

MINIATURE

ADVANCED  
**TH60+**  
NANO PVD COATING

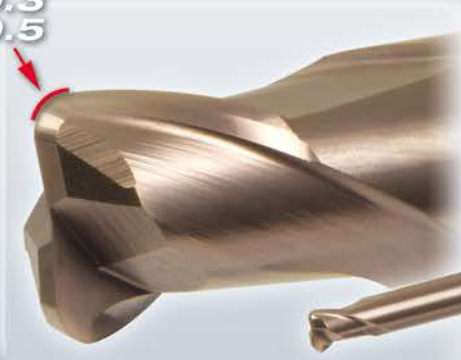
No. 440

**NEW**

# EPDRE Epoch Deep Radius **Evolution**

For Higher Efficiency & Higher Precision Deep Milling  
Micro Grain Solid Carbide End Mill

**CR**  
0.05  
0.1  
0.2  
0.3  
0.5



**Intermediate  
sizes:**

- 0.9 mm
- 1.25 mm
- 1.75 mm
- 2.5 mm

- $\varnothing D$  0.2 - 6 mm
- $l_n$  2xD - 20xD
- 151 Sizes
- Higher cutting performance
- New developed compound neck shape



Carbide End Mills - Nano PVD Coated

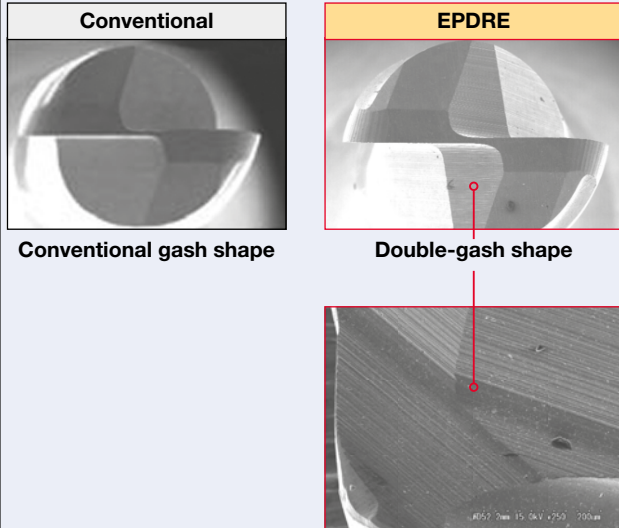


**Ultra Micro Grain Solid Carbide End Mill**

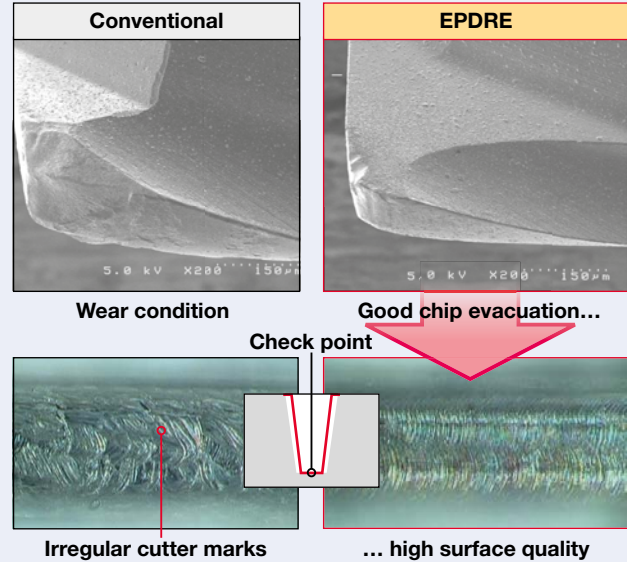
**EPDRE-ATH | Epoch Deep Radius Evolution ATH**

**The Evolution in Chip Evacuation: Cutting edge geometry with wide chip pocket and back draft effect for stable cutting especially in rib milling**

