ZBGF-W-2xD-R30-IKZ-HB-TiAlN-T4

solid carbide cicular drill thread mills

Comparison of Materials

EMUGE FRANKEN

applications – material		cutting speed vc in m/min	fz in mm
P1.1 Construction steels, Free-cutting steels, etc.	<= 600 N/mm²	150 - 250	0,04 - 0,08
P2.1 Construction steels, Cementation steels, Steel castings, etc.	<= 800 N/mm²	150 - 250	0,04 - 0,08
P3.1 Cementation steels, Heat-treatable steels, Cold work steels, etc.	<= 1000 N/mm²	100 - 250	0,03 - 0,08
P4.1 Heat-treatable steels, Cold work steels, Nitriding steels, etc.	<= 1200 N/mm²	100 - 250	0,03 - 0,08
P5.1 High-alloyed steels, Cold work steels, Hot work steels, etc.	<= 1400 N/mm²	100 - 200	0,02 - 0,06
M1.1 Ferritic, martensitic	<= 950 N/mm²	100 - 180	0,02 - 0,05
M2.1 Austenitic	<= 950 N/mm²	100 - 180	0,02 - 0,05
M3.1 Austenitic-ferritic (Duplex)	<= 1100 N/mm²	60 - 120	0,02 - 0,04
M4.1 Austenitic-ferritic heat-resistant (Super Duplex)	<= 1250 N/mm²	60 - 120	0,02 - 0,04
K1.1 Cast iron with lamellar graphite (GJL)	100-250 N/mm²	200 - 300	0,04 - 0,10
K1.2 Cast iron with lamellar graphite (GJL)	250-450 N/mm²	200 - 300	0,04 - 0,10
K2.1 Cast iron with nodular graphite (GJS)	350-500 N/mm²	150 - 250	0,05 - 0,08
K2.2 Cast iron with nodular graphite (GJS)	500-900 N/mm²	150 - 250	0,05 - 0,08
K3.1 Cast iron with vermicular graphite (GJV)	300-400 N/mm²	150 - 250	0,05 - 0,08
K3.2 Cast iron with vermicular graphite (GJV)	400-500 N/mm²	150 - 250	0,05 - 0,08
K4.1 Malleable cast iron (GTMW, GTMB)	250-500 N/mm²	200 - 300	0,05 - 0,10

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applications – material		cutting speed vc in m/min	fz in mm
N1.1 Aluminium wrought alloys	<= 200 N/mm²	200 - 300	0,05 - 0,10
N1.2 Aluminium wrought alloys	<= 350 N/mm²	200 - 300	0,05 - 0,10
N1.3 Aluminium wrought alloys	<= 550 N/mm²	200 - 300	0,05 - 0,10
N1.4 Aluminium cast alloys	Si <= 7%	200 - 300	0,05 - 0,10
N1.5 Aluminium cast alloys	7% < Si <= 12%	200 - 300	0,05 - 0,10
N1.6 Aluminium cast alloys	12% < Si <= 17%	100 - 200	0,05 - 0,10
N2.1 Pure copper, low-alloyed copper	<= 400 N/mm²	100 - 180	0,03 - 0,05
N2.2 Copper-zinc alloys (brass, long-chipping)	<= 550 N/mm²	150 - 250	0,05 - 0,08
N2.3 Copper-zinc alloys (brass, short-chipping)	<= 550 N/mm²	200 - 300	0,05 - 0,10
N2.4 Copper-aluminium alloys (alu bronze, long-chipping)	<= 800 N/mm²	100 - 180	0,03 - 0,05
N2.5 Copper-tin alloys (tin bronze, long-chipping)	<= 700 N/mm²	100 - 180	0,03 - 0,05
N2.6 Copper-tin alloys (tin bronze, short-chipping)	<= 400 N/mm²	200 - 300	0,05 - 0,10
N3.1 Magnesium wrought alloys	<= 500 N/mm²	200 - 300	0,05 - 0,10
N3.2 Magnesium cast alloys	<= 500 N/mm²	200 - 300	0,05 - 0,10
N4.1 Duroplastics (short-chipping)		150 - 250	0,05 - 0,08
N4.3 Fibre-reinforced synthetics (fibre content <= 30%)		80 - 150	0,05 - 0,08
N4.4 Fibre-reinforced synthetics (fibre content > 30%)		80 - 150	0,05 - 0,08
S1.1 Pure titanium	<= 450 N/mm²	60 - 120	0,02 - 0,04
S1.2 Titanium alloys	<= 900 N/mm²	60 - 120	0,02 - 0,04
S1.3 Titanium alloys	<= 1250 N/mm²	60 - 120	0,02 - 0,04
S2.1 Pure nickel	<= 600 N/mm²	60 - 120	0,02 - 0,04
S2.2 Nickel-base alloys	<= 1000 N/mm²	60 - 120	0,02 - 0,04
S2.4 Cobalt-base alloys	<= 1000 N/mm²	60 - 120	0,02 - 0,04
H1.1 High strength steels, hardened steels, hard castings	44 – 50 HRC	60 - 100	0,02 - 0,06
H1.2 High strength steels, hardened steels, hard castings	50 – 55 HRC	60 - 100	0,02 - 0,06