

TiAIN-COATED SOLID CARBIDE DREAM DRILLS  
**General without Coolant Holes (5XD)**

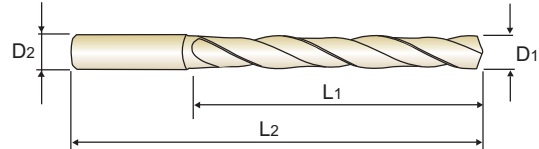
PLAIN SHANK

**DH424** SERIES

FLAT SHANK

**DH444** SERIES

- ▶ Drilling for Steel, Cast Steel, Cast Iron, Malleable Cast Iron
- ▶ Self centering and chip breaking by R-thinning
- ▶ Wave shape and negative land on the cutting edge for low thrust, stable torque and long tool life
- ▶ Optimized flute shape for strength of drilling and smooth chip evacuation



DIN 6537
CARBIDE
h6
h6
m7
140°
P. 39

**LONG**

**5 × D**

EDP No. (TiAIN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D1	D2	L1	L2
DH424010	-	1.0	3	8	55
DH424011	-	1.1	3	12	55
DH424012	-	1.2	3	12	55
DH424013	-	1.3	3	12	55
DH424014	-	1.4	3	12	55
DH424015	-	1.5	3	16	55
DH424016	-	1.6	3	16	55
DH424017	-	1.7	3	16	55
DH424018	-	1.8	3	16	55
DH424019	-	1.9	3	16	55
DH424020	-	2.0	4	21	57
DH424021	-	2.1	4	21	57
DH424022	-	2.2	4	21	57
DH424023	-	2.3	4	21	57
DH424024	-	2.4	4	21	57
DH424025	-	2.5	4	21	57
DH424026	-	2.6	4	21	57
DH424027	-	2.7	4	21	57
DH424028	-	2.8	4	21	57
DH424029	-	2.9	4	21	57
DH424030	DH444030	3.0	6	28	66
DH424031	DH444031	3.1	6	28	66
DH424032	DH444032	3.2	6	28	66
DH424033	DH444033	3.3	6	28	66

Unit : mm

EDP No. (TiAIN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D1	D2	L1	L2
DH424034	DH444034	3.4	6	28	66
DH424035	DH444035	3.5	6	28	66
DH424036	DH444036	3.6	6	28	66
DH424037	DH444037	3.7	6	28	66
DH424038	DH444038	3.8	6	36	74
DH424039	DH444039	3.9	6	36	74
DH424040	DH444040	4.0	6	36	74
DH424041	DH444041	4.1	6	36	74
DH424042	DH444042	4.2	6	36	74
DH424043	DH444043	4.3	6	36	74
DH424044	DH444044	4.4	6	36	74
DH424045	DH444045	4.5	6	36	74
DH424046	DH444046	4.6	6	36	74
DH424047	DH444047	4.7	6	36	74
DH424048	DH444048	4.8	6	44	82
DH424049	DH444049	4.9	6	44	82
DH424050	DH444050	5.0	6	44	82
DH424051	DH444051	5.1	6	44	82
DH424052	DH444052	5.2	6	44	82
DH424053	DH444053	5.3	6	44	82
DH424054	DH444054	5.4	6	44	82
DH424055	DH444055	5.5	6	44	82
DH424056	DH444056	5.6	6	44	82
DH424057	DH444057	5.7	6	44	82

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO	P									M				K						
	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	○	◎	◎	◎	○	○	◎	○	○	○	◎	○	◎	○	◎	○	

ISO	N									S						H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)				Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended																					

## TiAIN-COATED SOLID CARBIDE DREAM DRILLS General without Coolant Holes (5XD)

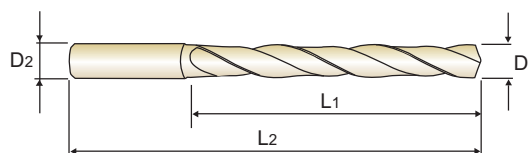
PLAIN SHANK

**DH424** SERIES

FLAT SHANK

**DH444** SERIES

- ▶ Drilling for Steel, Cast Steel, Cast Iron, Malleable Cast Iron
- ▶ Self centering and chip breaking by R-thinning
- ▶ Wave shape and negative land on the cutting edge for low thrust, stable torque and long tool life
- ▶ Optimized flute shape for strength of drilling and smooth chip evacuation