**Wide chip pocket for smooth chip removal**  
High chip removal effectiveness in deep cutting.

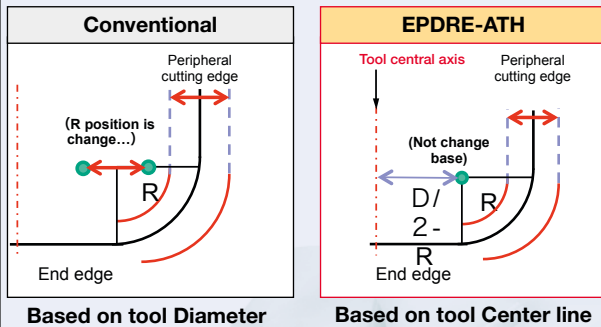


**Comparison of surface quality and wear condition in slotting**



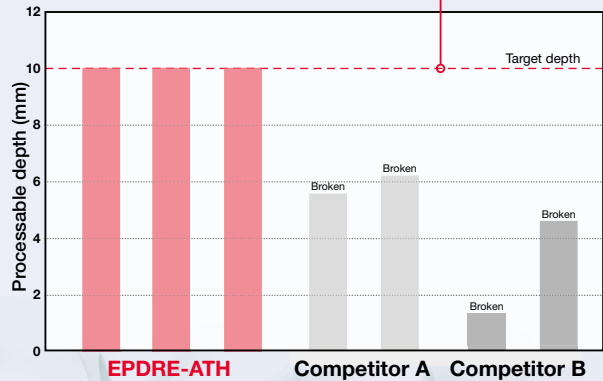
**Guaranteed corner radius accuracy for performing high accuracy processing**

Corner Radius Tolerance +/- 0.005 based on tool center as reference point. Enables more accurate finishing of molds.



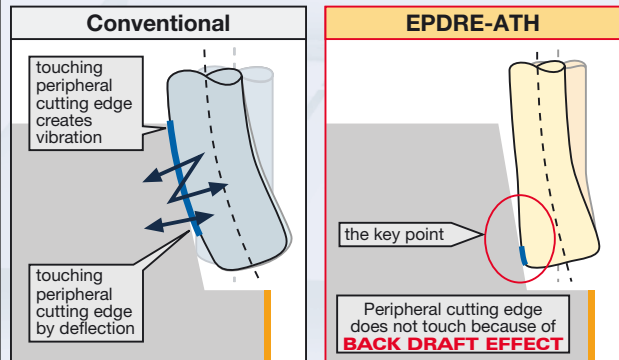
**Comparison of stability in rib slotting**

All 3 pieces could be finished until final depth thanks to double-gash shape

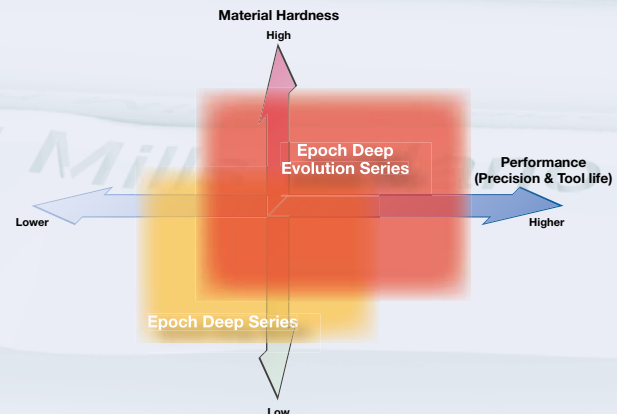


**Advanced Technology Back Draft Shape**

With strong backtaper reduces chattering in point cutting.



**Positioning of new Epoch Deep Evolution Series**





**Ultra Micro Grain Solid Carbide End Mill**

**EPDRE-ATH | Epoch Deep Radius Evolution ATH**

**Optimized neck radius**  
Evolution in higher precision and higher efficiency further improves the conventional neck geometry to resist breakage and suppress deflection.

Conventional Deep Series neck shape	Deep Evolution Series new neck shape
<p>Large neck R range</p>	<p>Smaller neck R range suppresses deflection</p>

**Deflection reduced by more than 20%**  
Static load test results  
Testing tool size:  $\varnothing D = 1 \text{ mm}$ ,  $l_n = 6 \text{ mm}$

Deflection amount (mm)	Load (N) - New Neck Shape	Load (N) - Conventional Neck Shape
0.35	~60.8	-
0.37	~61.8	-
0.38	~62.2	-
0.41	-	~62.2
0.43	-	~60.2

**Deflection suppression effect is high even under the same load. Enables machining with even higher accuracy.**

**New ATH (Advanced TH) Coating – Characteristics**

- Excellent adhesion strength
- Oxidation temperature: 1200°C
- Coating Hardness: 3800Hv
- Higher temperature resistance and wear resistance

