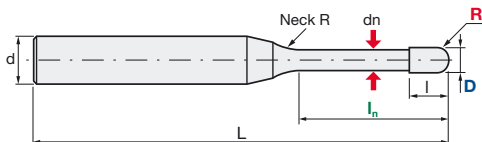


# Ultra Micro Grain Solid Carbide End Mill

## EPDBE-ATH | Epoch Deep Ball Evolution ATH

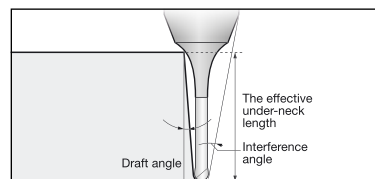
<b>V max</b> High Speed		<b>HRC</b> 70	<b>No. of Teeth</b> 2	
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A (D0.1–D5.0)



<b>Carbide</b> Micro Grain	<b>TH60+</b> Nano-PVD Coating	<b>Rake Angle</b> Negative
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Helix angle	30°
R 0.05 – 0.25	± 0.003mm
R 0.3 – 3.0	± 0.005mm
D 0.1 – 0.5	(0/-0.006 mm)
D 0.6 – 6.0	(0/-0.010 mm)
d	h5



Size									
ID Code	Item Code	Z	D	In	l	dn	L	d	Neck R
EP911	EPDBE-2001-0.2-ATH	2	0.1	0.2	0.08	0.08	45	4	1
EP912	EPDBE-2001-0.3-ATH			0.3					
EP913	EPDBE-2001-0.5-ATH			0.5					
EP914	EPDBE-2002-0.5-ATH			0.5					
EP915	EPDBE-2002-0.75-ATH			0.75					
EP916	EPDBE-2002-1-ATH			1					
EP917	EPDBE-2002-1.25-ATH		0.2	0.2	1.25	0.15	0.17		
EP918	EPDBE-2002-1.5-ATH				1.5				
EP919	EPDBE-2002-2-ATH				2				
EP920	EPDBE-2002-2.5-ATH				2.5				
EP921	EPDBE-2002-3-ATH				3				
EP922	EPDBE-2003-0.5-ATH				2				
EP923	EPDBE-2003-0.75-ATH		0.75						
EP924	EPDBE-2003-1-ATH		1						
EP925	EPDBE-2003-1.25-ATH		1.25						
EP926	EPDBE-2003-1.5-ATH		1.5						
EP927	EPDBE-2003-2-ATH		2						
EP928	EPDBE-2003-2.5-ATH		0.4	0.4		2.5	0.3		
EP929	EPDBE-2003-3-ATH	3							
EP930	EPDBE-2004-0.75-ATH	0.75							
EP931	EPDBE-2004-1-ATH	1							
EP932	EPDBE-2004-1.5-ATH	0.5	0.5	1.5	0.35	0.47			
EP933	EPDBE-2004-2-ATH			2					
EP934	EPDBE-2004-2.5-ATH			2.5					
EP935	EPDBE-2004-3-ATH			3					
EP936	EPDBE-2004-3.5-ATH			3.5					
EP937	EPDBE-2004-4-ATH			4					
EP938	EPDBE-2004-4.5-ATH			4.5					
EP939	EPDBE-2005-1-ATH	2	0.6	1	0.4	0.57			
EP940	EPDBE-2005-1.5-ATH			1.5					
EP941	EPDBE-2005-2-ATH			2					
EP942	EPDBE-2005-2.5-ATH			2.5					
EP943	EPDBE-2005-3-ATH			3					
EP944	EPDBE-2005-4-ATH			4					
EP945	EPDBE-2005-5-ATH		5						
EP946	EPDBE-2005-5.5-ATH		5.5						
EP947	EPDBE-2005-6-ATH		6						
EP948	EPDBE-2005-8-ATH		8						
EP949	EPDBE-2006-1-ATH	2	0.6	1	0.4	0.57			
EP950	EPDBE-2006-2-ATH			2					
EP951	EPDBE-2006-2.5-ATH			2.5					
EP952	EPDBE-2006-3-ATH			3					
EP953	EPDBE-2006-3.5-ATH			3.5					