P. 39

**LONG**

**5 × D**

EDP No. (TiAIN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D1	D2	L1	L2
DH424058	DH444058	5.8	6	44	82
DH424059	DH444059	5.9	6	44	82
DH424060	DH444060	6.0	6	44	82
DH424061	DH444061	6.1	8	53	91
DH424062	DH444062	6.2	8	53	91
DH424063	DH444063	6.3	8	53	91
DH424064	DH444064	6.4	8	53	91
DH424065	DH444065	6.5	8	53	91
DH424066	DH444066	6.6	8	53	91
DH424067	DH444067	6.7	8	53	91
DH424068	DH444068	6.8	8	53	91
DH424069	DH444069	6.9	8	53	91
DH424070	DH444070	7.0	8	53	91
DH424071	DH444071	7.1	8	53	91
DH424072	DH444072	7.2	8	53	91
DH424073	DH444073	7.3	8	53	91
DH424074	DH444074	7.4	8	53	91
DH424075	DH444075	7.5	8	53	91
DH424076	DH444076	7.6	8	53	91
DH424077	DH444077	7.7	8	53	91
DH424078	DH444078	7.8	8	53	91
DH424079	DH444079	7.9	8	53	91
DH424080	DH444080	8.0	8	53	91
DH424081	DH444081	8.1	10	61	103

Unit : mm

EDP No. (TiAIN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D1	D2	L1	L2
DH424082	DH444082	8.2	10	61	103
DH424083	DH444083	8.3	10	61	103
DH424084	DH444084	8.4	10	61	103
DH424085	DH444085	8.5	10	61	103
DH424086	DH444086	8.6	10	61	103
DH424087	DH444087	8.7	10	61	103
DH424088	DH444088	8.8	10	61	103
DH424089	DH444089	8.9	10	61	103
DH424090	DH444090	9.0	10	61	103
DH424091	DH444091	9.1	10	61	103
DH424092	DH444092	9.2	10	61	103
DH424093	DH444093	9.3	10	61	103
DH424094	DH444094	9.4	10	61	103
DH424095	DH444095	9.5	10	61	103
DH424096	DH444096	9.6	10	61	103
DH424097	DH444097	9.7	10	61	103
DH424098	DH444098	9.8	10	61	103
DH424099	DH444099	9.9	10	61	103
DH424100	DH444100	10.0	10	61	103
DH424101	DH444101	10.1	12	71	118
DH424102	DH444102	10.2	12	71	118
DH424103	DH444103	10.3	12	71	118
DH424104	DH444104	10.4	12	71	118
DH424105	DH444105	10.5	12	71	118

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

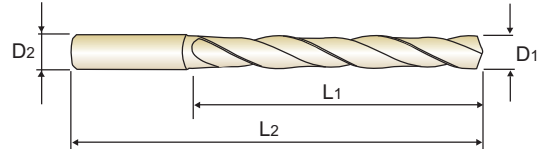
ISO	P										M				K						
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	○	◎	◎	◎	○	○	◎	○	○	○	○	◎	○	◎	○	◎	○	
ISO	N								S							H					
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended																					

TiAIN-COATED SOLID CARBIDE DREAM DRILLS  
**General without Coolant Holes (5XD)**

PLAIN SHANK **DH424** SERIES

FLAT SHANK **DH444** SERIES

- ▶ Drilling for Steel, Cast Steel, Cast Iron, Malleable Cast Iron
- ▶ Self centering and chip breaking by R-thinning
- ▶ Wave shape and negative land on the cutting edge for low thrust, stable torque and long tool life
- ▶ Optimized flute shape for strength of drilling and smooth chip evacuation



