

# Cutting data recommendation for replaceable head drills

Feed and cutting speed

TTD-Tritan, Typ Uni				Tensile strength/ Hardness [N/mm <sup>2</sup> ] [HRC]	Cutting speed vc [m/min]				Feed f [mm] with drill diameter					
MMG*		Material			Internal cooling	External cooling	MQL	Air	12	14,5	17,5	21,5	26,0	32
P	P1	P1.1	Structural, free-cutting, case hardened and heat-treated steel, non-alloyed	< 700 N/mm <sup>2</sup>	90	80	80		0,37	0,42	0,46	0,51	0,54	0,55
		P1.2	Structural, free-cutting, case hardened and heat-treated steel, non-alloyed	< 1200 N/mm <sup>2</sup>	80	70	70		0,46	0,52	0,58	0,64	0,68	0,69
	P2	P2.1	Nitrated, case hardened and heat-treated steel, alloyed	< 900 N/mm <sup>2</sup>	90	75	75		0,44	0,49	0,55	0,60	0,64	0,66
		P2.2	Nitrated, case hardened and heat-treated steel, alloyed	< 1400 N/mm <sup>2</sup>	65	55	55		0,35	0,39	0,43	0,48	0,50	0,51
	P3	P3.1	Tool, roller bearing, spring and high speed steel	< 900 N/mm <sup>2</sup>	70	60	60		0,39	0,44	0,49	0,54	0,58	0,59
		P3.2	Tool, roller bearing, spring and high speed steel	< 1500 N/mm <sup>2</sup>	55	50	50		0,32	0,36	0,40	0,44	0,47	0,48
	P4	P4.1	Stainless steel, ferritic and martensitic		55	40	45		0,26	0,29	0,32	0,36	0,38	0,39
	P5	P5.1	Cast steel		90	75	75		0,44	0,49	0,55	0,60	0,64	0,66
P6	P6.1	Stainless cast steel, ferritic and martensitic		55	40	45		0,26	0,29	0,32	0,36	0,38	0,39	
M	M1	M1.1	Stainless steel, austenitic	< 700 N/mm <sup>2</sup>										
		M1.2	Stainless steel, ferritic/austenitic (Duplex)	< 1000 N/mm <sup>2</sup>										
	M2	M2.1	Stainless cast steel, austenitic	< 700 N/mm <sup>2</sup>										
	M3	M3.1	Stainless cast steel, ferritic/austenitic (Duplex)	< 1000 N/mm <sup>2</sup>										
K	K1	K1.1	Cast iron with lamellar graphite (grey cast iron), EN-GJL	< 300 N/mm <sup>2</sup>	110	75	75	75	0,60	0,69	0,77	0,85	0,91	0,93
		K2.1	Cast iron with spheroidal graphite, EN-GJS	< 500 N/mm <sup>2</sup>	145	90	110	110	0,56	0,64	0,71	0,78	0,83	0,85
	K2	K2.2	Cast iron with spheroidal graphite, EN-GJS	500-800 N/mm <sup>2</sup>	90	70	70		0,49	0,55	0,61	0,67	0,72	0,73
		K2.3	Cast iron with spheroidal graphite, EN-GJS	> 800 N/mm <sup>2</sup>	55	35	45		0,32	0,36	0,40	0,44	0,47	0,48
	K3	K3.1	Cast iron with vermicular graphite, EN-GJV; Malleable cast iron, GJM	< 500 N/mm <sup>2</sup>	80	70	70		0,52	0,59	0,66	0,72	0,77	0,78
		K3.2	Cast iron with vermicular graphite, EN-GJV; Malleable cast iron, GJM	> 500 N/mm <sup>2</sup>	70	65	65		0,42	0,47	0,52	0,57	0,61	0,62

\* MILLER machining groups

The cutting data recommendations shown, are guidelines.

The best data for the machining task in question should be calculated during trials or during the machining operation.