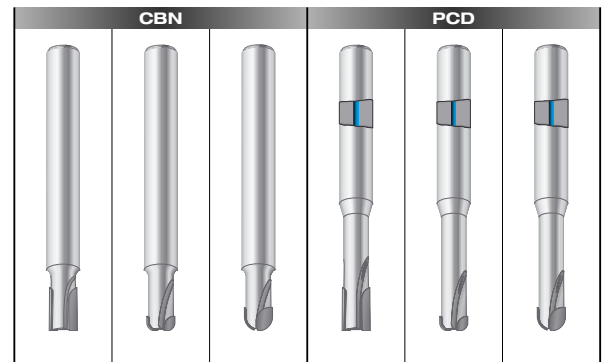


CBN and PCD end mills
CBN and PCD torus cutters
CBN and PCD ball nose cutters



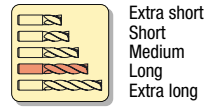
Type	N			N IKZ		
Diameter range inch	3/16 - 1/2			3/16 - 1/2		
Diameter range mm	4 - 12			4 - 12		
Page	190	192	194	196	198	200

■ = Preferred suitable milling cutter

	Material group	Hardness range			Material example										
		HRC	BHN	N/mm ²		2810	2809	2808	2805	2804	2803				
1	Steel materials														
1.1	Cold-extrusion steels, Magnetic soft iron		≤ 120	≤ 400	1008 / 1010										
1.2	Free-cutting steels, General construction steels		≤ 180	≤ 600	1008 / 1010 / 12L14 / A36 11L17, 1140, 12L15										
1.3	Free-cutting steels, Construction steels, Alloyed steels, Steel castings	≤ 25	≤ 250	≤ 850	1018, 1060, 4130, 4140, 41L30, 41L45, 86L20, 86L40, 1045										
1.4	Chrome alloy steels, Heat-treatable steels, Nitriding steels, Cold work steels	≤ 35	≤ 320	≤ 1100	5115, A29, A519, J404 4130, 8030, 4140, 4330 Nitralloy125, 135, 230, EZ, A7										
1.5	Heat-treatable steels, Nitriding steels, Hot work steels, Hardened steels up to 44 HRC, Cold work steels	≤ 44	≤ 410	≤ 1400	D2, D3, D4, D5, D7 4130, 8030, 4140, 4330 H10, H11, H14, H21, H22, H46 4130, 4340, 150, 4161, 5160, 8660										
1.6	Hardened steels	> 44 - 55			4130, 4340, 150, 4161, H13, H10										
1.7	Hardened steels	> 55 - 60			52100, M-50, 4340, D5ac, H11	■	■	■							
1.8	Hardened steels	> 60 - 63			M1-M47, 52100	■	■	■							
1.9	Hardened steels	> 63 - 66			M1-M47	■	■	■							
1.10	Corrosion-proof steels, Acid-proof steels, Heat-resistant steels	≤ 25	≤ 250	≤ 850	303, 304, 316, 316L, 416, 420 303, 304, 316, 316L, 416, 420 303, 304, 316, 316L, 416, 420										
1.11	Corr./Acid-proof steels, Heat-resist. steels	≤ 35	≤ 320	≤ 1100	410, 420, Cf8m, 17-4ph										
1.12	Corr./Acid-proof steels, Heat-resist. steels	≤ 44	≤ 410	≤ 1400	347, 420, 440, 15-5ph, 17-4ph										
1.13	Special steel materials				Ferro-TiC, Hardox 500										
2	Cast materials														
2.1	Cast iron		< 280		ASTM A48, SAE J431c grade, 1800										
2.2	Cast iron with nodular graphite			≤ 1000	ASTM A48 class 20, 30, 35, 40 SAE J431c grade G3000										
2.3	Cast iron with vermicular graphite		< 280			■	■	■							
2.4	Malleable cast iron			≤ 700	ASTM A47 grades 32510, 35018										
2.5	Hard castings up to 400 BHN		< 400			■	■	■							
3	Copper, Copper alloys, Bronze, Brass														
3.1	Pure copper and low alloyed copper		≤ 150	≤ 500	99% pure										
3.2	Copper-zinc alloys (brass, long-chipping)				320, 360										
3.3	Copper-zinc alloys (brass, short-chipping)														
3.4	Copper-alum. alloys (alubronze, long-ch.) Copper-tin alloys (bronze, long-chipping)														
3.5	Copper-tin alloys (bronze, short-chipping)														
3.6	Special copper alloys, up to Q18														
3.7	Special copper alloys, over Q18														
4	Nickel/Cobalt alloys														
4.1	Nickel/Cobalt alloys heat-resistant	≤ 25	≤ 250	≤ 850	Hastelloy B, C, C-276										
4.2	Nickel/Cobalt alloys high-heat resistant	25 - 44	250 - 410	850 - 1400	Inconell 718, Rene 100										
4.3	Nickel/Cobalt alloys high-heat resistant	> 44	> 410	> 1400	Inconell 718, Haynes 25										
5	Aluminium alloys														
5.1	Aluminium wrought alloys				2014, 2117, 5050, 6061, 7004										
5.2	Aluminium cast alloys Si ≤ 5%				201, 213, 295, 435.2, 511.0										
5.3	Aluminium cast alloys 5% < Si ≤ 12%				319, 333, 356, 343, 369, 380				■	■	■				
5.4	Aluminium cast alloys 12% < Si				390, 393, 413				■	■	■				
6	Magnesium alloys														
6.1	Magnesium wrought alloys														
6.2	Magnesium cast alloys														
7	Titanium, Titanium alloys														
7.1	Pure titanium, Titanium alloys	≤ 27	≤ 270	≤ 900	Commercially pure C-1, C-2										
7.2	Titanium alloys	27 - 39	270 - 370	900 - 1250	6Al4V										
8	Synthetics														
8.1	Duroplastics (short-chipping)				Bakelite										
8.2	Thermoplastics (long-chipping)				PVC										
8.3	Fibre-reinforced synthetics				Phenolic				■	■	■				
9	Materials for special applications														
9.1	Graphite								■	■	■				
9.2	Tungsten-copper alloys								■	■	■				

