



Ratio drills with internal coolant

Series

6499



Tool material

Solid Carbide

Coating

nano-FIREX®

Shank form

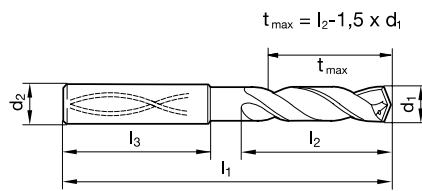
HA

Material		Suitability
<b>P</b>	Steel	●
<b>M</b>	Stainless steel	○
<b>K</b>	Cast iron	○
<b>N</b>	Aluminum	
<b>S</b>	Ni / Ti alloys	○
<b>H</b>	Hardened steel	○

●=Optimal ○=Limited

relieved cone • main cutting edge form concave  
• optimized cutting geometry • maximum performance

structural and case hardened steels • free-cutting steels, heat treatable steels • steels (alloyed/unalloyed) up to 1400 N/mm<sup>2</sup>



Diameter (d1)			d2 mm	l1 mm	t <sub>max</sub> mm	l2 mm	l3 mm	EDP #
inch	wire/ltr	mm						
0.1181		3.00	6.00	95.00	50.50	55.00	36.00	9064990030000
0.1220		3.10	6.00	95.00	50.35	55.00	36.00	9064990031000
0.1248	1/8	3.17	6.00	95.00	50.25	55.00	36.00	9064990031700
0.1260		3.20	6.00	95.00	50.20	55.00	36.00	9064990032000
0.1280		3.25	6.00	95.00	50.13	55.00	36.00	9064990032500
0.1299		3.30	6.00	95.00	50.05	55.00	36.00	9064990033000
0.1339		3.40	6.00	95.00	49.90	55.00	36.00	9064990034000
0.1378		3.50	6.00	102.00	56.75	62.00	36.00	9064990035000
0.1406	9/64	3.57	6.00	102.00	56.65	62.00	36.00	9064990035700
0.1417		3.60	6.00	102.00	56.60	62.00	36.00	9064990036000
0.1457		3.70	6.00	102.00	56.45	62.00	36.00	9064990037000
0.1496		3.80	6.00	102.00	56.30	62.00	36.00	9064990038000
0.1535		3.90	6.00	102.00	56.15	62.00	36.00	9064990039000
0.1563	5/32	3.97	6.00	102.00	56.05	62.00	36.00	9064990039700
0.1575		4.00	6.00	102.00	56.00	62.00	36.00	9064990040000
0.1591		4.04	6.00	109.00	62.94	69.00	36.00	9064990040400
0.1614		4.10	6.00	109.00	62.85	69.00	36.00	9064990041000
0.1654		4.20	6.00	109.00	62.70	69.00	36.00	9064990042000
0.1693		4.30	6.00	109.00	62.55	69.00	36.00	9064990043000
0.1720	11/64	4.37	6.00	109.00	62.45	69.00	36.00	9064990043700
0.1732		4.40	6.00	109.00	62.40	69.00	36.00	9064990044000
0.1772		4.50	6.00	116.00	69.25	76.00	36.00	9064990045000
0.1811		4.60	6.00	116.00	69.10	76.00	36.00	9064990046000
0.1831		4.65	6.00	116.00	69.03	76.00	36.00	9064990046500
0.1850		4.70	6.00	116.00	68.95	76.00	36.00	9064990047000
0.1874	3/16	4.76	6.00	116.00	68.86	76.00	36.00	9064990047600
0.1890		4.80	6.00	116.00	68.80	76.00	36.00	9064990048000
0.1929		4.90	6.00	116.00	68.65	76.00	36.00	9064990049000
0.1969		5.00	6.00	116.00	68.50	76.00	36.00	9064990050000
0.2008		5.10	6.00	123.00	75.35	83.00	36.00	9064990051000
0.2012		5.11	6.00	123.00	75.34	83.00	36.00	9064990051100
0.2031	13/64	5.16	6.00	123.00	75.26	83.00	36.00	9064990051600
0.2047		5.20	6.00	123.00	75.20	83.00	36.00	9064990052000
0.2087		5.30	6.00	123.00	75.05	83.00	36.00	9064990053000
0.2126		5.40	6.00	123.00	74.90	83.00	36.00	9064990054000
0.2130		5.41	6.00	123.00	74.89	83.00	36.00	9064990054100