**TH Coating**

TH Coating (Conventional)

**ATH Coating**

New ATH Coating for hardened steel (45HRC-65HRC)

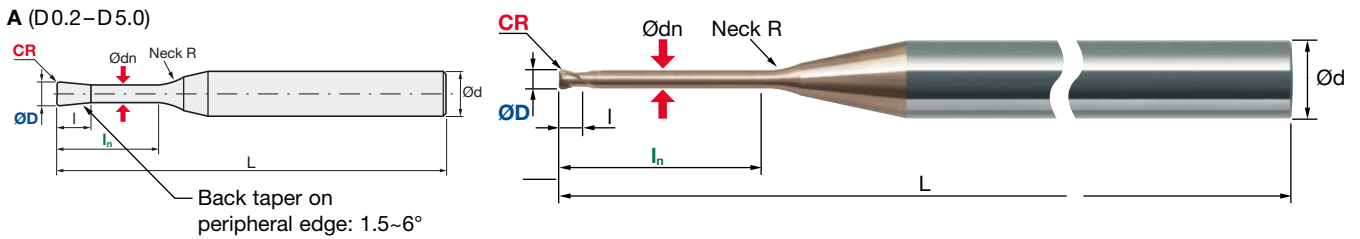
High hardness coating  
High heat resistant coating  
Nano size composite with atomic structure level

Coating	Coating Hardness (Hv)	Oxidation temp. (°C)
TiAlN	~2800	~800
TH	~3500	~1100
ATH	~3800	~1200

Ultra Micro Grain Solid Carbide End Mill

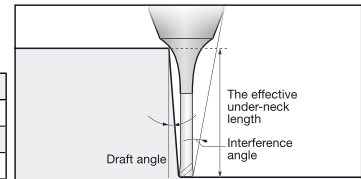
EPDRE-ATH | Epoch Deep Radius Evolution ATH