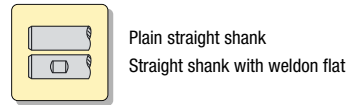
Description of the symbols:

Constructional length



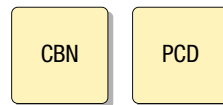
The respective constructional length is marked in **red**.

Shank design

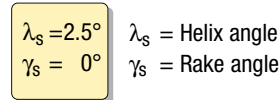


The shank designs to be found on the respective page are highlighted.

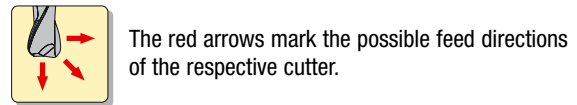
Cutting material



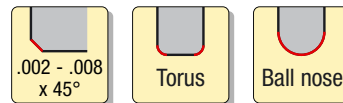
Cutting geometry



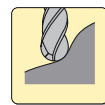
Feed direction



Bevelled edge / Torus / Ball nose



Application example

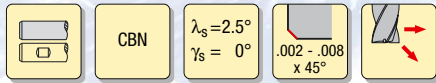
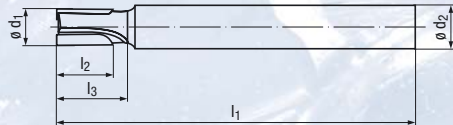


N

Left-hand oblique flutes



Extra long



CBN



HSM

Coating

-

EDP tool identification

2810

INCH

$\varnothing d_1$ $\pm .0008$	l_2	l_3	l_1	$\varnothing d_2$ h6	# of teeth	EDP Size ID		
3/16	9/32	3/8	3	1/4	2	01875	●	
1/4	3/8	1/2	4	3/8	2	0250	●	
3/8	9/16	3/4	4	1/2	2	0375	●	
1/2	3/4	1	4	5/8	2	0500	●	