DIN 6537
CARBIDE
h6
h6
m7
140°
P. 39

**LONG**

**5 × D**

EDP No. (TiAIN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D1	D2	L1	L2
DH424106	DH444106	10.6	12	71	118
DH424107	DH444107	10.7	12	71	118
DH424108	DH444108	10.8	12	71	118
DH424109	DH444109	10.9	12	71	118
DH424110	DH444110	11.0	12	71	118
DH424111	DH444111	11.1	12	71	118
DH424112	DH444112	11.2	12	71	118
DH424113	DH444113	11.3	12	71	118
DH424114	DH444114	11.4	12	71	118
DH424115	DH444115	11.5	12	71	118
DH424116	DH444116	11.6	12	71	118
DH424117	DH444117	11.7	12	71	118
DH424118	DH444118	11.8	12	71	118
DH424119	DH444119	11.9	12	71	118
DH424120	DH444120	12.0	12	71	118
DH424125	DH444125	12.5	14	77	124

Unit : mm

EDP No. (TiAIN)		Drill Diameter	Shank Diameter	Flute Length	Overall Length
Plain	Flat	D1	D2	L1	L2
DH424130	DH444130	13.0	14	77	124
DH424135	DH444135	13.5	14	77	124
DH424140	DH444140	14.0	14	77	124
DH424145	DH444145	14.5	16	83	133
DH424150	DH444150	15.0	16	83	133
DH424155	DH444155	15.5	16	83	133
DH424160	DH444160	16.0	16	83	133
DH424165	DH444165	16.5	18	93	143
DH424170	DH444170	17.0	18	93	143
DH424175	DH444175	17.5	18	93	143
DH424180	DH444180	18.0	18	93	143
DH424185	DH444185	18.5	20	101	153
DH424190	DH444190	19.0	20	101	153
DH424195	DH444195	19.5	20	101	153
DH424200	DH444200	20.0	20	101	153

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

ISO	P									M				K							
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel	Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21			
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	○	◎	◎	◎	○	○	◎	○	○	○	○	◎	○	◎	○	◎	○	
ISO	N									S						H					
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended																					

## RECOMMENDED CUTTING CONDITIONS

**DH404, DH423, DH443,  
DH424, DH444** SERIES

without COOLANT HOLES

Vc = m/min  
RPM = rev./min.  
FEED = mm/rev.

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm)		Vc	Parameter	Drill Diameter (mm)						
					1.0	2.0			3.0	4.0	5.0	6.0			
P	2	Non-alloy steel	70	RPM	22280	11140	100	RPM	10610	7960	6370	5310			
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22			
			70	RPM	22280	11140	100	RPM	10610	7960	6370	5310			
	P	3	Non-alloy steel	70	RPM	22280	11140	100	RPM	10610	7960	6370	5310		
					FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22		
				70	RPM	22280	11140	100	RPM	10610	7960	6370	5310		
		P	4	Non-alloy steel	70	RPM	22280	11140	100	RPM	10610	7960	6370	5310	
						FEED	0.03-0.05	0.05-0.07		FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18	
					70	RPM	19100	9550	80	RPM	8490	6370	5090	4240	
			P	5	Non-alloy steel	60	RPM	22280	11140	100	RPM	10610	7960	6370	5310
							FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
