

ICONS

Flutes



Helix Angle (0°, 5°, 7°, 25°, 30°, 35°, 45°, 55°)



Work Material Hardness (H0.55, 60, 65)



Coating



Roughing Pitch



Corner Radius (ø1, 0.2, 0.3, 0.5, 1, 1.5, 2)



Tip Angle (90°, 99°, 120°)



Applications



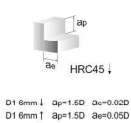
Statistics For Drills



Drills Type, Drills Type, Drills Type, DIN Code, DIN Code, Shank Diameter Tolerance, Cutting Flute Tolerance, Helix Angle, Tip Angle

DEPTH OF CUT

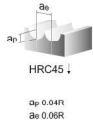
SIDE MILLING



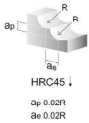
SLOTTING



RADIUS



PROFILING



SOLID CARBIDE

ISO Classification		K10 K20
QMG	MG	
Diameter (mm)		1.2-32.2
Co (%)		9.0
WC [†] FeCo [†] Cr [†] VC (%)		91.0
Density (g/cm ³)		14.40
HV _{0.05} (kg/mm ²)		1970
HRA (ISO3738)		93.9
K _C (H/mm ^{3/2})		9.3
TRS (N/mm ²)		> 4000
Porosity	A	02
	B	00
	C	00
WC-grain size (µm)		0.2-0.5
Co %		9
WC incl. Doping (%)		89.83
Tungsten Carbide C _t		ø0.2µm

ISO Classification		K10 K50
SMG	MG	
Diameter (mm)		1.2-42.2
Co (%)		12.0
WC [†] FeCo [†] Cr [†] VC (%)		88.0
Density (g/cm ³)		14.05
HV _{0.05} (kg/mm ²)		1680
HRA (ISO3738)		92.5
K _C (H/mm ^{3/2})		10.0
TRS (N/mm ²)		> 4000
Porosity	A	02
	B	00
	C	00
WC-grain size (µm)		0.5
Co %		12
WC incl. Doping (%)		88
Tungsten Carbide C _t		ø0.4µm

ISO Classification		K10 K50
MG	MG	
Diameter (mm)		1.2-42.2
Co (%)		10.0
WC [†] FeCo [†] Cr [†] VC (%)		90.0
Density (g/cm ³)		14.5
HV _{0.05} (kg/mm ²)		1610
HRA (ISO3738)		92.3
K _C (H/mm ^{3/2})		10.5
TRS (N/mm ²)		> 4000
Porosity	A	02
	B	00
	C	00
WC-grain size (µm)		0.6
Co %		10
WC incl. Doping (%)		90
Tungsten Carbide C _t		ø0.6µm

WORK MATERIAL

ISO	H	P	K	M	S	N
MATERIAL	Hardened steel	Low alloy steel	Cast iron	Stainless steel	High temp. alloys	Aluminum alloy
		High alloy steel, cast steel, tool steel				Copper alloys
					Titanium and Ti alloys	
						Non-metallic

HARD COATING PROPERTIES

Coating Type	Symbol Color	Nanohardness (GPa)	Thickness (μm)	Friction Coefficient	Max usage Temp (°C)	Coating Temp (°C)
TIALN	BLACK	30	1 - 4	0.4	800	450 ↑
AITiN	BLACK	38	1 - 4	0.6	900	450 ↑
nACoB	BLUE	45	1 - 4	0.45	1200	400 ↑
HELICA	COPPER	30	1 - 4	0.25	1000	480 ↑
CrN	METAL-SILVER	18	1 - 7	0.4	700	200 - 400
DLC	BLACK	20	1 - 3	0.15	400	150 - 250
G100	BURGUNDY-VIOLET	33	1 - 4	0.3	500	
G300	SOFT GOLD	35	1 - 4	0.4	800	
i8	GOLD-BRASS	47	1 - 4	0.45	900	
Aldura	BLACK	32	1 - 4	0.35	1100	
G-plus	WHITE GOLD		1 - 4	0.25	550	
i-plus	COPPER		1 - 3	0.3	1200	



COATING APPLICATIONS

Coating Type	Symbol Color	Introduce coating on different materials
TIALN	BLACK	General steel for wet cutting (HRC38-45)
AITiN	BLACK	High Hard steel for Dry cutting (HRC45-65)
nACoB	BLUE	High Hard steel for Dry cutting (HRC55-65)
HELICA	COPPER	General steel, Cast iron, with special flute design and work on Stainless steel (EX: GFCG)
CrN	METAL-SILVER	Copper Alloy
DLC	BLACK	Aluminum Alloy
G100	BURGUNDY-VIOLET	General steel for wet cutting (HRC35-45)
G300	SOFT GOLD	Tough material, ex: Titanium Alloy, Nickel Alloy, Stainless steel and Heat-resistant alloy
i8	GOLD-BRASS	High Hard steel for Dry and wet cutting (HRC55-65)
Aldura	BLACK	High Hard steel for Dry cutting (HRC55-65)
Diamond	BLACK GRAY	Graphite, Zirconium Oxide
G-plus	WHITE GOLD	Tough material, ex: Titanium Alloy, Nickel Alloy, Stainless steel and Heat-resistant alloy
i-plus	COPPER	High Hard steel for Dry and wet cutting (HRC70)