V max High Speed
HRC 70
Rib. Miniature
No. of Teeth 2



Carbide Micro Grain
TH60+ Nano-PVD Coating
Rake Angle Positive

Helix angle	30°
CR	± 0.005 mm
D	(0/-0.01 mm)
Ød	h5



Size											Actual Effective Length in Incline angles				
ID Code	Item Code	Z	ØD	CR	l <sub>n</sub>	l	Ødn	L	Ød	Neck R	0.5°	1°	1.5°	2°	3°
EP793	EPDRE-2002-0.5-005-ATH	2	0.2	0.05	0.5	0.15	0.17	50	4	1	0.70	0.73	0.75	0.78	0.82
EP795	EPDRE-2002-1-005-ATH				1						1.22	1.26	1.30	1.34	1.40
EP794	EPDRE-2002-1.5-005-ATH				1.5						1.74	1.79	1.84	1.89	2.06
EP796	EPDRE-2002-2-005-ATH				2						2.25	2.32	2.38	2.46	2.73
EP797	EPDRE-2003-1-005-ATH				1						1.32	1.39	1.45	1.50	1.61
EP798	EPDRE-2003-2-005-ATH				2						2.37	2.47	2.56	2.64	2.77
EP799	EPDRE-2003-3-005-ATH		3	3.41	3.54	3.65	3.74				4.05				
EP800	EPDRE-2004-1-005-ATH		1	1.32	1.39	1.45	1.50				1.61				
EP802	EPDRE-2004-2-005-ATH		2	2.37	2.47	2.56	2.64				2.77				
EP804	EPDRE-2004-3-005-ATH		3	3.41	3.54	3.65	3.74				4.05				
EP806	EPDRE-2004-4-005-ATH		4	4.45	4.60	4.72	4.86				5.38				
EP801	EPDRE-2004-1-01-ATH		1	1.31	1.38	1.44	1.50				1.60				
EP803	EPDRE-2004-2-01-ATH		2	2.37	2.47	2.55	2.63			2.77					
EP805	EPDRE-2004-3-01-ATH		3	3.41	3.54	3.64	3.74			4.04					
EP807	EPDRE-2004-4-01-ATH		4	4.45	4.60	4.72	4.85			5.37					
EP808	EPDRE-2005-1-005-ATH		1	1.32	1.39	1.45	1.50			1.61					
EP810	EPDRE-2005-2-005-ATH		2	2.37	2.47	2.56	2.64			2.77					
EP812	EPDRE-2005-3-005-ATH		3	3.41	3.54	3.65	3.74			4.05					
EP814	EPDRE-2005-4-005-ATH		4	4.45	4.60	4.72	4.86			5.38					
EP816	EPDRE-2005-5-005-ATH		5	5.49	5.66	5.79	6.05			6.71					
EP818	EPDRE-2005-6-005-ATH		6	6.53	6.71	6.91	7.25			8.04					
EP809	EPDRE-2005-1-01-ATH		1	1.31	1.38	1.44	1.50			1.60					
EP811	EPDRE-2005-2-01-ATH		2	2.37	2.47	2.55	2.63			2.77					
EP813	EPDRE-2005-3-01-ATH		3	3.41	3.54	3.64	3.74			4.04					
EP815	EPDRE-2005-4-01-ATH	4	4.45	4.60	4.72	4.85	5.37								
EP817	EPDRE-2005-5-01-ATH	5	5.49	5.66	5.79	6.04	6.69								
EP819	EPDRE-2005-6-01-ATH	6	6.52	6.71	6.90	7.24	8.02								
EP821	EPDRE-2006-2-01-ATH	2	2.53	2.69	2.82	2.95	3.17								
EP822	EPDRE-2006-4-01-ATH	4	4.65	4.88	5.06	5.23	5.51								
EP823	EPDRE-2006-6-01-ATH	6	6.76	7.03	7.25	7.44	8.02								
EP824	EPDRE-2006-8-01-ATH	8	8.85	9.16	9.41	9.63	10.67								
EP820	EPDRE-2006-10-01-ATH	10	10.92	11.27	11.55	12.03	13.33								
EP825	EPDRE-2007-4-01-ATH	4	4.65	4.88	5.06	5.23	5.51								
EP826	EPDRE-2007-6-01-ATH	6	6.76	7.03	7.25	7.44	8.02								
EP831	EPDRE-2008-2-01-ATH	2	2.53	2.69	2.82	2.95	3.17								
EP833	EPDRE-2008-4-01-ATH	4	4.65	4.88	5.06	5.23	5.51								
EP835	EPDRE-2008-6-01-ATH	6	6.76	7.03	7.25	7.44	8.02								
EP837	EPDRE-2008-8-01-ATH	8	8.85	9.16	9.41	9.63	10.67								
EP827	EPDRE-2008-10-01-ATH	10	10.92	11.27	11.55	12.03	13.33								
EP829	EPDRE-2008-12-01-ATH	12	13.00	13.38	13.75	14.42	15.98								
EP832	EPDRE-2008-2-02-ATH	2	2.53	2.68	2.81	2.93	3.15								
EP834	EPDRE-2008-4-02-ATH	4	4.65	4.87	5.05	5.21	5.50								
EP836	EPDRE-2008-6-02-ATH	6	6.75	7.02	7.24	7.43	7.99								