60						RPM	19100	9550	80	RPM	8490	6370	5090	4240	
P				6	Low alloy steel	70	RPM	22280	11140	100	RPM	10610	7960	6370	5310
							FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
	60					RPM	19100	9550	80	RPM	8490	6370	5090	4240	
	P			7	Low alloy steel	60	RPM	19100	9550	80	RPM	8490	6370	5090	4240
							FEED	0.03-0.05	0.05-0.07		FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
		60				RPM	19100	9550	80	RPM	8490	6370	5090	4240	
		P		8	Low alloy steel	60	RPM	19100	9550	80	RPM	8490	6370	5090	4240
							FEED	0.02-0.04	0.03-0.05		FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
			60			RPM	9550	4770	40	RPM	4240	3180	2550	2120	
			P	9	Low alloy steel	30	RPM	9550	4770	40	RPM	4240	3180	2550	2120
							FEED	0.02-0.04	0.03-0.05		FEED	0.03-0.08	0.05-0.11	0.08-0.14	0.10-0.16
30						RPM	15920	7960	70	RPM	7430	5570	4460	3710	
P				10	High alloyed steel, and tool steel	50	RPM	15920	7960	70	RPM	7430	5570	4460	3710
							FEED	0.03-0.05	0.05-0.07		FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
	50					RPM	9550	4770	40	RPM	4240	3180	2550	2120	
	M			12	Stainless steel	50	RPM	15920	7960	70	RPM	7430	5570	4460	3710
							FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
		50				RPM	11140	5570	45	RPM	4770	3580	2860	2390	
		K		13	Stainless steel	35	RPM	11140	5570	45	RPM	4770	3580	2860	2390
							FEED	0.02-0.04	0.03-0.05		FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18
			35			RPM	22280	11140	100	RPM	10610	7960	6370	5310	
			K	15	Grey cast iron	70	RPM	22280	11140	100	RPM	10610	7960	6370	5310
							FEED	0.04-0.06	0.04-0.06		FEED	0.08-0.14	0.12-0.18	0.18-0.24	0.14-0.26
70						RPM	20690	10350	80	RPM	8490	6370	5090	4240	
K				16	Grey cast iron	65	RPM	20690	10350	80	RPM	8490	6370	5090	4240
							FEED	0.04-0.06	0.04-0.06		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
	65					RPM	22280	11140	100	RPM	10610	7960	6370	5310	
	K			17	Nodular cast iron	70	RPM	22280	11140	100	RPM	10610	7960	6370	5310
							FEED	0.04-0.06	0.04-0.06		FEED	0.08-0.14	0.12-0.18	0.18-0.24	0.14-0.26
		70				RPM	15920	7960	70	RPM	7430	5570	4460	3710	
		K		18	Nodular cast iron	50	RPM	15920	7960	70	RPM	7430	5570	4460	3710
							FEED	0.04-0.06	0.04-0.06		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
			50			RPM	19100	9550	80	RPM	8490	6370	5090	4240	
			K	19	Malleable cast iron	60	RPM	19100	9550	80	RPM	8490	6370	5090	4240
							FEED	0.04-0.06	0.04-0.06		FEED	0.08-0.14	0.12-0.18	0.18-0.24	0.14-0.26
60						RPM	15920	7960	70	RPM	7430	5570	4460	3710	
K				20	Malleable cast iron	50	RPM	15920	7960	70	RPM	7430	5570	4460	3710
							FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22
	50					RPM	22280	11140	100	RPM	10610	7960	6370	5310	