Actual Effective Length in Incline angles					
	0.5°	1°	1.5°	2°	3°
0.1	0.35	0.37	0.39	0.41	0.44
0.2	0.46	0.48	0.5	0.52	0.57
0.3	0.67	0.7	0.73	0.76	0.81
0.4	0.7	0.72	0.75	0.77	0.82
0.5	0.96	0.99	1.02	1.05	1.11
0.6	1.22	1.26	1.3	1.33	1.39
0.75	1.48	1.52	1.57	1.61	1.72
1	1.74	1.79	1.84	1.88	2.05
1.25	2.25	2.32	2.37	2.45	2.71
1.5	2.77	2.84	2.91	3.05	3.37
2	3.28	3.37	3.48	3.65	4.04
2.5	0.78	0.82	0.86	0.9	0.98
3	1.05	1.1	1.15	1.2	1.29
3.5	1.31	1.38	1.43	1.49	1.59
4	1.58	1.65	1.72	1.78	1.89
4.5	1.84	1.92	1.99	2.06	2.18
5	2.36	2.46	2.55	2.62	2.76
5.5	2.89	3	3.1	3.18	3.36
6	3.41	3.53	3.64	3.73	4.02
6.5	1.04	1.09	1.14	1.19	1.28
7	1.31	1.37	1.43	1.48	1.58
7.5	1.84	1.92	1.99	2.06	2.17
8	2.36	2.46	2.54	2.62	2.75
8.5	2.89	3	3.09	3.18	3.34
9	3.41	3.53	3.63	3.73	4.01
9.5	3.93	4.06	4.18	4.27	4.67
10	4.45	4.59	4.71	4.83	5.33
10.5	4.97	5.12	5.25	5.43	6
11	1.31	1.37	1.42	1.47	1.57
11.5	1.83	1.91	1.98	2.05	2.17
12	2.36	2.45	2.54	2.61	2.75
12.5	2.88	2.99	3.09	3.17	3.33
13	3.41	3.53	3.63	3.72	3.99
13.5	4.45	4.59	4.71	4.82	5.32
14	5.48	5.65	5.78	6.01	6.65
14.5	6	6.17	6.31	6.61	7.31
15	6.52	6.7	6.88	7.21	7.97
15.5	8.58	8.79	9.16	9.6	10.63
16	1.44	1.54	1.63	1.71	1.88
16.5	2.52	2.66	2.79	2.91	3.13
17	3.05	3.22	3.36	3.49	3.73
17.5	3.58	3.77	3.93	4.07	4.32
18	4.12	4.32	4.49	4.64	4.91