# Ultra Micro Grain Solid Carbide End Mill

## EPDRE-ATH | Epoch Deep Radius Evolution ATH

ID Code	Item Code	Size									Actual Effective Length in Incline angles							
		Z	ØD	CR	In	l	Ødn	L	Ød	Neck R	0.5°	1°	1.5°	2°	3°			
EP838	EPDRE-2008-8-02-ATH	2	0.8	0.2	8	0.5	0.77	50			8.84	9.15	9.40	9.62	10.64			
EP828	EPDRE-2008-10-02-ATH				10			50			10.92	11.27	11.54	12.01	13.30			
EP830	EPDRE-2008-12-02-ATH				12			55			12.99	13.37	13.73	14.40	15.95			
EP839	EPDRE-2009-4-02-ATH				4			0.9			0.6	0.87			4.65	4.87	5.05	5.21
EP840	EPDRE-2009-8-02-ATH		8	50	8.84	9.15	9.40		9.62	10.64								
EP1236	EPDRE-2010-2-01-ATH		2	1	0.1	0.8	0.94			2.64					2.78	2.90	3.01	3.23
EP1239	EPDRE-2010-4-01-ATH		4							50					4.74	4.95	5.12	5.28
EP1242	EPDRE-2010-6-01-ATH		6					55		6.83	7.09	7.30	7.49	8.11				
EP1245	EPDRE-2010-8-01-ATH		8					60		8.91	9.21	9.45	9.72	10.77				
EP841	EPDRE-2010-10-01-ATH		10					50		10.99	11.32	11.59	12.11	13.42				
EP1227	EPDRE-2010-12-01-ATH		12							13.06	13.42	13.83	14.50	16.08				
EP1230	EPDRE-2010-16-01-ATH		16							17.18	17.60	18.39	19.29	21.39				
EP1233	EPDRE-2010-20-01-ATH		20							21.29	21.93	22.95	24.08	26.70				
EP1237	EPDRE-2010-2-02-ATH		2					50		0.2	0.8	0.94		2.63	2.77	2.89	3.00	3.21
EP1240	EPDRE-2010-4-02-ATH		4											4.74	4.94	5.11	5.27	5.54
EP1243	EPDRE-2010-6-02-ATH		6											6.83	7.08	7.29	7.48	8.08
EP1246	EPDRE-2010-8-02-ATH		8											8.91	9.20	9.45	9.70	10.74
EP842	EPDRE-2010-10-02-ATH		10	55	0.3	0.8	0.94		10.98	11.32	11.58	12.09	13.39					
EP1228	EPDRE-2010-12-02-ATH		12						13.05	13.42	13.81	14.48	16.05					
EP1231	EPDRE-2010-16-02-ATH		16						17.18	17.59	18.38	19.27	21.35					
EP1234	EPDRE-2010-20-02-ATH	20	21.29						21.92	22.94	24.06	26.66						
EP1238	EPDRE-2010-2-03-ATH	2	50	0.3	0.8	0.94		2.63	2.76	2.87	2.98	3.19						
EP1241	EPDRE-2010-4-03-ATH	4						4.73	4.93	5.10	5.25	5.53						
EP1244	EPDRE-2010-6-03-ATH	6						6.82	7.07	7.28	7.47	8.05						
EP1247	EPDRE-2010-8-03-ATH	8						8.91	9.20	9.44	9.68	10.70						
EP1226	EPDRE-2010-10-03-ATH	10	55	0.3	0.8	0.94		10.98	11.31	11.58	12.07	13.36						
EP1229	EPDRE-2010-12-03-ATH	12						13.05	13.41	13.80	14.46	16.01						
EP1232	EPDRE-2010-16-03-ATH	16						17.17	17.59	18.36	19.25	21.32						
EP1235	EPDRE-2010-20-03-ATH	20						21.28	21.91	22.92	24.04	26.63						
EP1251	EPDRE-20125-5-02-ATH	2	1.25	0.2	5	1.15	1.18	50	4	4	5.81	6.03	6.22	6.39	6.79			
EP1248	EPDRE-20125-10-02-ATH				10			55			11.00	11.33	11.59	12.12	13.42			