Diameter (d1)			d2 mm	l1 mm	t <sub>max</sub> mm	l2 mm	l3 mm	EDP #	
inch	wire/ltr	mm							
0.2165		5.50	6.00	130.00	81.75	90.00	36.00	9064990055000	
0.2185		5.55	6.00	130.00	81.68	90.00	36.00	9064990055500	
0.2189	7/32	5.56	6.00	130.00	81.66	90.00	36.00	9064990055600	
0.2205		5.60	6.00	130.00	81.60	90.00	36.00	9064990056000	
0.2244		5.70	6.00	130.00	81.45	90.00	36.00	9064990057000	
0.2283		5.80	6.00	130.00	81.30	90.00	36.00	9064990058000	
0.2323		5.90	6.00	130.00	81.15	90.00	36.00	9064990059000	
0.2343	15/64	5.95	6.00	130.00	81.08	90.00	36.00	9064990059500	
0.2362		6.00	6.00	130.00	81.00	90.00	36.00	9064990060000	
0.2402		6.10	8.00	158.00	108.85	118.00	36.00	9064990061000	
0.2441		6.20	8.00	158.00	108.70	118.00	36.00	9064990062000	
0.2480		6.30	8.00	158.00	108.55	118.00	36.00	9064990063000	
0.2500	1/4	E	6.35	8.00	158.00	108.48	118.00	36.00	9064990063500
0.2520		6.40	8.00	158.00	108.40	118.00	36.00	9064990064000	
0.2559		6.50	8.00	158.00	108.25	118.00	36.00	9064990065000	
0.2571		6.53	8.00	158.00	108.21	118.00	36.00	9064990065300	
0.2579		6.55	8.00	158.00	108.18	118.00	36.00	9064990065500	
0.2598		6.60	8.00	158.00	108.10	118.00	36.00	9064990066000	
0.2638		6.70	8.00	158.00	107.95	118.00	36.00	9064990067000	
0.2657	17/64	6.75	8.00	158.00	107.88	118.00	36.00	9064990067500	
0.2677		6.80	8.00	158.00	107.80	118.00	36.00	9064990068000	
0.2717		6.90	8.00	158.00	107.65	118.00	36.00	9064990069000	
0.2756		7.00	8.00	158.00	107.50	118.00	36.00	9064990070000	
0.2795		7.10	8.00	158.00	107.35	118.00	36.00	9064990071000	
0.2811	9/32	7.14	8.00	158.00	107.29	118.00	36.00	9064990071400	
0.2835		7.20	8.00	158.00	107.20	118.00	36.00	9064990072000	
0.2874		7.30	8.00	158.00	107.05	118.00	36.00	9064990073000	
0.2913		7.40	8.00	158.00	106.90	118.00	36.00	9064990074000	
0.2953		7.50	8.00	158.00	106.75	118.00	36.00	9064990075000	
