APPLICATION RECOMMENDATIONS FOR THE MULTI-PLEX INTERCHANGEABLE INSERT SYSTEM

Drill-Ø mm	Feed cloumn no.								
	1	2	3	4	5	6	7	8	9
	f(mm/U)								
10.00	0.08	0.09	0,11	0,14	0,19	0,24	0,29	0,36	0,44
12.50	0.09	0.11	0.13	0.17	0.22	0.28	0.35	0.43	0.52
16.00	0.11	0.13	0.16	0.21	0.27	0.34	0.42	0.52	0.63
20.00	0.13	0.15	0.19	0.25	0.32	0.40	0.50	0.62	0.75
25.00	0.16	0.18	0.23	0.29	0.38	0.48	0.60	0.74	0.89
31.50	0.19	0.22	0.27	0.35	0.45	0.57	0.72	0.88	1.07
40.00	0.23	0.26	0.33	0.42	0.54	0.69	0.86	1.06	1.29
50.00	0.27	0.31	0.39	0.50	0.64	0.82	1.02	1.26	1.53
63.00	0.32	0.38	0.47	0.60	0.77	0.98	1.22	1.51	1.83
102.00	0.40	0.48	0.59	0.74	0.85	1.20	1.50	1.80	2.00
150.00	0.59	0.70	0.87	1.09	1.25	1.76	2.21	2.65	2.94
200.00	0.78	0.93	1.16	1.45	1.67	2.35	2.94	3.53	3.92

Tools with **bold** feed column no. are preferred choice.

- with drilling depth > 7 x D reduce cutting rates by 20%!
- with drilling depth ≥ 7 x D pilot drilling is recommended, for all holders >7xD support for pilot hole is necessary!

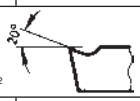
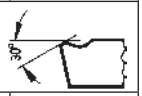
Material group	Material examples Bold = material no. to DIN EN	Tensile strength N/mm2	Hardness	Coolant
Common structural steels	**1.0035** S185, **1.0486** StE P275N, **1.0345** P235GH, **1.0425** P265GH	≤500		●
	1.0050 E295, **1.0070** E360, **1.8937** P500NH	>500-850		●
Free-cutting steels	**1.0718** 11SMnPb30, **1.0736** 115Mn37	≤850		●
	1.0727 46 S20, **1.0728** 60 S20, **1.0757** 46SPb20	850-1000		●
Unalloyed heat-treatable steels	**1.0402** C22, **1.1178** C30E	≤ 700		●
	1.0503 C45, **1.1191** C45E	700-850		●
	1.0601 C60, **1.1221** C60E	850-1000		●
Alloyed heat-treatable steels	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-1000		○
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		○
Unalloyed case hardened steels	**1.0301** C10, **1.1121** C10E	≤750		●
Alloyed case hardened steels	**1.7043** 38Cr4	850-1000		●
	1.5752 14NiCr14, **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		●
Nitriding steels	**1.8504** 34CrAl6	≥850-1000		●
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	1000-1200		●
Tool steels	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		○
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	850-1000		●
High speed steels	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** 61CrV4	≥650-1000		●
Spring steels	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4		≤330 HB	●
Stainless steels, sulphured	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18 9	≤850		●
austenitic	**1.4301** X5CrNi18 10, **1.4541** X6CrNiTi18 10, **1.4571** X6CrNiMoTi 17 12 2	≤850		●
martensitic	**1.4057** X17CrNi16-1, **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18 2	≤850		●
Hardened steels	–		≤40-48 HRC	●
			>48-60 HRC	●
Special alloys	Nimonic, Inconel, Monel, Hastelloy	≤1200		●
Cast iron	EN-GJL-100 ... EN-GJL-200 (previously GG10 ... GG20)		≤240 HB	●○
	EN-GJL-250 ... EN-GJL-350 (previously GG25 ... GG45)		<300 HB	●○
Spheroidal graphite and	EN-GJMW-350-4, EN-GJMB-550-4, EN-GJS-500-7 (previously GTW35, GTS55, GGG50)		≤240 HB	●
malleable cast iron	EN-GJMB-700-2, EN-GJS-700-2 (previously GTS70, GGG70)		<300 HB	●
Chilled cast iron	–		≤350 HB	○
Ti and Ti-alloys	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		●
	3.7154 TiAl6Zr5, **3.7164** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	850-1200		●
Al and Al-alloys	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Al wrought alloys	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		●
Al cast alloys ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		○
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		○
Magnesium alloys	MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	≤450		○
Copper, low-alloyed	**2.0070** SE-Cu, 2.1020 CuSn6, **2.1096** G-CuSn5ZnPb	≤400		○
Brass, short-chipping	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		●
Brass, long-chipping	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		○
Bronze, short-chipping	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		●●
	2.0790 CuNi18Zn19Pb	>600-850		●
Bronze, long-chipping	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		●
	2.0980 CuAl11Ni, **2.1247** CuBe2	850-1000		●
Duroplastics	Bakelit, Resopal, Pertinax, Moltopren		–	○
Thermoplastics	Plexiglas, Hostalen, Novodur, Makralon		–	●○
Kevlar	Kevlar		–	○
Glass, carbon concentr. plastics	GFK/CFK		–	○

