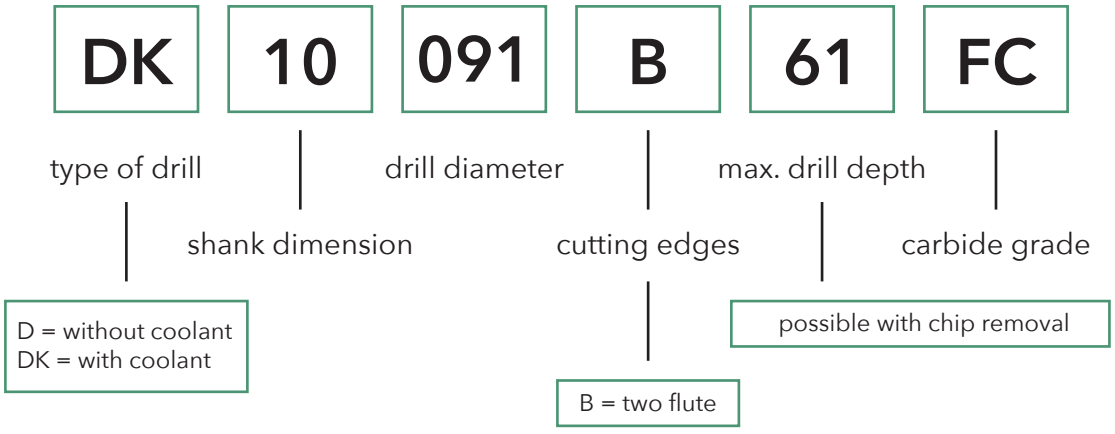
Cutting Speed (V_c) and Material Factor (F_m)

MATERIAL		Hardness HB	Tensile Strenght N/mm²	Cutting Speed (V_c) m/min	Material Factor (F_m)
Steel	Low carbon, C < 0,25%	< 120	< 400	80 - 120	1,2
	Medium carbon, C < 0,55%	< 200	< 700	70 - 110	1,1
	High carbon, C < 0,85%	< 250	< 850	60 - 100	1,0
	Low alloy	< 250	< 850	60 - 100	1,0
	High alloy	< 350	< 1200	40 - 60	0,9
	Hardened, HRC < 45			30 - 50	0,8
	Hardened, HRC < 55			20 - 30	0,7
	Hardened, HRC < 65			15 - 25	0,6
Cast iron	Lamellar graphite	< 150	< 500	70 - 110	1,2
	Lamellar graphite	< 300	< 1000	60 - 100	1,1
	Nodular graphite, malleable	< 200	< 700	50 - 80	1,0
	Nodular graphite, malleable	< 300	< 1000	40 - 70	0,9
Stainless steel	Free machining	< 250	< 850	40 - 55	1,0
	Austenitic	< 250	< 850	30 - 45	0,9
	Ferritic and austenitic	< 300	< 1000	25 - 40	0,8
Titanium	Unalloyed	< 200	< 700	35 - 50	0,8
	Alloyed	< 270	< 900	25 - 40	0,7
	Alloyed	< 350	< 1250	20 - 35	0,6
Nickel	Unalloyed	< 150	< 500	40 - 55	0,8
	Alloyed	< 270	< 900	25 - 35	0,7
	Alloyed	< 350	< 1250	20 - 30	0,6
Copper	Unalloyed	< 100	< 350	80 - 160	1,0
	Brass, bronze	< 200	< 700	70 - 150	1,0
	High strength bronze	< 470	< 1500	50 - 70	0,8
Aluminium	Unalloyed	< 100	< 350	200 - 300	1,4
	Alloyed, Si < 0.5%	< 150	< 500	150 - 250	1,3
	Alloyed, Si < 10%	< 120	< 400	100 - 200	1,2
	Alloyed, Si > 10%	< 120	< 400	80 - 160	1,1
Inconel	718	< 370		20 - 30	0,6
Graphite				100 - 200	1,0

20% higher cutting speed is recommended for drill with internal coolant.

Code Key



CUTTING DATA

Diameter Factor (F_d)

D	Diameter Factor (F_d)		
	3xD	5xD	8xD
3,0	0,12	0,10	0,08
4,0	0,14	0,11	0,10
5,0	0,17	0,14	0,12
6,0	0,20	0,16	0,14
8,0	0,26	0,21	0,18
10,0	0,34	0,27	0,24
12,0	0,38	0,30	0,27
14,0	0,41	0,33	0,29
16,0	0,44	0,35	0,31
18,0	0,46	0,37	0,32
20,0	0,50	0,40	0,35

Example

Drilling with D10100B47 FC (3xD)
Carbon Steel, up to 700 N/mm2
D = 10,0 mm
F_n = 1,1 x 0,34 = 0,37 mm/r
n = (90 x 1000) / (π x 10) = 2865 rpm
V_f = 0,37 x 2865 = 1060 mm/min

$$F_n = F_m \times F_d$$

$$n = \frac{V_c \times 1000}{\pi \times D}$$

D = drill diameter (mm)
F_n = feed / rev. (mm/r)
n = spindle speed (rpm)
V_c = cutting speed (m/min)
V_f = table feed (mm/min)

$$V_f = F_n \times n$$

Carbide Grades

FC

Super Micrograin Carbide with TiAlN coating.
Allround Grade with high heat resistance.
Use cutting data according to the tables.