0.2969	19/64	7.54	8.00	158.00	106.69	118.00	36.00	9064990075400	
0.2972		7.55	8.00	158.00	106.68	118.00	36.00	9064990075500	
0.2992		7.60	8.00	158.00	106.60	118.00	36.00	9064990076000	
0.3012		7.65	8.00	158.00	106.53	118.00	36.00	9064990076500	
0.3031		7.70	8.00	158.00	106.45	118.00	36.00	9064990077000	
0.3071		7.80	8.00	158.00	106.30	118.00	36.00	9064990078000	
0.3110		7.90	8.00	158.00	106.15	118.00	36.00	9064990079000	
0.3126	5/16	7.94	8.00	158.00	106.09	118.00	36.00	9064990079400	
0.3150		8.00	8.00	158.00	106.00	118.00	36.00	9064990080000	
0.3189		8.10	10.00	190.00	133.85	146.00	40.00	9064990081000	
0.3228		8.20	10.00	190.00	133.70	146.00	40.00	9064990082000	
0.3268		8.30	10.00	190.00	133.55	146.00	40.00	9064990083000	
0.3280	21/64	8.33	10.00	190.00	133.51	146.00	40.00	9064990083300	
0.3307		8.40	10.00	190.00	133.40	146.00	40.00	9064990084000	
0.3346		8.50	10.00	190.00	133.25	146.00	40.00	9064990085000	
0.3386		8.60	10.00	190.00	133.10	146.00	40.00	9064990086000	
0.3425		8.70	10.00	190.00	132.95	146.00	40.00	9064990087000	
0.3437	11/32	8.73	10.00	190.00	132.91	146.00	40.00	9064990087300	
0.3465		8.80	10.00	190.00	132.80	146.00	40.00	9064990088000	
0.3504		8.90	10.00	190.00	132.65	146.00	40.00	9064990089000	
0.3543		9.00	10.00	190.00	132.50	146.00	40.00	9064990090000	
0.3583		9.10	10.00	190.00	132.35	146.00	40.00	9064990091000	
0.3594	23/64	9.13	10.00	190.00	132.31	146.00	40.00	9064990091300	
0.3622		9.20	10.00	190.00	132.20	146.00	40.00	9064990092000	
0.3642		9.25	10.00	190.00	132.13	146.00	40.00	9064990092500	
0.3661		9.30	10.00	190.00	132.05	146.00	40.00	9064990093000	
0.3677		9.34	10.00	190.00	131.99	146.00	40.00	9064990093400	
0.3701		9.40	10.00	190.00	131.90	146.00	40.00	9064990094000	
0.3740		9.50	10.00	190.00	131.75	146.00	40.00	9064990095000	
0.3748	3/8	9.52	10.00	190.00	131.72	146.00	40.00	9064990095200	



