Advanced Engineering
Hitachi Tool

HITACHI
Inspire the Next

No. 432

Epoch21

ADVANCED TH60+ NANO-PVD COATING

EPBTS-TH Epoch TH Hard Ball

Strong

NEW

Micro Grain Solid Carbide End Mill
Epoch New Advanced TH Ball Series

High speed direct milling for Hardened steels

ADVANCED TH60+ NANO-PVD COATING

- Strong (negative rake) edge geometry for efficient roughing application
- 3D new edge shape for good finishing
- New ATH coating for Hardened steels

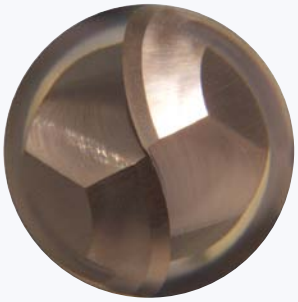
Hitachi Tool Engineering Europe GmbH
www.high-speed-cutting.com

Micro Grain Solid Carbide End Mill

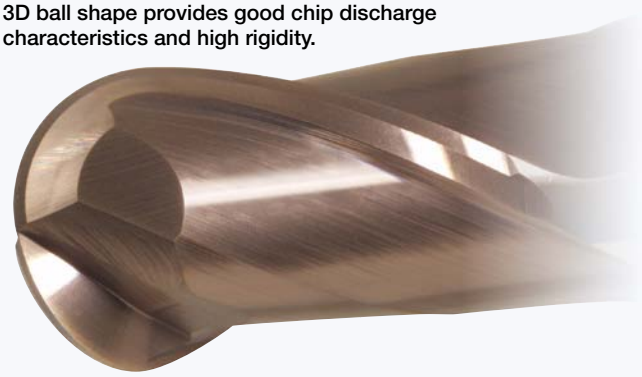
EPBTS | Epoch TH Hard Ball Strong

Features

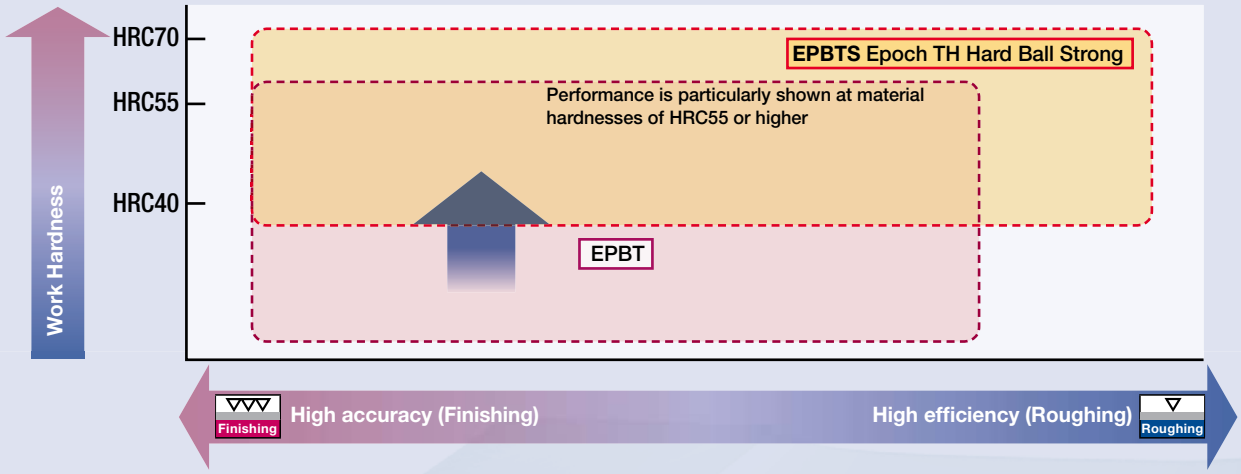
Flute tip shape provides both rigidity and good cutting performance.



3D ball shape provides good chip discharge characteristics and high rigidity.



Overview diagram of cutting regions

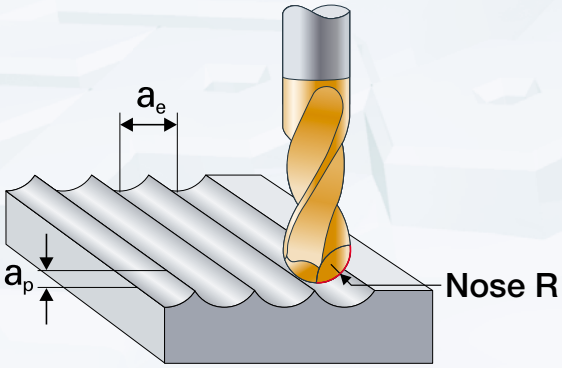


Theoretical cusp height in end milling (µm)
Die theoretische Rautiefe in der Fräsbearbeitung (µm)
Calculo de altura de la cresta teórica en fresado (mm)
Cresta teórica de fresado (µm)
Hauteur de crête théorique en fraisage (µm)