Coolant: ● soluble oil ● neat oil ○ air

HIGH SPEED STEEL INTERCHANGEABLE INSERTS

Tool material		PM HSS-E	PM HSS-E	PM HSS-E
Carbide description		–	–	–
Carbide grade		–	–	–
Surface finish		T	F	A
Product no.		86602	86608	86609
Ø-range		10…25	10…25	25…210
with PM-HSS-E interchangeable inserts				
T	F A			
v_c m/min for **all** drilling depths		**Feed column no.** for all drilling depths		
40	48	**4**		
35	42	**4**		
50	60	**5**		
40	50	**5**		
40	45	**4**		
35	40	**4**		
30	35	**4**		
25	28	**3**		
22	25	**2**		
35	40	**3**		
25	28	**3**		
22	25	**2**		
22	25	**3**		
15	18	**2**		
26	28	**3**		
22	25	**2**		
12	18	**2**		
10	13	**2**		
20	23	**2**		
15	17	2		
15	20	2		
35	40	**4**		
35	40	**4**		
35	40	**4**		
28	33	**4**		
60	65	**5**		
80	85	**5**		
85	85	**5**		
70	70	**5**		
45	50	**4**		
45	50	**4**		
60	65	**5**		
45	50	**4**		
32	35	**5**		
40	45	**3**		
36	40	**3**		
28	32	**3**		
22	27	**3**		

CARBIDE INTERCHANGEABLE INSERTS

Tool material		Solid carbide	Solid carbide	Solid carbide	Solid carbide
Carbide description		H22	H22	H22	H22
Carbide grade		K20 - K40	K20 - K40	K20 - K40	K20 - K40
Surface finish		T	F	T	F
Product no.		86709	86701	86708	86702
Ø-range		10…35	10…35	10…35	10…35
Point grind		… w/o margins for materials with a tensile strength up to app. 600 N/mm² 		… with margins for materials with a tensile strength over 600 N/mm² 	
With solid carbide interch. inserts					
T	F				
v_c m/min for **all** drilling depths		**Feed column no.** for all drilling depths			
60	70	5			
55	65	4			
100	115	**4**			
95	105	**4**			
80	90	**4**			
80	90	**4**			
75	85	**3**			
70	80	**4**			
60	70	**3**			
85	95	4			
70	80	**4**			
55	65	**3**			
60	65	**3**			
50	55	**2**			
40	45	**3**			
35	40	**2**			
40	45	**2**			
35	40	**2**			
40	45	**2**			
25	30	2			
25	30	1			
100	120	**5**			
90	105	**4**			
80	90	**4**			
65	75	**3**			
25	30	**1**			
180	200	**5**			
160	180	5			
140	160	**5**			
130	150	**5**			
150	160	**5**			
70	80	4			
160	180	**5**			
110	120	4			
80	90	**5**			
65	75	**4**			
45	50	4			
35	40	4			
70	85	**3**			
70	85	**3**			
70	85	**3**			
70	85	**3**			

Surface finish: T TiN F FIRE A AlTiN