METRIC (Dimensions in mm)

$\varnothing d_1$ ± 0.02	l_2	l_3	l_1	$\varnothing d_2$ h6	# of teeth	EDP Size ID		
4	6	8	75	6	2	004	●	
6	9	12	100	8	2	006	●	
8	12	16	100	10	2	008	●	
10	15	20	100	12	2	010	●	
12	18	24	100	16	2	012	●	

Cutting speed v_c [sfm]

	Material group	Hardness range			Material example	Correction factor	CBN
		HRC	BHN	N/mm ²			
1	Steel materials						
1.1	Cold-extrusion steels, Magnetic soft iron		≤ 120	≤ 400	1008 / 1010		
1.2	Free-cutting steels, General construction steels		≤ 180	≤ 600	1008 / 1010 / 12L14 / A36 11L17, 1140, 12L15		
1.3	Free-cutting steels, Construction steels, Alloyed steels, Steel castings	≤ 25	≤ 250	≤ 850	1018, 1060, 4130, 4140, 41L30, 41L45, 86L20, 86L40, 1045		
1.4	Chrome alloy steels, Heat-treatable steels, Nitriding steels, Cold work steels	≤ 35	≤ 320	≤ 1100	5115, A29, A519, J404 4130, 8030, 4140, 4330 Nitralloy125, 135, 230, EZ, A7		
1.5	Heat-treatable steels, Nitriding steels, Hot work steels, Hardened steels up to 44 HRC, Cold work steels	≤ 44	≤ 410	≤ 1400	D2, D3, D4, D5, D7 4130, 8030, 4140, 4330 H10, H11, H14, H21, H22, H46 4130, 4340, 150, 4161, 5160, 8660		
1.6	Hardened steels	> 44 - 55			4130, 4340, 150, 4161, H13, H10		
1.7	Hardened steels	> 55 - 60			52100, M-50, 4340, D5ac, H11	1.1	890 - 980
1.8	Hardened steels	> 60 - 63			M1-M47, 52100	1.0	720 - 820
1.9	Hardened steels	> 63 - 66			M1-M47	0.9	660 - 720
1.10	Corrosion-proof steels, Acid-proof steels, Heat-resistant steels	≤ 25	≤ 250	≤ 850	303, 304, 316, 316L, 416, 420 303, 304, 316, 316L, 416, 420 303, 304, 316, 316L, 416, 420		
1.11	Corr.-/Acid-proof steels, Heat-resist. steels	≤ 35	≤ 320	≤ 1100	410, 420, C18m, 17-4ph		
1.12	Corr.-/Acid-proof steels, Heat-resist. steels	≤ 44	≤ 410	≤ 1400	347, 420, 440, 15-5ph, 17-4ph		
1.13	Special steel materials				Ferro-TiC, Hardox 500		
2	Cast materials						
2.1	Cast iron		< 280		ASTM A48, SAE J431c grade, 1800		
2.2	Cast iron with nodular graphite			≤ 1000	ASTM A48 class 20, 30, 35, 40 SAE J431c grade G3000		
2.3	Cast iron with vermicular graphite		< 280			1.0	1640 - 2600
2.4	Malleable cast iron			≤ 700	ASTM A47 grades 32510, 35018		
2.5	Hard castings up to 400 BHN		< 400			0.8	1300 - 1900

Chipload per tooth f_z [inch]

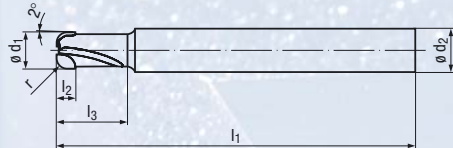
INCH	Finishing	METRIC	Finishing
	<p>$a_p = 1.5 \times d_1$</p> <p>$a_e = .01 \text{ in}$</p>		<p>$a_p = 1.5 \times d_1$</p> <p>$a_e = .01 \text{ in}$</p>
$\emptyset d_1$	CBN	$\emptyset d_1$ [mm]	CBN
3/16	.0005	4	.0005
1/4	.0008	6	.0008
3/8	.0013	8	.0011
1/2	.0017	10	.0013
		12	.0017

Please note that the value f_z from the above table must be multiplied with the corresponding correction factor.