EP1249	EPDRE-20125-15-02-ATH				15			60			16.16	16.56	17.26	18.10	20.06			
EP1250	EPDRE-20125-20-02-ATH				20			21.30			21.95	22.97	24.09	x				
EP1258	EPDRE-2015-4-02-ATH		1.5	0.2	4	1.35	1.42		4.79	4.98	5.15	5.30	5.57					
EP1260	EPDRE-2015-6-02-ATH				6				50	6.88	7.12	7.32	7.50	8.14				
EP1262	EPDRE-2015-8-02-ATH				8				55	8.95	9.24	9.47	9.75	10.80				
EP1252	EPDRE-2015-12-02-ATH				12				13.09	13.44	13.87	14.54	16.11					
EP1254	EPDRE-2015-15-02-ATH			15	16.18	16.58	17.29	18.13	20.09									
EP1256	EPDRE-2015-20-02-ATH			20	21.32	21.97	22.99	24.11	x									
EP1259	EPDRE-2015-4-05-ATH			0.5	4	1.35	1.42		4.78	4.96	5.12	5.26	5.53					
EP1261	EPDRE-2015-6-05-ATH				6				50	6.86	7.10	7.30	7.48	8.05				
EP1263	EPDRE-2015-8-05-ATH	8			55				8.94	9.22	9.45	9.70	10.70					
EP1253	EPDRE-2015-12-05-ATH	12			13.08				13.43	13.83	14.48	16.01						
EP1255	EPDRE-2015-15-05-ATH	15		16.17	16.56	17.25	18.07	19.99										
EP1257	EPDRE-2015-20-05-ATH	20		21.31	21.95	22.95	24.06	x										
EP1267	EPDRE-20175-5-02-ATH	1.75	0.2	5	1.55	1.67		5.84	6.05	6.24	6.41	6.82						
EP1264	EPDRE-20175-10-02-ATH			10				50	11.02	11.34	11.61	12.15	13.45					
EP1265	EPDRE-20175-15-02-ATH			15				55	16.18	16.58	17.29	18.13	20.09					
EP1266	EPDRE-20175-20-02-ATH			20				60	21.32	21.97	22.99	24.11	x					
EP1278	EPDRE-2020-4-02-ATH	2	0.2	4	1.7	1.92		4.79	4.98	5.15	5.30	5.57						
EP1280	EPDRE-2020-6-02-ATH			6				50	6.88	7.12	7.32	7.50	8.14					
EP1282	EPDRE-2020-8-02-ATH			8				55	8.95	9.24	9.47	9.75	10.80					
EP1268	EPDRE-2020-12-02-ATH			12				13.09	13.44	13.87	14.54	16.11						
EP1270	EPDRE-2020-16-02-ATH		16	17.21	17.62	18.43	19.33	x										
EP1272	EPDRE-2020-20-02-ATH		20	21.32	21.97	22.99	24.11	x										
EP1274	EPDRE-2020-25-02-ATH		25	26.44	27.42	28.69	x	x										
EP1276	EPDRE-2020-30-02-ATH		30	31.55	32.87	34.40	x	x										
EP1279	EPDRE-2020-4-05-ATH		0.5	4	1.7	1.92		4.78	4.96	5.12	5.26	5.53						
EP1281	EPDRE-2020-6-05-ATH			6				50	6.86	7.10	7.30	7.48	8.05					
EP1283	EPDRE-2020-8-05-ATH			8				55	8.94	9.22	9.45	9.70	10.70					
EP1269	EPDRE-2020-12-05-ATH			12				13.08	13.43	13.83	14.48	16.01						
EP1271	EPDRE-2020-16-05-ATH	16	17.20	17.61	18.39	19.27	x											
EP1273	EPDRE-2020-20-05-ATH	20	21.31	21.95	22.95	24.06	x											
EP1275	EPDRE-2020-25-05-ATH	25	26.43	27.39	28.65	x	x											
EP1277	EPDRE-2020-30-05-ATH	30	31.54	32.84	34.36	x	x											