ISO	VDI 3323	Material Description	Vc	Parameter	Drill Diameter (mm)									
					8.0	10.0	12.0	14.0	16.0	18.0	20.0			
P	2	Non-alloy steel	100	RPM	3980	3180	2650	2270	1990	1770	1590			
				FEED	0.18-0.24	0.22-0.28	0.20-0.30	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40			
			100	RPM	3980	3180	2650	2270	1990	1770	1590			
	P	3	Non-alloy steel	100	RPM	3980	3180	2650	2270	1990	1770	1590		
					FEED	0.18-0.24	0.22-0.28	0.20-0.30	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40		
				100	RPM	3980	3180	2650	2270	1990	1770	1590		
		P	4	Non-alloy steel	100	RPM	3980	3180	2650	2270	1990	1770	1590	
						FEED	0.14-0.2	0.18-0.24	0.14-0.24	0.16-0.26	0.18-0.28	0.20-0.30	0.22-0.32	
					80	RPM	3180	2550	2120	1820	1590	1410	1270	
			P	5	Non-alloy steel	80	RPM	3180	2550	2120	1820	1590	1410	1270
							FEED	0.14-0.2	0.18-0.24	0.14-0.24	0.16-0.26	0.18-0.28	0.20-0.30	0.22-0.32
80						RPM	3980	3180	2650	2270	1990	1770	1590	
P				6	Low alloy steel	100	RPM	3980	3180	2650	2270	1990	1770	1590
							FEED	0.18-0.24	0.22-0.28	0.20-0.30	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40
	80					RPM	3180	2550	2120	1820	1590	1410	1270	
	P			7	Low alloy steel	80	RPM	3180	2550	2120	1820	1590	1410	1270
							FEED	0.16-0.28	0.20-0.30	0.21-0.30	0.22-0.35	0.25-0.36	0.28-0.38	0.30-0.40
		80				RPM	3180	2550	2120	1820	1590	1410	1270	
		P		8	Low alloy steel	80	RPM	3180	2550	2120	1820	1590	1410	1270
							FEED	0.14-0.2	0.18-0.24	0.14-0.24	0.16-0.26	0.18-0.28	0.20-0.30	0.22-0.32
			40			RPM	1590	1270	1060	910	800	710	640	
			P	9	Low alloy steel	40	RPM	1590	1270	1060	910	800	710	640
							FEED	0.12-0.18	0.14-0.20	0.12-0.22	0.13-0.23	0.14-0.24	0.16-0.26	0.18-0.28
40						RPM	2790	2230	1860	1590	1390	1240	1110	
P				10	High alloyed steel, and tool steel	70	RPM	2790	2230	1860	1590	1390	1240	1110
							FEED	0.14-0.20	0.18-0.24	0.14-0.24	0.16-0.26	0.18-0.28	0.20-0.30	0.22-0.32
	40					RPM	1590	1270	1060	910	800	710	640	
	M			12	Stainless steel	70	RPM	2790	2230	1860	1590	1390	1240	1110
							FEED	0.18-0.24	0.22-0.28	0.20-0.30	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40
		45				RPM	1790	1430	1190	1020	900	800	720	
		K		13	Stainless steel	45	RPM	1790	1430	1190	1020	900	800	720
							FEED	0.14-0.20	0.18-0.24	0.14-0.24	0.16-0.26	0.18-0.28	0.20-0.30	0.22-0.32
			45			RPM	3980	3180	2650	2270	1990	1770	1590	
			K	15	Grey cast iron	100	RPM	3980	3180	2650	2270	1990	1770	1590
							FEED	0.16-0.28	0.24-0.34	0.26-0.36	0.28-0.38	0.30-0.40	0.32-0.42	0.34-0.44
80						RPM	3180	2550	2120	1820	1590	1410	1270	
K				16	Grey cast iron	80	RPM	3180	2550	2120	1820	1590	1410	1270
							FEED	0.18-0.24	0.22-0.28	0.20-0.30	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40
	80					RPM	3980	3180	2650	2270	1990	1770	1590	
	K			17	Nodular cast iron	100	RPM	3980	3180	2650	2270	1990	1770	1590
							FEED	0.16-0.28	0.24-0.34	0.26-0.36	0.28-0.38	0.30-0.40	0.32-0.42	0.34-0.44
		70				RPM	2790	2230	1860	1590	1390	1240	1110	
		K		18	Nodular cast iron	70	RPM	2790	2230	1860	1590	1390	1240	1110
							FEED	0.18-0.24	0.22-0.28	0.20-0.30	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40
			80			RPM	3180	2550	2120	1820	1590	1410	1270	
			K	19	Malleable cast iron	80	RPM	3180	2550	2120	1820	1590	1410	1270
							FEED	0.16-0.28	0.24-0.34	0.26-0.36	0.28-0.38	0.30-0.40	0.32-0.42	0.34-0.44
80						RPM	2790	2230	1860	1590	1390	1240	1110	
K				20	Malleable cast iron	70	RPM	2790	2230	1860	1590	1390	1240	1110
							FEED	0.18-0.24	0.22-0.28	0.20-0.30	0.22-0.32	0.24-0.34	0.28-0.38	0.30-0.40
	70					RPM								