N



Extra long



CBN

$\lambda_s = 0^\circ$
 $\gamma_s = 0^\circ$



CBN



HSM

Coating

EDP tool identification

INCH

ϕd_1	r	l_2	l_3	l_1	ϕd_2	# of teeth	EDP Size ID
$\pm .0008$	$\pm .0004$				h6		
3/16	.0375	9/64	3/8	3	1/4	2	01875
1/4	.0500	3/16	1/2	4	3/8	2	0250
3/8	.0750	9/32	3/4	4	1/2	2	0375
1/2	.1000	3/8	1	4	5/8	2	0500

METRIC (Dimensions in mm)

ϕd_1	r	l_2	l_3	l_1	ϕd_2	# of teeth	EDP Size ID
± 0.02	± 0.01				h6		
4	0.8	3	8	75	6	2	004
6	1.2	4.5	12	100	8	2	006
8	1.6	6	16	100	10	2	008
10	2.0	7.5	20	100	12	2	010
12	2.4	9	24	100	16	2	012

2809

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Cutting speed v_c [sfm]

	Material group	Hardness range			Material example	Correction factor	CBN
		HRC	BHN	N/mm ²			
1	Steel materials						
1.1	Cold-extrusion steels, Magnetic soft iron		≤ 120	≤ 400	1008 / 1010		
1.2	Free-cutting steels, General construction steels		≤ 180	≤ 600	1008 / 1010 / 12L14 / A36 11L17, 1140, 12L15		
1.3	Free-cutting steels, Construction steels, Alloyed steels, Steel castings	≤ 25	≤ 250	≤ 850	1018, 1060, 4130, 4140, 41L30, 41L45, 86L20, 86L40, 1045		
1.4	Chrome alloy steels, Heat-treatable steels, Nitriding steels, Cold work steels	≤ 35	≤ 320	≤ 1100	5115, A29, A519, J404 4130, 8030, 4140, 4330 Nitralloy125, 135, 230, EZ, A7		
1.5	Heat-treatable steels, Nitriding steels, Hot work steels, Hardened steels up to 44 HRC, Cold work steels	≤ 44	≤ 410	≤ 1400	D2, D3, D4, D5, D7 4130, 8030, 4140, 4330 H10, H11, H14, H21, H22, H46 4130, 4340, 150, 4161, 5160, 8660		
1.6	Hardened steels	> 44 - 55			4130, 4340, 150, 4161, H13, H10		
1.7	Hardened steels	> 55 - 60			52100, M-50, 4340, D5ac, H11	1.1	890 - 980
1.8	Hardened steels	> 60 - 63			M1-M47, 52100	1.0	720 - 820
1.9	Hardened steels	> 63 - 66			M1-M47	0.9	660 - 720
1.10	Corrosion-proof steels, Acid-proof steels, Heat-resistant steels	≤ 25	≤ 250	≤ 850	303, 304, 316, 316L, 416, 420 303, 304, 316, 316L, 416, 420 303, 304, 316, 316L, 416, 420		
1.11	Corr.-/Acid-proof steels, Heat-resist. steels	≤ 35	≤ 320	≤ 1100	410, 420, C18m, 17-4ph		
1.12	Corr.-/Acid-proof steels, Heat-resist. steels	≤ 44	≤ 410	≤ 1400	347, 420, 440, 15-5ph, 17-4ph		
1.13	Special steel materials				Ferro-TiC, Hardox 500		
2	Cast materials						
2.1	Cast iron		< 280		ASTM A48, SAE J431c grade, 1800		
2.2	Cast iron with nodular graphite			≤ 1000	ASTM A48 class 20, 30, 35, 40 SAE J431c grade G3000		
2.3	Cast iron with vermicular graphite		< 280			1.0	1640 - 2600
2.4	Malleable cast iron			≤ 700	ASTM A47 grades 32510, 35018		
2.5	Hard castings up to 400 BHN		< 400			0.8	1300 - 1900