Diameter (d1)			d2 mm	l1 mm	t <sub>max</sub> mm	l2 mm	l3 mm	EDP #
inch	wire/ltr	mm						
0.3760		9.55	10.00	190.00	131.68	146.00	40.00	9064990095500
0.3780		9.60	10.00	190.00	131.60	146.00	40.00	9064990096000
0.3819		9.70	10.00	190.00	131.45	146.00	40.00	9064990097000
0.3858		9.80	10.00	190.00	131.30	146.00	40.00	9064990098000
0.3898		9.90	10.00	190.00	131.15	146.00	40.00	9064990099000
0.3906	25/64	9.92	10.00	190.00	131.12	146.00	40.00	9064990099200
0.3937		10.00	10.00	190.00	131.00	146.00	40.00	9064990100000
0.3976		10.10	12.00	223.00	158.85	174.00	45.00	9064990101000
0.4016		10.20	12.00	223.00	158.70	174.00	45.00	9064990102000
0.4055		10.30	12.00	223.00	158.55	174.00	45.00	9064990103000
0.4063	13/32	10.32	12.00	223.00	158.52	174.00	45.00	9064990103200
0.4094		10.40	12.00	223.00	158.40	174.00	45.00	9064990104000
0.4134		10.50	12.00	223.00	158.25	174.00	45.00	9064990105000
0.4173		10.60	12.00	223.00	158.10	174.00	45.00	9064990106000
0.4213		10.70	12.00	223.00	157.95	174.00	45.00	9064990107000
0.4220	27/64	10.72	12.00	223.00	157.92	174.00	45.00	9064990107200
0.4252		10.80	12.00	223.00	157.80	174.00	45.00	9064990108000
0.4291		10.90	12.00	223.00	157.65	174.00	45.00	9064990109000
0.4331		11.00	12.00	223.00	157.50	174.00	45.00	9064990110000
0.4370		11.10	12.00	223.00	157.35	174.00	45.00	9064990111000
0.4374	7/16	11.11	12.00	223.00	157.34	174.00	45.00	9064990111100
0.4409		11.20	12.00	223.00	157.20	174.00	45.00	9064990112000
0.4449		11.30	12.00	223.00	157.05	174.00	45.00	9064990113000
0.4488		11.40	12.00	223.00	156.90	174.00	45.00	9064990114000
0.4528		11.50	12.00	223.00	156.75	174.00	45.00	9064990115000
0.4531	29/64	11.51	12.00	223.00	156.74	174.00	45.00	9064990115100
0.4547		11.55	12.00	223.00	156.68	174.00	45.00	9064990115500
0.4567		11.60	12.00	223.00	156.60	174.00	45.00	9064990116000
0.4606		11.70	12.00	223.00	156.45	174.00	45.00	9064990117000
0.4646		11.80	12.00	223.00	156.30	174.00	45.00	9064990118000
0.4685		11.90	12.00	223.00	156.15	174.00	45.00	9064990119000
0.4689	15/32	11.91	12.00	223.00	156.14	174.00	45.00	9064990119100
0.4724		12.00	12.00	223.00	156.00	174.00	45.00	9064990120000
0.4764		12.10	14.00	251.00	183.85	202.00	45.00	9064990121000
0.4803		12.20	14.00	251.00	183.70	202.00	45.00	9064990122000
0.4843	31/64	12.30	14.00	251.00	183.55	202.00	45.00	9064990123000
0.4882		12.40	14.00	251.00	183.40	202.00	45.00	9064990124000
0.4921		12.50	14.00	251.00	183.25	202.00	45.00	9064990125000
0.4961		12.60	14.00	251.00	183.10	202.00	45.00	9064990126000
0.5000	1/2	12.70	14.00	251.00	182.95	202.00	45.00	9064990127000
0.5039		12.80	14.00	251.00	182.80	202.00	45.00	9064990128000
0.5079		12.90	14.00	251.00	182.65	202.00	45.00	9064990129000
0.5118		13.00	14.00	251.00	182.50	202.00	45.00	9064990130000
0.5157	33/64	13.10	14.00	251.00	182.35	202.00	45.00	9064990131000
0.5197		13.20	14.00	251.00	182.20	202.00	45.00	9064990132000
0.5236		13.30	14.00	251.00	182.05	202.00	45.00	9064990133000
0.5276		13.40	14.00	251.00	181.90	202.00	45.00	9064990134000
0.5311	17/32	13.49	14.00	251.00	181.77	202.00	45.00	9064990134900
0.5315		13.50	14.00	251.00	181.75	202.00	45.00	9064990135000
0.5354		13.60	14.00	251.00	181.60	202.00	45.00	9064990136000
0.5394		13.70	14.00	251.00	181.45	202.00	45.00	9064990137000
0.5433		13.80	14.00	251.00	181.30	202.00	45.00	9064990138000
0.5469	35/64	13.89	14.00	251.00	181.17	202.00	45.00	9064990138900
0.5472		13.90	14.00	251.00	181.15	202.00	45.00	9064990139000
0.5512		14.00	14.00	251.00	181.00	202.00	45.00	9064990140000
0.5551		14.10	16.00	282.00	208.85	230.00	48.00	9064990141000
0.5591		14.20	16.00	282.00	208.70	230.00	48.00	9064990142000
0.5626	9/16	14.29	16.00	282.00	208.57	230.00	48.00	9064990142900
0.5630		14.30	16.00	282.00	208.55	230.00	48.00	9064990143000