Feed pitch and cusp height
a_e (mm) Zeilensprung
Paso y altura de cresta
Relación Paso / Cresta
Pas et hauteur de crête

$$h = R - \sqrt{\frac{2 \cdot R^2 - a_e^2}{4}}$$

$$h = \frac{a_e^2}{8 \cdot R}$$

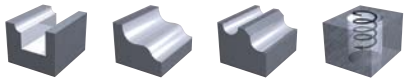


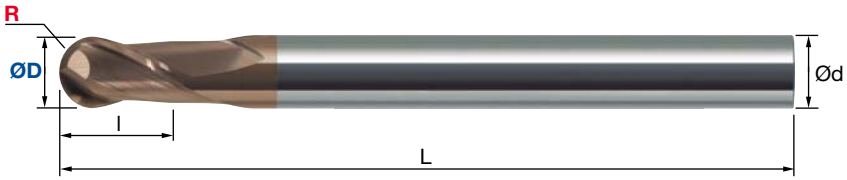
		a_e (Pick feed) mm										
		0.02	0.03	0.04	0.05	0.075	0.1	0.15	0.2	0.3	0.4	0.5
Nose R (mm)	0.5	0.10	0.23	0.40	0.63	1.41	2.51	5.66	10.10	23.03	41.74	66.99
	1	0.05	0.11	0.20	0.31	0.70	1.25	2.82	5.01	11.31	20.20	31.75
	1.5	0.03	0.08	0.13	0.21	0.47	0.83	1.88	3.34	7.52	13.39	20.98
	2	0.03	0.06	0.10	0.16	0.35	0.63	1.41	2.50	5.63	10.03	15.69
	2.5	0.02	0.05	0.08	0.13	0.28	0.50	1.13	2.00	4.50	8.01	12.53
	3	0.017	0.04	0.07	0.10	0.23	0.42	0.94	1.67	3.75	6.67	10.43
	4	0.013	0.03	0.05	0.08	0.18	0.31	0.70	1.25	2.81	5.00	7.82
	5	0.010	0.02	0.04	0.06	0.14	0.25	0.56	1.00	2.25	4.00	6.25
	6	0.008	0.02	0.03	0.05	0.12	0.21	0.47	0.83	1.88	3.33	5.21

Micro Grain Solid Carbide End Mill

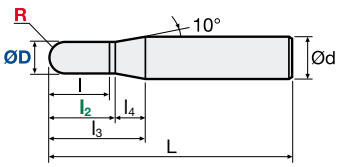
EPBTS | Epoch TH Hard Ball Strong

V max	Q max	▽	▽▽	▽▽▽	HRC	No. of Teeth
High Speed	High Efficient	Roughing	Semi-Finishing	Finishing	72	2

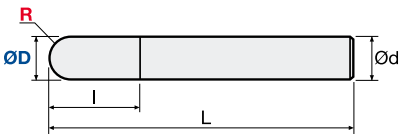




A



B



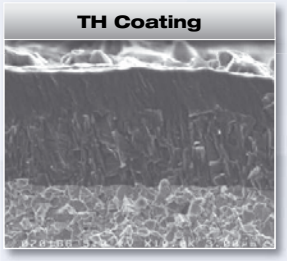
Carbide	TH60+	Rake Angle
Micro Grain	Nano-PVD Coating	Negative

D	(0 / -0.01 mm)
R	± 0.005 mm
ød	h5
Helix angle	30°

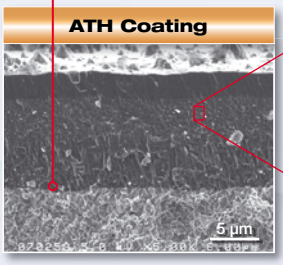
ID Code	Item Code	Z	ØD	R	l	l_2	l_3	l_4	L	Ød	Type
EP855	**EPBTS-2010-TH**	2	1	0.5	1.5	2.5	11.0	8.5	50	4	A
EP856	**EPBTS-2020-TH**		2	1	3	4.0	15.3	11.3	50	6	
EP857	**EPBTS-2030-TH**		3	1.5	4.5	5.5	14.0	8.5	70		
EP858	**EPBTS-2040-TH**		4	2	6	7.0	12.7	5.7			
EP859	**EPBTS-2050-TH**		5	2.5	7.5	8.5	11.3	2.8	80		
EP860	**EPBTS-2060-TH**		6	3	9	-	-	-	90		B
EP861	**EPBTS-2080-TH**		8	4	12				100	8	
EP862	**EPBTS-2100-TH**		10	5	15					10	
EP863	**EPBTS-2120-TH**		12	6	18				110	12	

New ATH (Advanced TH) Coating – Characteristics

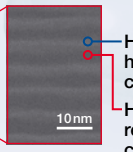
- Excellent adhesion strength
- Oxidation temperature: 1200°C
- Coating Hardness: 3800Hv
- Higher temperature resistance and wear resistance



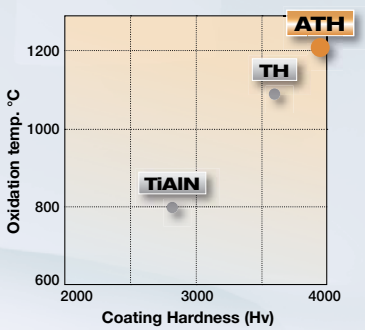
TH Coating (Conventional)



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



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



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Solid Carbide End Mills

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CBN
Cubic Boron Nitride

HD COATING

Epoch21

MINIATURE

3D-Cut

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Indexable Milling

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EMC Power Drills

ESM SPEED

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