Chipload per tooth f_z [inch]

INCH	Torus (2D)		Torus (3D)		METRIC	Torus (2D)		Torus (3D)	
	a_e	a_p	a_e	a_p		a_e	a_p	a_e	a_p
		$a_p = .01 \times d_1$		$a_p = .05 \times d_1$			$a_p = .01 \times d_1$		$a_p = .05 \times d_1$
	$a_e = 0.2 \times d_1$					$a_e = 0.2 \times d_1$			
$\emptyset d_1$	CBN		CBN		$\emptyset d_1$ [mm]	CBN		CBN	
3/16	.0005		.0006		4	.0005		.0006	
1/4	.0008		.0009		6	.0008		.0009	
3/8	.0012		.0015		8	.0010		.0012	
1/2	.0015		.0018		10	.0012		.0015	
					12	.0015		.0018	

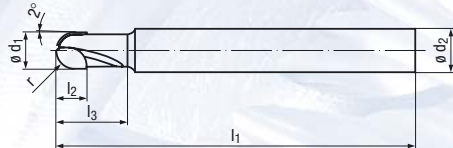
Please note that the value f_z from the above table must be multiplied with the corresponding correction factor.

CBN / PCD

N



Extra long



CBN

$\lambda_s = 0^\circ$
 $\gamma_s = 0^\circ$



CBN



HSM

Coating

EDP tool identification

INCH

$\varnothing d_1$	r	l_2	l_3	l_1	$\varnothing d_2$	# of teeth	EDP Size ID
$\pm .0008$	$\pm .0004$				h6		
3/16	.0937	3/16	3/8	3	1/4	2	01875
1/4	.1250	1/4	1/2	4	3/8	2	0250
3/8	.1875	3/8	3/4	4	1/2	2	0375
1/2	.2500	1/2	1	4	5/8	2	0500

METRIC (Dimensions in mm)

$\varnothing d_1$	r	l_2	l_3	l_1	$\varnothing d_2$	# of teeth	EDP Size ID
± 0.02	± 0.01				h6		
4	2	4	8	75	6	2	004
6	3	6	12	100	8	2	006
8	4	8	16	100	10	2	008
10	5	10	20	100	12	2	010
12	6	12	24	100	16	2	012

2808

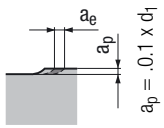
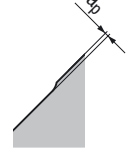
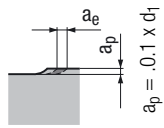
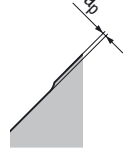
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Cutting speed v_c [sfm]