Diameter (d1)			d2 mm	l1 mm	t <sub>max</sub> mm	l2 mm	l3 mm	EDP #
inch	wire/ltr	mm						
0.5669		14.40	16.00	282.00	208.40	230.00	48.00	9064990144000
0.5709		14.50	16.00	282.00	208.25	230.00	48.00	9064990145000
0.5748		14.60	16.00	282.00	208.10	230.00	48.00	9064990146000
0.5780		14.68	16.00	282.00	207.98	230.00	48.00	9064990146800
0.5787		14.70	16.00	282.00	207.95	230.00	48.00	9064990147000
0.5827		14.80	16.00	282.00	207.80	230.00	48.00	9064990148000
0.5866		14.90	16.00	282.00	207.65	230.00	48.00	9064990149000
0.5906		15.00	16.00	282.00	207.50	230.00	48.00	9064990150000
0.5937		15.08	16.00	282.00	207.38	230.00	48.00	9064990150800
0.5945		15.10	16.00	282.00	207.35	230.00	48.00	9064990151000
0.5984		15.20	16.00	282.00	207.20	230.00	48.00	9064990152000
0.6024		15.30	16.00	282.00	207.05	230.00	48.00	9064990153000
0.6063		15.40	16.00	282.00	206.90	230.00	48.00	9064990154000
0.6094	39/64	15.48	16.00	282.00	206.78	230.00	48.00	9064990154800
0.6102		15.50	16.00	282.00	206.75	230.00	48.00	9064990155000
0.6122		15.55	16.00	282.00	206.68	230.00	48.00	9064990155500
0.6142		15.60	16.00	282.00	206.60	230.00	48.00	9064990156000
0.6181	5/8	15.70	16.00	282.00	206.45	230.00	48.00	9064990157000
0.6220		15.80	16.00	282.00	206.30	230.00	48.00	9064990158000
0.6248		15.87	16.00	282.00	206.20	230.00	48.00	9064990158700
0.6260		15.90	16.00	282.00	206.15	230.00	48.00	9064990159000
0.6299		16.00	16.00	282.00	206.00	230.00	48.00	9064990160000
0.6406		16.27	18.00	310.00	233.60	258.00	48.00	9064990162700
0.6417		16.30	18.00	310.00	233.55	258.00	48.00	9064990163000
0.6496		16.50	18.00	310.00	233.25	258.00	48.00	9064990165000
0.6563		16.67	18.00	310.00	233.00	258.00	48.00	9064990166700
0.6575		16.70	18.00	310.00	232.95	258.00	48.00	9064990167000
0.6654		16.90	18.00	310.00	232.65	258.00	48.00	9064990169000
0.6693		17.00	18.00	310.00	232.50	258.00	48.00	9064990170000
0.6720		17.07	18.00	310.00	232.40	258.00	48.00	9064990170700
0.6874		17.46	18.00	310.00	231.81	258.00	48.00	9064990174600
0.6890		17.50	18.00	310.00	231.75	258.00	48.00	9064990175000
0.6909		17.55	18.00	310.00	231.68	258.00	48.00	9064990175500
0.6969		17.70	18.00	310.00	231.45	258.00	48.00	9064990177000
0.7031		17.86	18.00	310.00	231.21	258.00	48.00	9064990178600
0.7087		18.00	18.00	310.00	231.00	258.00	48.00	9064990180000
0.7189		18.26	20.00	340.00	258.61	286.00	50.00	9064990182600
0.7283		18.50	20.00	340.00	258.25	286.00	50.00	9064990185000
0.7362		18.70	20.00	340.00	257.95	286.00	50.00	9064990187000
0.7441		18.90	20.00	340.00	257.65	286.00	50.00	9064990189000
0.7480		19.00	20.00	340.00	257.50	286.00	50.00	9064990190000
0.7500	3/4	19.05	20.00	340.00	257.43	286.00	50.00	9064990190500
0.7579		19.25	20.00	340.00	257.13	286.00	50.00	9064990192500
0.7598		19.30	20.00	340.00	257.05	286.00	50.00	9064990193000
0.7657		19.45	20.00	340.00	256.83	286.00	50.00	9064990194500
0.7677		19.50	20.00	340.00	256.75	286.00	50.00	9064990195000
0.7697		19.55	20.00	340.00	256.68	286.00	50.00	9064990195500
0.7756		19.70	20.00	340.00	256.45	286.00	50.00	9064990197000
0.7795		19.80	20.00	340.00	256.30	286.00	50.00	9064990198000
0.7811		19.84	20.00	340.00	256.24	286.00	50.00	9064990198400
0.7874		20.00	20.00	340.00	256.00	286.00	50.00	9064990200000