# SELECTION GUIDE



HOLEMAKING TOOLS

SERIES  
 DRILLING DEPTH / STANDARD  
 LENGTH  
 SIZE MIN  
 SIZE MAX  
 PAGE

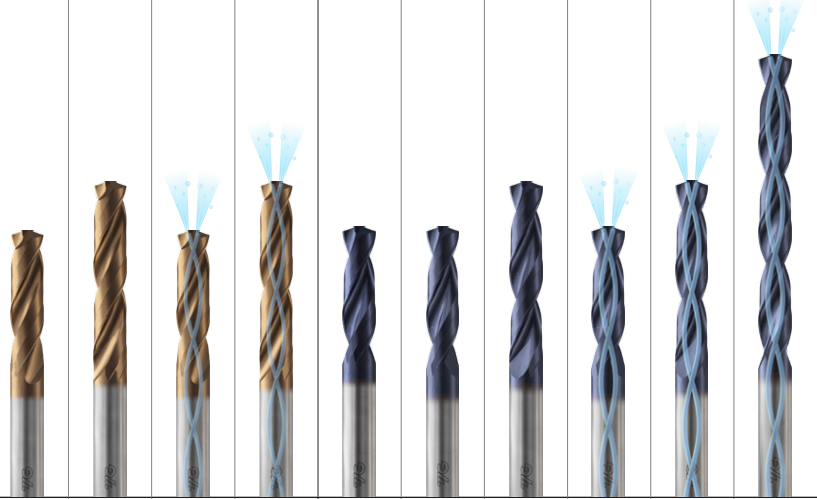
PRO <sup>NEW</sup>				GENERAL					
DGN523	DGN526	DGN506	DGN508	DH404	DH423 DH443	DH424 DH444	DH406 DH446	DH408 DH448	DH421
3XD	5XD	3XD	5XD	3XD	3XD	5XD	3XD	5XD	8XD
SHORT	LONG	SHORT	LONG	STUB	SHORT	LONG	SHORT	LONG	EXTRALONG
D3.0	D1.0	D3.0	D1.0	D3.0	D32.0	D1.0	D3.0	D1.0	D3.0
D20.0	D20.0	D20.0	D20.0	D20.0	D20.0	D20.0	D20.0	D20.0	D14.0
8	11	14	16	24	26	29	32	34	37

SURFACE TREATMENT

Z-Coating

TiAIN

## SOLID CARBIDE **DREAM DRILLS**



Please visit  
[globalyg1.com/mat](http://globalyg1.com/mat)  
 for material search

◎ : Excellent ○ : Good

TECHNICAL DATA : P 97

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRC	DGN523	DGN526	DGN506	DGN508	DH404	DH423 DH443	DH424 DH444	DH406 DH446	DH408 DH448	DH421	
P	1	Non-alloy steel	About 0.15% C Annealed	125												
	2		About 0.45% C Annealed	190 13	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	3		About 0.45% C Quenched & Tempered	250 25	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	4		About 0.75% C Annealed	270 28	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	5		About 0.75% C Quenched & Tempered	300 32	○	○	○	○	○	○	○	○	○	○	○	○
	6	Low alloy steel	Annealed	180 10	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	7		Quenched & Tempered	275 29	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	8		Quenched & Tempered	300 32	○	○	○	○	○	○	○	○	○	○	○	○
	9		Quenched & Tempered	350 38	○	○	○	○	○	○	○	○	○	○	○	○
	10		High alloyed steel, and tool steel	Annealed	200 15	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	11	Quenched & Tempered		325 35	○	○	○	○	○	○	○	○	○	○	○	○
M	12	Stainless steel	Ferritic / Martensitic Annealed	200 15	○	○	○	○	○	○	○	○	○	○	○	
	13		Martensitic Quenched & Tempered	240 23	○	○	○	○	○	○	○	○	○	○	○	
	14		Austenitic	180 10												
K	15	Grey cast iron	Pearlitic / ferritic	180 10	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	
	16		Pearlitic (Martensitic)	260 26	○	○	○	○	○	○	○	○	○	○	○	
	17	Nodular cast iron	Ferritic	160 3	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	
	18		Pearlitic	250 25	○	○	○	○	○	○	○	○	○	○	○	
	19		Malleable cast iron	130	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	
20	Pearlitic	230 21	○	○	○	○	○	○	○	○	○	○	○	○		
N	21	Aluminum-wrought alloy	Not Curable	60												
	22		Curable Hardened	100												
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75												
	24		≤ 12% Si, Curable Hardened	90												
	25		> 12% Si, Not Curable	130												
	26		Cutting Alloys, PB>1%	110												
	27	Copper and Copper Alloys (Bronze / Brass)	CuZn, CuSnZn (Brass)	90												
	28		CuSn, lead-free copper and electrolytic copper	100												
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic													
	30		Rubber, Wood, etc.													
S	31	Heat Resistant Super Alloys	Fe Based Annealed	200 15												
	32		Fe Based Cured	280 30												
	33		Annealed	250 25												
	34		Ni or Co Based Cured	350 38												
	35		Cast	320 34												
	36	Titanium Alloys	Pure Titanium	400 <sub>m</sub>												
	37		Alpha + Beta Alloys Hardened	1050 <sub>m</sub>												
H	38	Hardened steel	Hardened	550 55												
	39		Hardened	630 60												
	40	Chilled Cast Iron	Cast	400 42												
	41	Hardened Cast Iron	Hardened	550 55												