	Material group	Hardness range			Material example	Correction factor	CBN
		HRC	BHN	N/mm ²			
1	Steel materials						
1.1	Cold-extrusion steels, Magnetic soft iron		≤ 120	≤ 400	1008 / 1010		
1.2	Free-cutting steels, General construction steels		≤ 180	≤ 600	1008 / 1010 / 12L14 / A36 11L17, 1140, 12L15		
1.3	Free-cutting steels, Construction steels, Alloyed steels, Steel castings	≤ 25	≤ 250	≤ 850	1018, 1060, 4130, 4140, 41L30, 41L45, 86L20, 86L40, 1045		
1.4	Chrome alloy steels, Heat-treatable steels, Nitriding steels, Cold work steels	≤ 35	≤ 320	≤ 1100	5115, A29, A519, J404 4130, 8030, 4140, 4330 Nitralloy125, 135, 230, EZ, A7		
1.5	Heat-treatable steels, Nitriding steels, Hot work steels, Hardened steels up to 44 HRC, Cold work steels	≤ 44	≤ 410	≤ 1400	D2, D3, D4, D5, D7 4130, 8030, 4140, 4330 H10, H11, H14, H21, H22, H46 4130, 4340, 150, 4161, 5160, 8660		
1.6	Hardened steels	> 44 - 55			4130, 4340, 150, 4161, H13, H10		
1.7	Hardened steels	> 55 - 60			52100, M-50, 4340, D5ac, H11	1.1	890 - 980
1.8	Hardened steels	> 60 - 63			M1-M47, 52100	1.0	720 - 820
1.9	Hardened steels	> 63 - 66			M1-M47	0.9	660 - 720
1.10	Corrosion-proof steels, Acid-proof steels, Heat-resistant steels	≤ 25	≤ 250	≤ 850	303, 304, 316, 316L, 416, 420 303, 304, 316, 316L, 416, 420 303, 304, 316, 316L, 416, 420		
1.11	Corr.-/Acid-proof steels, Heat-resist. steels	≤ 35	≤ 320	≤ 1100	410, 420, C18m, 17-4ph		
1.12	Corr.-/Acid-proof steels, Heat-resist. steels	≤ 44	≤ 410	≤ 1400	347, 420, 440, 15-5ph, 17-4ph		
1.13	Special steel materials				Ferro-TiC, Hardox 500		
2	Cast materials						
2.1	Cast iron		< 280		ASTM A48, SAE J431c grade, 1800		
2.2	Cast iron with nodular graphite			≤ 1000	ASTM A48 class 20, 30, 35, 40 SAE J431c grade G3000		
2.3	Cast iron with vermicular graphite		< 280			1.0	1640 - 2600
2.4	Malleable cast iron			≤ 700	ASTM A47 grades 32510, 35018		
2.5	Hard castings up to 400 BHN		< 400			0.8	1300 - 1900

Chipload per tooth f_z [inch]

INCH	Ball nose (2D)		Ball nose (3D)		METRIC	Ball nose (2D)		Ball nose (3D)	
	a_e	a_p	a_e	a_p		a_e	a_p	a_e	a_p
		$a_p = .01 \times d_1$		$a_p = .05 \times d_1$			$a_p = .01 \times d_1$		$a_p = .05 \times d_1$
	$a_e = 0.2 \times d_1$					$a_e = 0.2 \times d_1$			
$\emptyset d_1$	CBN		CBN		$\emptyset d_1$ [mm]	CBN		CBN	
3/16	.0005		.0006		4	.0005		.0006	
1/4	.0008		.0009		6	.0008		.0009	
3/8	.0012		.0015		8	.0010		.0012	
1/2	.0015		.0018		10	.0012		.0015	
					12	.0015		.0018	

Please note that the value f_z from the above table must be multiplied with the corresponding correction factor.

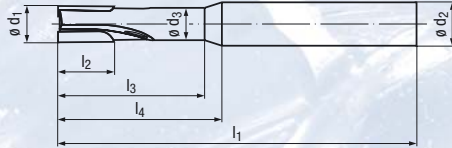
CBN / PCD

N IKZ

Right-hand oblique flutes



Extra long



PCD

$\lambda_s = 2.5^\circ$
 $\gamma_s = 0^\circ$



PCD



HSM

Coating

EDP tool identification

INCH

$\varnothing d_1$ $\pm .0008$	l_2	l_3	l_1	$\varnothing d_3$	l_4	$\varnothing d_2$ h6	# of teeth	EDP Size ID		
3/16	5/16	1 1/4	3	.1677	1 3/8	1/4	2	01875	●	
1/4	3/8	1 1/2	4	.2303	1 3/4	3/8	2	0250	●	
3/8	5/8	1 1/2	4	.3553	1 3/4	1/2	2	0375	●	
1/2	3/4	1 1/2	4	.4803	1 3/4	5/8	2	0500	●	

METRIC (Dimensions in mm)