# Ultra Micro Grain Solid Carbide End Mill

## EPDBE-ATH | Epoch Deep Ball Evolution ATH

ID Code	Item Code	Z	Size							Actual Effective Length in Incline angles										
			D	In	l	dn	L	d	Neck R	0.5°	1°	1.5°	2°	3°						
EP954	EPDBE-2006-4-ATH	2	0.6	4	0.4	0.57	50	4	4	4.64	4.86	5.04	5.2	5.48						
EP955	EPDBE-2006-4.5-ATH			4.5						5.17	5.4	5.59	5.76	6.06						
EP956	EPDBE-2006-5-ATH			5						5.7	5.94	6.14	6.32	6.63						
EP957	EPDBE-2006-5.5-ATH			5.5						6.22	6.48	6.69	6.87	7.29						
EP958	EPDBE-2006-6-ATH			6						6.75	7.02	7.23	7.42	7.96						
EP959	EPDBE-2006-7-ATH			7						7.79	8.08	8.32	8.52	9.28						
EP960	EPDBE-2006-8-ATH			8						8.84	9.15	9.4	9.61	10.61						
EP961	EPDBE-2006-9-ATH			9						9.88	10.21	10.47	10.79	11.94						
EP962	EPDBE-2006-10-ATH			10						10.92	11.26	11.54	11.99	13.27						
EP963	EPDBE-2006-12-ATH			12						12.99	13.37	13.72	14.38	15.92						
EP964	EPDBE-2007-2-ATH			0.7						2	0.45	0.67	50	4	4	2.52	2.66	2.79	2.9	3.12
EP965	EPDBE-2007-4-ATH									4						4.64	4.86	5.04	5.2	5.48
EP966	EPDBE-2007-6-ATH		6		6.74	7.01	7.23	7.42	7.94											
EP967	EPDBE-2007-8-ATH		8		8.83	9.14	9.39	9.61	10.6											
EP968	EPDBE-2008-2-ATH		0.8	2	0.5	0.77	50	4	4	2.51	2.65	2.78	2.89	3.11						
EP969	EPDBE-2008-4-ATH			4						4.64	4.85	5.03	5.19	5.47						
EP970	EPDBE-2008-5-ATH			5						5.69	5.93	6.13	6.31	6.61						
EP971	EPDBE-2008-6-ATH			6						6.74	7.01	7.23	7.41	7.92						
EP972	EPDBE-2008-8-ATH			8						8.83	9.14	9.39	9.6	10.58						
EP973	EPDBE-2008-10-ATH			10						10.91	11.26	11.53	11.97	13.23						
EP974	EPDBE-2009-2-ATH			2						2.51	2.65	2.77	2.89	3.1						
EP975	EPDBE-2009-4-ATH			4						4.64	4.85	5.03	5.18	5.46						
EP976	EPDBE-2009-6-ATH		6	6.74	7	7.22	7.41	7.91												
EP977	EPDBE-2009-8-ATH		8	8.83	9.14	9.38	9.6	10.56												
EP978	EPDBE-2010-2-ATH		1	2	0.8	0.96	50	4	4	2.54	2.67	2.79	2.9	3.11						
EP979	EPDBE-2010-3-ATH			3						3.61	3.78	3.93	4.06	4.3						
EP980	EPDBE-2010-4-ATH			4						4.66	4.87	5.04	5.2	5.47						
EP981	EPDBE-2010-5-ATH			5						5.72	5.95	6.14	6.31	6.61						
EP982	EPDBE-2010-6-ATH			6						6.76	7.02	7.23	7.42	7.92						
EP983	EPDBE-2010-7-ATH			7						7.81	8.09	8.32	8.52	9.25						
EP984	EPDBE-2010-8-ATH			8						8.85	9.15	9.4	9.61	10.58						
