0140	0.0160	0.0200	0.0245
Alloyed case hardened steels	32 43	301 402											
Nitriding steels	32 43	301 402											
Tool steels	25 43	255 402	45				0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	0.0160
High speed steels	43	402											
Spring steels	38	354											
Hardened steels	48 66	460 -											
Stainless steels, sulphured austenitic martensitic	28 36 46	273 337 435											
Cast iron	23 38	242 354	90 70				0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200	0.0245 0.0245
Spheroidal graphite iron and malleable cast iron	23 38	242 354	70 55				0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0140 0.0140	0.0160 0.0160	0.0200 0.0200	0.0245 0.0245
Chilled cast iron	38	354											
New cast materials GGV	20 32	220 301											
New cast materials ADI	32 43	301 402											
Special alloys	54	549											
Ti and Ti-alloys	25 43	255 402											
Aluminium and Al-alloys	-	120											
Al wrought alloys	-	200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	-	180 180	180 145				0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0180 0.0140	0.0200 0.0160	0.0245 0.0200	0.0290 0.0245
Magnesium alloys	-	120	225				0.0100	0.0125	0.0125	0.0140	0.0160	0.0200	0.0245
Copper, low-alloyed	-	150	90				0.0080	0.0100	0.0100	0.0110	0.0125	0.0160	0.0200
Brass, short-chipping long-chipping	-	180 180	110				0.0080	0.0100	0.0100	0.0110	0.0125	0.0160	0.0200
Bronze, short-chipping	-	180	90				0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	0.0160
Bronze, long-chipping	25 32	255 301	70				0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	0.0160
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			45 70				0.0065 0.0080	0.0080 0.0100	0.0080 0.0100	0.0090 0.0110	0.0100 0.0125	0.0125 0.0160	0.0160 0.0200

Material group	Hardness		SFM	Feed Rate - IPR									
	HRc	Bhn		1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	- 32	150 301	70 55				0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090	0.0125 0.0100	0.0160 0.0125	
Free-cutting steels	25 32	255 301	70 55				0.0080 0.0065	0.0100 0.0080	0.0100 0.0080	0.0110 0.0090	0.0125 0.0100	0.0160 0.0125	
Unalloyed heat-treatable steels	20 25 32	220 255 301	70 55				0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090	0.0100 0.0100	0.0125 0.0125	
Alloyed heat-treatable steels	32 43	301 402	35				0.0050	0.0065	0.0065	0.0070	0.0080	0.0100	
Unalloyed case hardened steels	25	255	70				0.0080	0.0100	0.0100	0.0110	0.0125	0.0160	
Alloyed case hardened steels	32 43	301 402	30				0.0050	0.0065	0.0065	0.0070	0.0080	0.0100	
Nitriding steels	32 43	301 402	25				0.0050	0.0065	0.0065	0.0070	0.0080	0.0100	
Tool steels	25 43	255 402	35 15				0.0050 0.0040	0.0065 0.0050	0.0065 0.0050	0.0070 0.0055	0.0080 0.0065	0.0100 0.0080	
High speed steels	43	402	15				0.0040	0.0050	0.0050	0.0055	0.0065	0.0080	
Spring steels	38	354											
Hardened steels	48 66	460 -											
Stainless steels, sulphured austenitic martensitic	28 36 46	273 337 435	25				0.0050	0.0065	0.0065	0.0070	0.0080	0.010	
Cast iron	23 38	242 354	70 55				0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.0110 0.0110	0.0125 0.0125	0.0160 0.0160	
Spheroidal graphite iron and malleable cast iron	23 38	242 354	65 45				0.0080 0.0080	0.0100 0.0100	0.0100 0.0100	0.0110 0.0110	0.0125 0.0125	0.0160 0.0160	
Chilled cast iron	38	354											
New cast materials GGV	20 32	220 301											
New cast materials ADI	32 43	301 402											
Special alloys	54	549											
Ti and Ti-alloys	25 43	255 402											
Aluminium and Al-alloys	-	120											
Al wrought alloys	-	200											
Al cast alloys ≤ 10 % Si ≤ 24 % Si	-	180 180	145 115				0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0140 0.0110	0.0160 0.0125	0.0200 0.0160	
Magnesium alloys	-	120	180				0.0080	0.0100	0.0100	0.0110	0.0125	0.0160	
Copper, low-alloyed	-	150	70				0.0065	0.0080	0.0080	0.0090	0.0100	0.0125	
Brass, short-chipping long-chipping	-	180 180	145 90				0.0065 0.0065	0.0080 0.0080	0.0080 0.0080	0.0090 0.0090	0.0100 0.0100	0.0125 0.0125	
Bronze, short-chipping	-	180	70				0.0050	0.0065	0.0065	0.0070	0.0080	0.0100	
Bronze, long-chipping	25 32	255 301	55 45				0.0050 0.0050	0.0065 0.0065	0.0065 0.0065	0.0070 0.0070	0.0080 0.0080	0.0100 0.0100	
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK			35 55				0.0050 0.0065	0.0065 0.0080	0.0065 0.0080	0.0070 0.0090	0.0080 0.0100	0.0100 0.0125	