$\varnothing d_1$ ± 0.02	l_2	l_3	l_1	$\varnothing d_3$	l_4	$\varnothing d_2$ h6	# of teeth	EDP Size ID		
4	8	35	75	3.8	40	6	2	004	●	
6	10	40	100	5.5	45	8	2	006	●	
8	15	40	100	7.5	45	10	2	008	●	
10	15	40	100	9.5	45	12	2	010	●	
12	20	40	100	11.5	50	16	2	012	●	

Cutting speed v_c [sfm]

Material group	Hardness range			Material example	Correction factor	PCD
	HRC	BHN	N/mm ²			
5 Aluminium alloys						
5.1 Aluminium wrought alloys				2014, 2117, 5050, 6061, 7004		
5.2 Aluminium cast alloys Si ≤ 5%				201, 213, 295, 435.2, 511.0		
5.3 Aluminium cast alloys 5% < Si ≤ 12%				319, 333, 356, 343, 369, 380	1.6	2620 - 3280
5.4 Aluminium cast alloys 12% < Si				390, 393, 413	1.5	2620 - 3280
8 Synthetics						
8.1 Duroplastics (short-chipping)				Bakelite		
8.2 Thermoplastics (long-chipping)				PVC		
8.3 Fibre-reinforced synthetics				Phenolic	1.0	1310 - 1640
9 Materials for special applications						
9.1 Graphite					1.0	2300 - 2630
9.2 Tungsten-copper alloys						

Chipload per tooth f_z [inch]

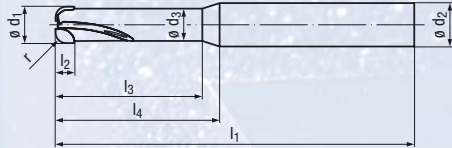
INCH		METRIC	
Finishing		Finishing	
<p>$a_p = 1.5 \times d_1$ $a_e = .01 \text{ in}$</p>		<p>$a_p = 1.5 \times d_1$ $a_e = .01 \text{ in}$</p>	
$\emptyset d_1$	PCD	$\emptyset d_1$ [mm]	PCD
3/16	.0011	4	.0011
1/4	.0016	6	.0016
3/8	.0026	8	.0021
1/2	.0032	10	.0026
		12	.0032

Please note that the value f_z from the above table must be multiplied with the corresponding correction factor.

N IKZ



Extra long



PCD

$\lambda_s = 0^\circ$
 $\gamma_s = 0^\circ$



PCD



HSM

Coating

EDP tool identification

INCH

$\varnothing d_1$	r	l_2	l_3	l_1	$\varnothing d_3$	l_4	$\varnothing d_2$	# of teeth	EDP Size ID
$\pm .0008$	$\pm .0004$						h6		
3/16	.0375	5/16	1 1/4	3	.1677	1 3/8	1/4	2	01875
1/4	.0500	3/8	1 1/2	4	.2303	1 3/4	3/8	2	0250
3/8	.0750	5/8	1 1/2	4	.3553	1 3/4	1/2	2	0375
1/2	.1000	3/4	1 1/2	4	.4803	1 3/4	5/8	2	0500

METRIC (Dimensions in mm)

$\varnothing d_1$	r	l_2	l_3	l_1	$\varnothing d_3$	l_4	$\varnothing d_2$	# of teeth	EDP Size ID
± 0.02	± 0.01						h5		
4	0.8	4	35	75	3.8	40	6	2	004
6	1.2	6	40	100	5.5	45	8	2	006
8	1.4	7	40	100	7.5	45	10	2	008
10	1.6	8	40	100	9.5	45	12	2	010
12	1.8	9	40	100	11.5	50	16	2	012

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Cutting speed v_c [sfm]

Material group	Hardness range			Material example	Correction factor	PCD
	HRC	BHN	N/mm ²			
5 Aluminium alloys						
5.1 Aluminium wrought alloys				2014, 2117, 5050, 6061, 7004		
5.2 Aluminium cast alloys Si ≤ 5%				201, 213, 295, 435.2, 511.0		
5.3 Aluminium cast alloys 5% < Si ≤ 12%				319, 333, 356, 343, 369, 380	1.6	2620 - 3280
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8 Synthetics						
8.1 Duroplastics (short-chipping)				Bakelite		
8.2 Thermoplastics (long-chipping)				PVC		
8.3 Fibre-reinforced synthetics				Phenolic	1.0	1310 - 1640
9 Materials for special applications						
9.1 Graphite					1.0	2300 - 2630
9.2 Tungsten-copper alloys						