Ø2.5-  
Ø6



**Ultra Micro Grain Solid Carbide End Mill**

**EPDRE-ATH** | Epoch Deep Radius Evolution ATH

ID Code	Item Code	Size									Actual Effective Length in Incline angles						
		Z	ØD	CR	In	l	Ødn	L	Ød	Neck R	0.5°	1°	1.5°	2°	3°		
EP1284	EPDRE-2025-10-02-ATH	2	2.5	0.2	10	2	2.39	50	4	4	11.08	11.39	11.67	12.23	13.55		
EP1286	EPDRE-2025-20-02-ATH				20			60			21.36	22.05	23.07	x	x		
EP1288	EPDRE-2025-30-02-ATH				30			70			31.58	32.94	x	x	x		
EP1285	EPDRE-2025-10-05-ATH			10	50			11.07			11.37	11.63	12.17	13.45			
EP1287	EPDRE-2025-20-05-ATH			20	60			21.35			22.02	23.03	x	x			
EP1289	EPDRE-2025-30-05-ATH			30	70			31.58			32.92	x	x	x			
EP1300	EPDRE-2030-8-02-ATH		3	0.2	8	2.5	2.86	55	4		9.07	9.33	9.55	9.92	10.99		
EP1290	EPDRE-2030-12-02-ATH				12			60			13.19	13.52	14.03	14.71	16.30		
EP1292	EPDRE-2030-16-02-ATH				16			65			17.30	17.77	18.59	19.50	21.60		
EP1294	EPDRE-2030-20-02-ATH				20			75			21.40	22.13	23.15	24.28	26.91		
EP1296	EPDRE-2030-30-02-ATH				30			80			31.62	33.02	34.56	36.25	x		
EP1298	EPDRE-2030-35-02-ATH				35			80			36.83	38.47	40.26	42.23	x		
EP1301	EPDRE-2030-8-05-ATH			8	55	9.06	9.31	9.53			9.87	10.89					
EP1291	EPDRE-2030-12-05-ATH			12	60	13.18	13.51	13.99			14.65	16.20					
EP1293	EPDRE-2030-16-05-ATH			16	65	17.29	17.74	18.55			19.44	21.51					
EP1295	EPDRE-2030-20-05-ATH			20	75	21.39	22.10	23.11			24.22	26.82					
EP1297	EPDRE-2030-30-05-ATH			30	80	31.61	32.99	34.52			36.19	x					
EP1299	EPDRE-2030-35-05-ATH			35	80	36.82	38.44	40.22			42.17	x					
EP1302	EPDRE-2040-12-05-ATH			4	0.5	12	3.5	3.8			60	6	13.28	13.58	14.15	14.82	16.39
EP1304	EPDRE-2040-16-05-ATH					16					65		17.38	17.89	18.71	19.61	x
EP1306	EPDRE-2040-20-05-ATH					20					70		21.47	22.25	23.27	24.39	x
EP1308	EPDRE-2040-24-05-ATH					24					75		25.56	26.61	27.83	x	x
EP1310	EPDRE-2040-30-05-ATH					30					80		31.75	33.15	34.68	x	x
EP1312	EPDRE-2040-36-05-ATH					36					80		38.01	39.68	x	x	x
EP1314	EPDRE-2040-45-05-ATH		45		90	47.39	49.49	x	x		x						
EP1303	EPDRE-2040-12-1-ATH		1		12	60	13.27	13.56	14.08		14.72		16.23				
EP1305	EPDRE-2040-16-1-ATH				16	65	17.37	17.85	18.64		19.51		x				
EP1307	EPDRE-2040-20-1-ATH				20	70	21.46	22.21	23.20		24.30		x				
EP1309	EPDRE-2040-24-1-ATH				24	75	25.55	26.57	27.77		29.08		x				
EP1311	EPDRE-2040-30-1-ATH				30	80	31.73	33.10	34.61		x		x				
EP1313	EPDRE-2040-36-1-ATH	36		80	37.98	39.64	x	x	x								
EP1315	EPDRE-2040-45-1-ATH	45	90	47.37	49.44	x	x	x									
EP1316	EPDRE-2050-20-05-ATH	5	0.5	20	4	4.75	65	-	21.54	22.38	x	x	x				
EP1318	EPDRE-2050-40-05-ATH			40			85		42.30	x	x	x	x				
EP1317	EPDRE-2050-20-1-ATH			20			65		21.53	22.34	x	x	x				
EP1319	EPDRE-2050-40-1-ATH	6	0.5	40	5	5.7	85	-	42.28	x	x	x	x				
EP1320	EPDRE-2060-18-05-ATH			18			60		x	x	x	x	x				
EP1322	EPDRE-2060-24-05-ATH			24			70		x	x	x	x	x				
EP1324	EPDRE-2060-36-05-ATH		36	80			x		x	x	x	x					
EP1326	EPDRE-2060-54-05-ATH		54	100			x		x	x	x	x					
EP1321	EPDRE-2060-18-1-ATH		1	18			60		x	x	x	x					
EP1323	EPDRE-2060-24-1-ATH	24		70	x	x	x	x									
EP1325	EPDRE-2060-36-1-ATH	36		80	x	x	x	x									

Carbide End Mills - Nano PV

The electronic Hitachi Tool product catalogue

# P50QF PRODUCTION50<sup>®</sup> QuickFinder

## P50QF | Production50 QuickFinder

The Quickly-Finding Software for Tools and Tool Accessories

Die Software zum schnellen Finden von Werkzeugen und Zubehör

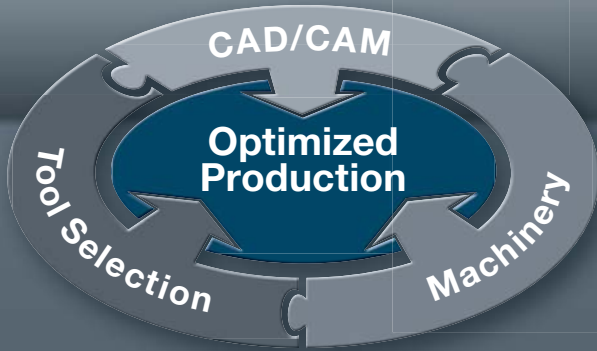
- Real-time search with catalogue browser
- Cutting conditions calculation with project planning
- Shop system
- Online update