EP985	EPDBE-2010-9-ATH			9						9.89	10.21	10.47	10.78	11.91						
EP986	EPDBE-2010-10-ATH			10						10.93	11.27	11.54	11.98	13.23						
EP987	EPDBE-2010-12-ATH			12						13	13.37	13.72	14.37	15.89						
EP988	EPDBE-2010-13-ATH		13	14.04	14.42	14.86	15.57	17.21												
EP989	EPDBE-2010-14-ATH		14	15.07	15.47	16	16.76	18.54												
EP990	EPDBE-2010-16-ATH		16	17.13	17.56	18.28	19.16	21.2												
EP991	EPDBE-2010-18-ATH		18	19.19	19.66	20.56	21.55	23.85												
EP992	EPDBE-2010-20-ATH		20	21.25	21.84	22.84	23.94	26.51												
EP993	EPDBE-2011-2-ATH		1.1	2	1	1.05	50	4	4	2.58	2.7	2.81	2.92	3.12						
EP994	EPDBE-2011-4-ATH			4						4.69	4.89	5.06	5.21	5.48						
EP995	EPDBE-2011-6-ATH			6						6.79	7.04	7.25	7.43	7.94						
EP996	EPDBE-2011-8-ATH			8						8.87	9.17	9.41	9.61	10.59						
EP997	EPDBE-2011-10-ATH		1.2	10	1.1	1.15	50	4	4	10.95	11.28	11.55	12	13.25						
EP998	EPDBE-2012-4-ATH			4						4.69	4.88	5.05	5.2	5.47						
EP999	EPDBE-2012-8-ATH		1.4	8	1.3	1.34	50	4	4	8.87	9.16	9.4	9.61	10.58						
EP1000	EPDBE-2012-10-ATH			10						10.95	11.28	11.54	11.99	13.23						
EP1001	EPDBE-2012-12-ATH			12						13.02	13.38	13.73	14.38	15.89						
EP1002	EPDBE-2014-8-ATH			8						8.89	9.18	9.41	9.61	10.58						
EP1003	EPDBE-2014-12-ATH		1.5	12	1.35	1.44	50	4	4	13.04	13.39	13.74	14.39	15.89						
EP1004	EPDBE-2014-16-ATH			16						17.16	17.57	18.31	19.17	21.2						
EP1005	EPDBE-2015-4-ATH		1.6	4	1.4	1.54	50	4	4	4.71	4.89	5.06	5.2	5.46						
EP1006	EPDBE-2015-6-ATH			6						6.81	7.04	7.25	7.42	7.91						
EP1007	EPDBE-2015-8-ATH			8						8.89	9.17	9.41	9.61	10.56						
EP1008	EPDBE-2015-10-ATH			10						10.96	11.29	11.55	11.98	13.22						
EP1009	EPDBE-2015-12-ATH			12						13.03	13.39	13.74	14.38	15.87						
EP1010	EPDBE-2015-14-ATH			14						15.1	15.48	16.02	16.77	18.52						
EP1011	EPDBE-2015-16-ATH			16						17.16	17.57	18.3	19.16	21.18						
EP1012	EPDBE-2015-18-ATH			18						19.22	19.69	20.58	21.56	23.83						
EP1013	EPDBE-2015-20-ATH		20	21.27	21.87	22.86	23.95	x												
EP1014	EPDBE-2016-8-ATH		1.6	8	1.4	1.54	50	4	4	8.89	9.17	9.4	9.6	10.55						
EP1015	EPDBE-2016-12-ATH			12						13.03	13.39	13.73	14.37	15.85						
EP1016	EPDBE-2016-16-ATH			16						17.16	17.57	18.29	19.15	21.16						
EP1017	EPDBE-2016-20-ATH			20						21.27	21.87	22.86	23.94	x						



### Ultra Micro Grain Solid Carbide End Mill

### EPDBE-ATH | Epoch Deep Ball Evolution ATH

ID Code	Item Code	Z	Size							Actual Effective Length in Incline angles							
			D	In	l	dn	L	d	Neck R	0.5°	1°	1.5°	2°	3°			
EP1018	EPDBE-2018-8-ATH	2	1.8	8	1.6	1.73	50	-	-	8.91	9.18	9.41	9.61	10.54			
EP1019	EPDBE-2018-12-ATH			12						13.05	13.4	13.74	14.38	15.85			
EP1020	EPDBE-2018-16-ATH			16						17.17	17.58	18.31	19.16	21.16			
EP1021	EPDBE-2018-20-ATH		2	2	1.7	1.92	50	-	-	21.28	21.88	22.87	23.95	x			
EP1022	EPDBE-2020-3-ATH									3	3.71	3.84	3.96	4.07	4.29		
EP1023	EPDBE-2020-4-ATH									4	4.75	4.92	5.07	5.21	5.45		
EP1024	EPDBE-2020-6-ATH						6	6.84	7.07	7.26	7.43	7.89					
EP1025	EPDBE-2020-8-ATH						8	8.92	9.19	9.42	9.61	10.54					
EP1026	EPDBE-2020-10-ATH						10	11	11.3	11.56	11.99	13.2					
EP1027	EPDBE-2020-12-ATH						12	13.06	13.41	13.76	14.39	15.85					
EP1028	EPDBE-2020-13-ATH						13	14.1	14.45	14.9	15.58	17.18					
EP1029	EPDBE-2020-14-ATH						14	15.13	15.5	16.04	16.78	18.51					
EP1030	EPDBE-2020-16-ATH						16	17.19	17.59	18.32	19.17	x					
EP1031	EPDBE-2020-18-ATH						18	19.24	19.72	20.6	21.57	x					
EP1032	EPDBE-2020-20-ATH						20	21.3	21.9	22.88	23.96	x					
EP1033	EPDBE-2020-22-ATH						22	23.35	24.08	25.16	26.35	x					
EP1034	EPDBE-2020-25-ATH						25	26.42	27.35	28.58	x	x					
EP1035	EPDBE-2020-30-ATH						30	31.53	32.8	34.29	x	x					
EP1036	EPDBE-2020-35-ATH						35	36.65	38.24	x	x	x					
EP1037	EPDBE-2020-40-ATH						40	41.86	43.69	x	x	x					
EP1038	EPDBE-2025-6-ATH		2.5	2.5	2	2.4	50	-	-	6.88	7.09	7.27	7.43	7.87			
EP1039	EPDBE-2025-10-ATH						10			11.03	11.32	11.56	12	13.18			
EP1040	EPDBE-2025-15-ATH						15			16.18	16.56	17.2	17.98	x			
EP1041	EPDBE-2025-20-ATH						20			21.32	21.93	22.9	x	x			
EP1042	EPDBE-2025-25-ATH						25			26.44	27.38	28.6	x	x			
EP1043	EPDBE-2025-30-ATH						30			31.55	32.82	x	x	x			
EP1044	EPDBE-2030-8-ATH						3			3	2.5	2.88	55	-	-	8.99	9.23
EP1045	EPDBE-2030-10-ATH		10	11.06	11.34	11.57		12.01	13.16								
EP1046	EPDBE-2030-13-ATH		13	14.15	14.48	14.94		15.6	17.15								
EP1047	EPDBE-2030-16-ATH		16	17.24	17.61	18.36		19.19	21.13								
EP1048	EPDBE-2030-20-ATH		20	21.34	21.96	22.92		23.97	26.44								
EP1049	EPDBE-2030-25-ATH		25	26.46	27.41	28.62		29.96	x								
EP1050	EPDBE-2030-30-ATH		30	31.57	32.85	34.32		35.94	x								
EP1051	EPDBE-2030-35-ATH		35	36.72	38.3	40.03		41.92	x								
EP1052	EPDBE-2035-15-ATH		3.5	2.75	3.35	60		16.25	16.6				17.26			18.03	19.81
EP1053	EPDBE-2035-25-ATH					25		26.49	27.46				28.67			29.99	x
EP1054	EPDBE-2035-35-ATH					35	36.79	38.36	40.07	x	x						
EP1055	EPDBE-2035-45-ATH	45	47.22	49.25	x	x	x										
EP1056	EPDBE-2040-10-ATH	4	4	3	3.85	55	-	-	11.1	11.36	11.58	12	13.1				
EP1057	EPDBE-2040-13-ATH					13			14.19	14.5	14.95	15.59	17.08				
EP1058	EPDBE-2040-16-ATH					16			17.27	17.63	18.37	19.18	x				
EP1059	EPDBE-2040-20-ATH					20			21.37	21.99	22.93	23.96	x				
EP1060	EPDBE-2040-25-ATH					25			26.49	27.44	28.63	29.95	x				
EP1061	EPDBE-2040-30-ATH					30			31.59	32.89	34.34	x	x				
EP1062	EPDBE-2040-35-ATH					35			36.78	38.33	40.04	x	x				
EP1063	EPDBE-2040-40-ATH					40			41.99	43.78	x	x	x				
EP1064	EPDBE-2040-45-ATH					45			47.2	49.23	x	x	x				
EP1065	EPDBE-2040-50-ATH					50			52.42	54.68	x	x	x				
EP1066	EPDBE-2050-20-ATH	5	3.5	4.85	65	21.36	21.95	x	x	x							
EP1067	EPDBE-2050-25-ATH				25	26.48	27.39	x	x	x							
EP1068	EPDBE-2050-30-ATH				30	31.58	x	x	x	x							
EP1069	EPDBE-2050-40-ATH				40	41.97	x	x	x	x							
EP1070	EPDBE-2060-12-ATH	6	6	5.85	60	x	x	x	x	x							
EP1071	EPDBE-2060-20-ATH				20	x	x	x	x	x							
EP1072	EPDBE-2060-30-ATH				30	x	x	x	x	x							
EP1073	EPDBE-2060-50-ATH				50	x	x	x	x	x							

Cutting Conditions   Schnittwerte   Condizioni di taglio   Condiciones de Corte   Conditions de coupe   Valores de corte:				
High Precision Finishing		Page 14-19	High Efficient Roughing	
			High Efficient Roughing (Rib Applications)	
				Page 20-25