Chipload per tooth f_z [inch]

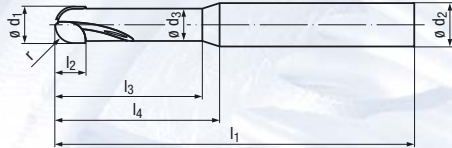
INCH	Torus (2D)		Torus (3D)		METRIC	Torus (2D)		Torus (3D)	
	a_e	$a_p = .01 \times d_1$	a_e	$a_p = .05 \times d_1$		a_e	$a_p = .01 \times d_1$	a_e	$a_p = .05 \times d_1$
$\emptyset d_1$	PCD		PCD		$\emptyset d_1$ [mm]	PCD		PCD	
3/16	.0010		.0011		4	.0010		.0011	
1/4	.0015		.0017		6	.0015		.0017	
3/8	.0025		.0028		8	.0020		.0022	
1/2	.0030		.0034		10	.0025		.0028	
					12	.0030		.0034	

Please note that the value f_z from the above table must be multiplied with the corresponding correction factor.

N IKZ



Extra long



PCD

$\lambda_s = 0^\circ$
 $\gamma_s = 0^\circ$



PCD



HSM

Coating

EDP tool identification

INCH

$\varnothing d_1$	r	l_2	l_3	l_1	$\varnothing d_3$	l_4	$\varnothing d_2$	# of teeth	EDP Size ID
$\pm .0008$	$\pm .0004$						h_6		
3/16	.0937	5/16	1 1/4	3	.1677	1 3/8	1/4	2	01875
1/4	.1250	3/8	1 1/2	4	.2303	1 3/4	3/8	2	0250
3/8	.1875	5/8	1 1/2	4	.3553	1 3/4	1/2	2	0375
1/2	.2500	3/4	1 1/2	4	.4803	1 3/4	5/8	2	0500

METRIC (Dimensions in mm)

$\varnothing d_1$	r	l_2	l_3	l_1	$\varnothing d_3$	l_4	$\varnothing d_2$	# of teeth	EDP Size ID
± 0.02	± 0.01						h_6		
4	2	4	35	75	3.8	40	6	2	004
6	3	6	40	100	5.5	45	8	2	006
8	4	7	40	100	7.5	45	10	2	008
10	5	8	40	100	9.5	45	12	2	010
12	6	9	40	100	11.5	50	16	2	012

Cutting speed v_c [sfm]

Material group	Hardness range			Material example	Correction factor	PCD
	HRC	BHN	N/mm ²			
5 Aluminium alloys						
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8.3 Fibre-reinforced synthetics				Phenolic	1.0	1310 - 1640
9 Materials for special applications						
9.1 Graphite					1.0	2300 - 2630
9.2 Tungsten-copper alloys						

Chipload per tooth f_z [inch]

INCH	Ball nose (2D)		Ball nose (3D)		METRIC	Ball nose (2D)		Ball nose (3D)	
	a_e	$a_p = .01 \times d_1$	a_e	$a_p = .05 \times d_1$		a_e	$a_p = .01 \times d_1$	a_e	$a_p = .05 \times d_1$
$\emptyset d_1$	PCD		PCD		$\emptyset d_1$ [mm]	PCD		PCD	
3/16	.0010		.0011		4	.0010		.0011	
1/4	.0015		.0017		6	.0015		.0017	
3/8	.0025		.0028		8	.0020		.0022	
1/2	.0030		.0034		10	.0025		.0028	
					12	.0030		.0034	

Please note that the value f_z from the above table must be multiplied with the corresponding correction factor.

CBN / PCD