- Suche in Echtzeit mit Katalog-Browser
- Schnittwerte-Berechnung mit Projektierung
- Bestellsystem
- Online-Update
- Komplett in Deutsch & Englisch



The electronic Hitachi Tool product catalogue

## Quickly find the tools you need for best performance in machining



[www.production50.com](http://www.production50.com)

**Function Buttons**  
Funktions-Schaltflächen

**QuickFinder Help: Details of tools etc.**  
QuickFinder Hilfe: Werkzeugdetails usw.

**Filtering by contour shape**  
Gefiltert nach Bearbeitungs-Kontur

**Additional search parameters**  
Zusätzliche Parameter-Suche

ID code	Item code	Z	ØD	ØR	CR	In	s	l	Øda	L	Ød	Grade	Inserts1	Inserts2	Inserts3
EP297	ETMP-4040-40-10	4	4		1	40	1	6				90	6		
EP270	ETM-4050-12	4	5		1.2	15		10				70	6		
EP298	ETMP-4050-30-12	4	5		1.2	30	1	7.5				90	6		
EP299	ETMP-4050-40-12	4	5		1.2	40	1	7.5				100	6		
EP600	ETMP-4050-50-12	4	5		1.2	50	1	7.5				110	6		
EP371	ETM-4060-15	4	6		1.5			12				90	6		
EP379	ETMLN-4060-30-15	4	6		1.5	30		9	5.7			75	6		
EP380	ETMLN-4060-42-15	4	6		1.5	42		9	5.7			90	6		
EP381	ETMLN-4060-54-15	4	6		1.5	54		9	5.7			100	6		
EP601	ETMP-4060-40-15	4	6		1.5	40	1	9				100	8		
EP002	ETMP-4060-55-15	4	6		1.5	55	1	9				110	8		
EP603	ETMP-4060-67-15	4	6		1.5	67	1	9				125	8		
EP372	ETMLN-4060-30-20	4	8		2			16				100	8		
EP392	ETMLN-4060-40-20	4	8		2	40		12	7.6			85	8		
EP393	ETMLN-4060-55-20	4	8		2	55		12	7.6			100	8		
EP384	ETMLN-4060-72-20	4	8		2	72		12	7.6			120	8		
EP373	ETM-4100-20	4	10		2			20				110	10		

**Selected product**  
Ausgewähltes Produkt

Download: [www.hitachitool-eu.com/quickfinder](http://www.hitachitool-eu.com/quickfinder)



**Product Range**

Solid Carbide End Mills

micro**EndMill**

**CBN**  
Cubic Boron Nitride

**HD COATING**

**Epoch21**

**MINIATURE**

**3D-Cut**

CR  
0.05  
0.1  
0.2  
0.3  
0.5

Indexable Milling Tools

**Indexable Milling**

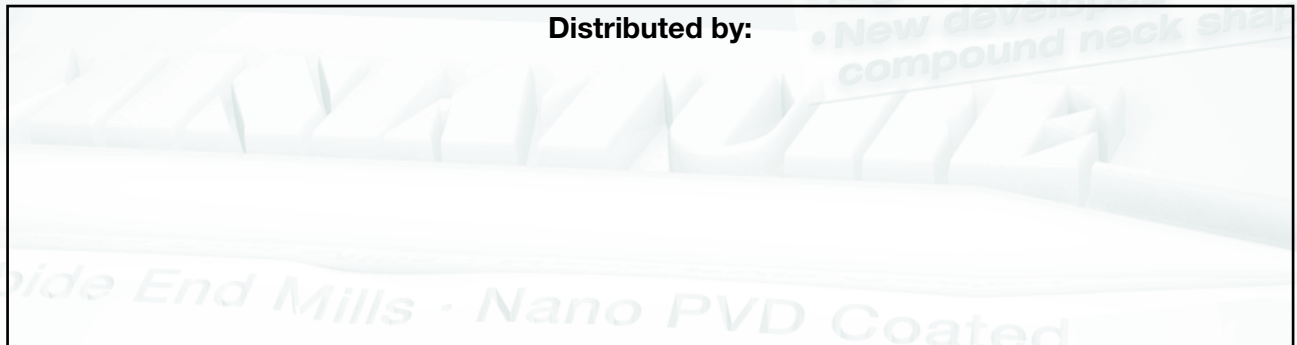
ESM Speed End Mills  
EMC Power Drills

**ESM SPEED**

Milling Chucks

**Milling Chucks**

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