## Series 6499

Material group	Hardness		SFM	Feed Rate - IPR					
	HRC	BHN		1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm
Common structural steels	-	≤ 150	590	0.0065	0.0100	0.0155	0.0155	0.0195	0.0250
	< 32	< 301	590	0.0050	0.0080	0.0125	0.0125	0.0155	0.0195
Free-cutting steels	≤ 25	≤ 255	590	0.0065	0.0100	0.0155	0.0155	0.0195	0.0250
	< 32	< 301	590	0.0065	0.0100	0.0155	0.0155	0.0195	0.0250
Unalloyed heat-treatable steels	≤ 20	≤ 220	525	0.0065	0.0100	0.0155	0.0155	0.0195	0.0250
	≤ 25	≤ 255	460	0.0065	0.0100	0.0155	0.0155	0.0195	0.0250
	< 32	< 301	395	0.0065	0.0100	0.0155	0.0155	0.0195	0.0250
Alloyed heat-treatable steels	≤ 32	≤ 301	360	0.0065	0.0100	0.0155	0.0155	0.0195	0.0250
	< 43	< 402	360	0.0050	0.0080	0.0125	0.0125	0.0155	0.0195
Unalloyed case hardened steels	< 25	< 255	525	0.0065	0.0100	0.0155	0.0155	0.0195	0.0250
Alloyed case hardened steels	≤ 32	≤ 301	360	0.0065	0.0100	0.0155	0.0155	0.0195	0.0250
	< 43	< 402	330	0.0050	0.0080	0.0125	0.0125	0.0155	0.0195
Nitriding steels	≤ 32	≤ 301	330	0.0050	0.0080	0.0125	0.0125	0.0155	0.0195
	< 43	< 402	295	0.0030	0.0050	0.0080	0.0080	0.0100	0.0125
Tool steels	≤ 25	≤ 255	260	0.0050	0.0080	0.0125	0.0125	0.0155	0.0195
	< 43	< 402	195	0.0040	0.0065	0.0100	0.0100	0.0125	0.0155
High speed steels	< 43	< 402	180	0.0030	0.0050	0.0080	0.0080	0.0100	0.0125
Spring steels	< 38	< 354	180	0.0030	0.0050	0.0080	0.0080	0.0100	0.0125
Hardened steels	≤ 48	≤ 460	150	0.0020	0.0030	0.0050	0.0050	0.0065	0.0080
	< 66	-							
Stainless steels, sulphured austenitic martensitic	≤ 28	≤ 273	230	0.0030	0.0050	0.0080	0.0080	0.0100	0.0125
	≤ 36	≤ 337							
	< 46	< 435	165	0.0030	0.0050	0.0080	0.0080	0.0100	0.0125
Cast iron	≤ 23	≤ 242	540	0.0065	0.0125	0.0155	0.0195	0.0250	0.0250
	< 38	< 354	475	0.0065	0.0125	0.0155	0.0195	0.0250	0.0250
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	425	0.0065	0.0125	0.0155	0.0195	0.0250	0.0250
	< 38	< 354	425	0.0065	0.0100	0.0155	0.0155	0.0195	0.0250
Chilled cast iron	≤ 38	≤ 354							
New cast materials GGV	≤ 20	≤ 220	425	0.0065	0.0100	0.0155	0.0155	0.0195	0.0250
	< 32	< 301	425	0.0065	0.0100	0.0155	0.0155	0.0195	0.0250
New cast materials ADI	≤ 32	≤ 301	230	0.0050	0.0080	0.0125	0.0125	0.0155	0.0195
	< 43	< 402	230	0.0050	0.0080	0.0125	0.0125	0.0155	0.0195
Special alloys	< 54	< 549	80	0.0025	0.0040	0.0065	0.0065	0.0080	0.0100
Ti and Ti-alloys	≤ 25	≤ 255	115	0.0025	0.0040	0.0065	0.0065	0.0080	0.0100
	< 43	< 402	100	0.0020	0.0030	0.0050	0.0050	0.0065	0.0080
Aluminium and Al-alloys	-	< 120							
Al wrought alloys	-	< 200							
Al cast alloys ≤ 10 % Si ≤ 24 % Si	-	≤ 180							
	-	< 180							
Magnesium alloys	-	< 120							
Copper, low-alloyed	-	< 150							
Brass, short-chipping long-chipping	-	≤ 180							
	-	< 180							
Bronze, short-chipping	-	≤ 180							
	< 25	< 255							
Bronze, long-chipping	≤ 25	≤ 255							
	< 32	< 301							
Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK									