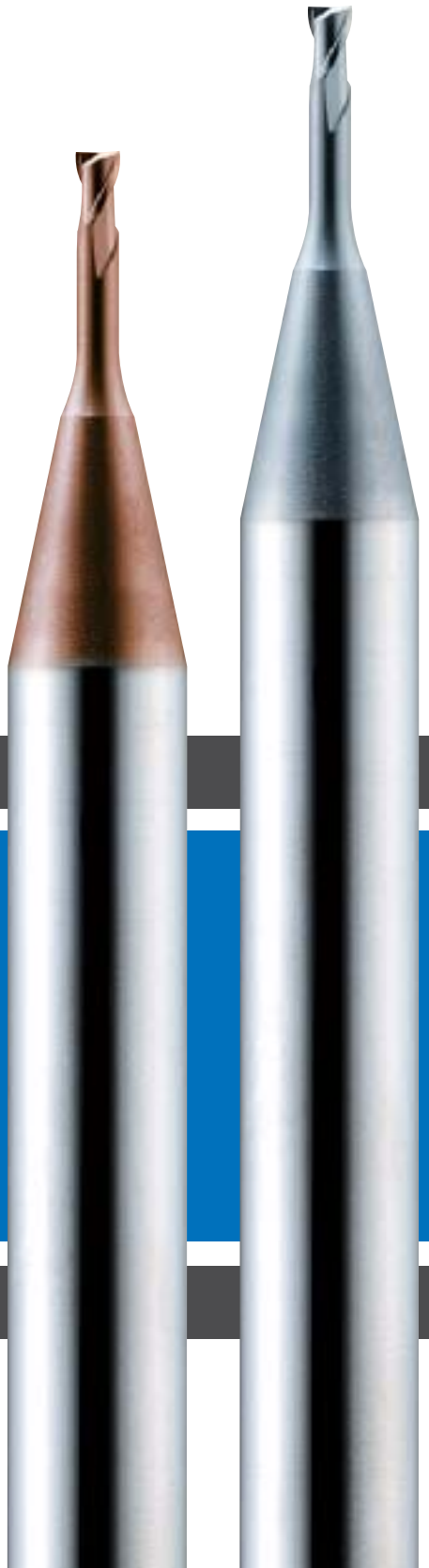
EPDSE

High-Precision Square End Mills for Deep Machining



FEATURES

- High strength end shape improves cutting stability
- Improved compound neck design for reduced chatter and increased strength
- New flute shape increases resistance to breakage
- ATH and PN Coatings for maximum efficiency and tool life

EPDSE

INTRODUCTION

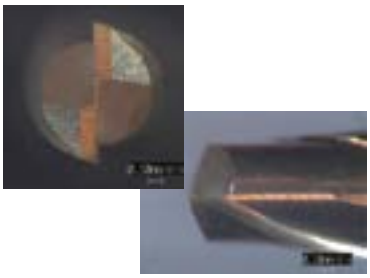
The EPDSE Epoch Series Square End Mills have been designed for cutting deep ribs and slots in molds, as well as machining deep corners and precision features that were previously possible only by EDM (electrical discharge machining).

Featuring an improved compound neck design, these end mills exhibit greater breakage resistance and less vibration during high speed machining than competitors' tools. New cutting geometries as well as the advanced ATH and PN Coatings help to maximize machining performance as well as tool life.

FEATURES

1. Innovative Square Nose Geometry

Flute shape with high flute tip strength and high cutting performance provides improved stability.



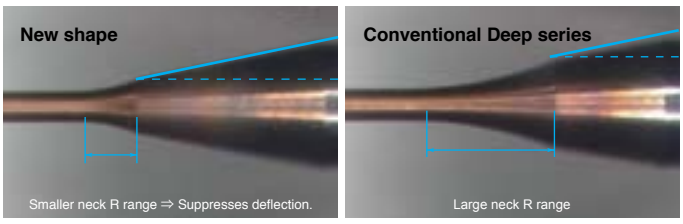
Tool : EPDSE2010-4-ATH
(φ1 Under neck 4mm)

1.5mm square island (90° standing walls)

Work material: HPM-MAGIC 40HRC
Holder: HSK-F63
Coolant: Wet
n=15,000min^{-1}(vc=47m/min)
vf=1,000mm/min
(fz=0.03mm/t)
ap×ae=0.1mm×0.1mm

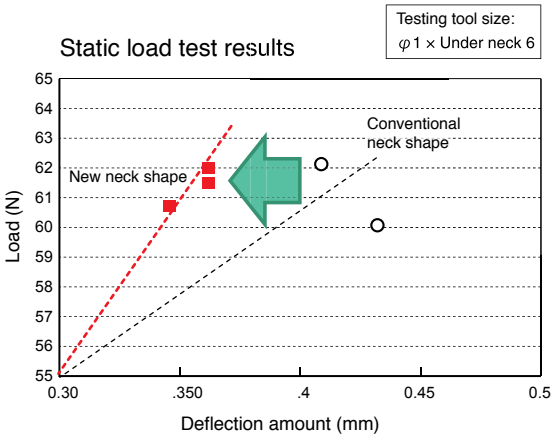
2. Improved Compound Neck Shape

Further improves the conventional compound shape of R and taper to both resist breakage and suppress deflection.



Caution: The interference region has changed due to changes in the neck shape. Be sure to check for interference before starting machining.

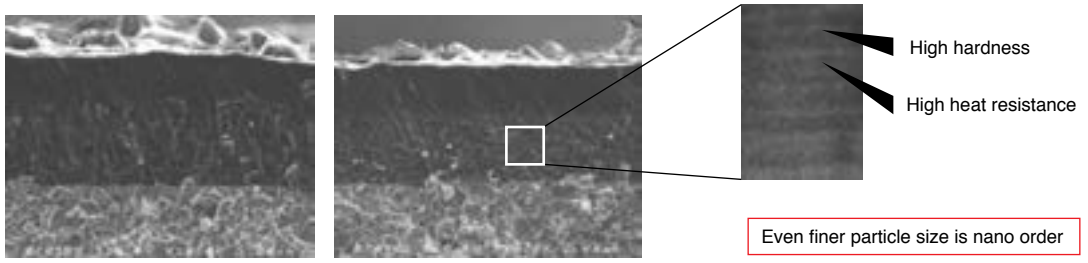
Testing tool size:
φ1 × Under neck 6



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

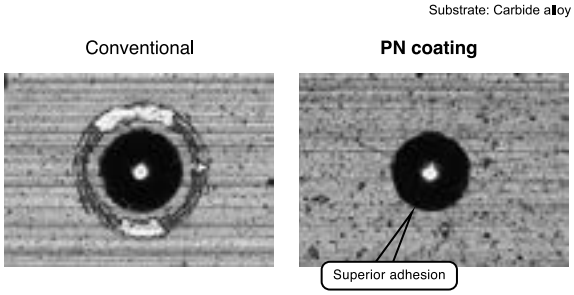
3. New PVD Coating Technology

Advanced TH (ATH) Coating: With a hardness of 3800Hv and oxidation temperature of 1200°, our new ATH Coating enables longer life and higher efficiency when cutting high-hardness materials (55HRC or higher). Compared with our previous generation coating, double the tool life and more than double the machining efficiency can be achieved. The ATH Coating is ideal for both dry cutting and wet cutting in a variety of materials including cold-worked die steel, HSS, tool steel, composite materials, carbide alloys and more.

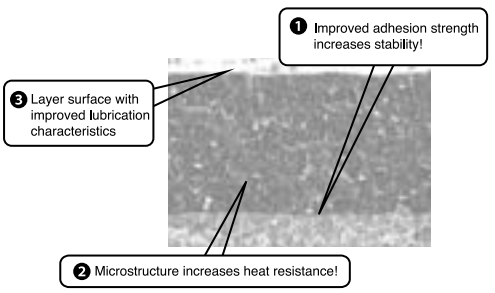


PN Coating: By optimizing the Al content, the multi-layer PN Coating exhibits both excellent heat-resistance and adhesion to the tool substrate. Combining of the AlCr coating layer with Si produces high hardness (3000HV) as well as good wear resistance. PN Coating provides extended cutting tool life in both wet and dry machining of materials including pre-hardened steel, carbon steel, alloy steel, stainless steel, H13, D2 and more.

Adhesion of PN coating



Cross-section photograph of PN coating layer structure



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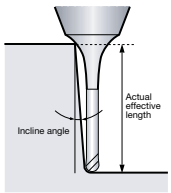

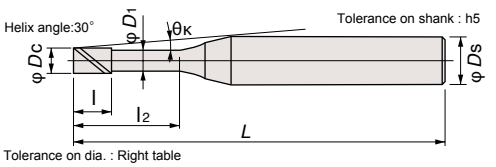

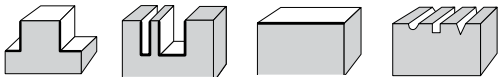

Helix Angle	30°	Dc (Ø0.1 – Ø0.5)	0/-0.007
ϕDs	h5	Dc (Ø0.6 – Ø0.9)	0/-0.01
		Dc (Ø1– Ø6)	0/-0.015

	Stock		Size (mm)						Neck		Actual Effective Length in Incline Angles				
Part No.*	PN	ATH	D_c	l_2	l	D_1	L	D_s	R	θk	0.5°	1°	1.5°	2°	3°
EPDSE2001-0.3-□□□	□	●	0.1	0.3	0.15	0.08	45	4	1	11.58	0.46	0.49	0.51	0.53	0.58
EPDSE2001-0.5-□□□	□	●	0.1	0.5	0.15	0.08	45	4	1	11.35	0.67	0.71	0.74	0.76	0.82
EPDSE2001-1-□□□	□	□	0.1	1.0	0.15	0.08	45	4	1	10.81	1.20	1.25	1.29	1.33	1.39
EPDSE2002-0.5-□□□	□	●	0.2	0.5	0.30	0.17	50	4	1	11.30	0.70	0.73	0.76	0.78	0.83
EPDSE2002-1-□□□	□	●	0.2	1.0	0.30	0.17	50	4	1	10.75	1.22	1.27	1.31	1.34	1.42
EPDSE2002-1.5-□□□	□	□	0.2	1.5	0.30	0.17	50	4	1	10.25	1.74	1.80	1.85	1.89	2.08
EPDSE2002-2-□□□	□	□	0.2	2.0	0.30	0.17	50	4	1	9.80	2.26	2.32	2.38	2.47	2.74
EPDSE2002-3-□□□	□	□	0.2	3.0	0.30	0.17	50	4	1	9.00	3.29	3.37	3.50	3.67	4.07
EPDSE2003-1-□□□	□	●	0.3	1.0	0.45	0.27	50	4	2	10.72	1.32	1.39	1.45	1.51	1.62
EPDSE2003-1.5-□□□	□	●	0.3	1.5	0.45	0.27	50	4	2	10.21	1.85	1.93	2.01	2.08	2.21
EPDSE2003-2-□□□	□	□	0.3	2.0	0.45	0.27	50	4	2	9.75	2.37	2.47	2.56	2.64	2.78
EPDSE2003-2.5-□□□	□	□	0.3	2.5	0.45	0.27	50	4	2	9.32	2.89	3.01	3.11	3.20	3.41
EPDSE2003-3-□□□	□	□	0.3	3.0	0.45	0.27	50	4	2	8.93	3.42	3.54	3.65	3.75	4.07
EPDSE2004-1-□□□	□	●	0.4	1.0	0.60	0.37	50	4	2	10.69	1.32	1.39	1.45	1.51	1.62
EPDSE2004-1.5-□□□	□	●	0.4	1.5	0.60	0.37	50	4	2	10.17	1.85	1.93	2.01	2.08	2.21
EPDSE2004-2-□□□	□	●	0.4	2.0	0.60	0.37	50	4	2	9.70	2.37	2.47	2.56	2.64	2.78
EPDSE2004-2.5-□□□	□	□	0.4	2.5	0.60	0.37	50	4	2	9.27	2.89	3.01	3.11	3.20	3.41
EPDSE2004-3-□□□	□	●	0.4	3.0	0.60	0.37	50	4	2	8.87	3.42	3.54	3.65	3.75	4.07
EPDSE2004-3.5-□□□	□	□	0.4	3.5	0.60	0.37	50	4	2	8.51	3.94	4.08	4.19	4.29	4.73
EPDSE2004-4-□□□	□	●	0.4	4.0	0.60	0.37	50	4	2	8.17	4.46	4.61	4.73	4.87	5.40
EPDSE2004-5-□□□	□	□	0.4	5.0	0.60	0.37	50	4	2	7.58	5.49	5.66	5.79	6.06	6.72
EPDSE2004-6-□□□	□	□	0.4	6.0	0.60	0.37	50	4	2	7.06	6.53	6.71	6.92	7.26	8.05
EPDSE2004-8-□□□	□	□	0.4	8.0	0.60	0.37	50	4	2	6.22	8.59	8.80	9.20	9.65	10.71
EPDSE2004-10-□□□	□	□	0.4	10.0	0.60	0.37	50	4	2	5.55	10.64	10.97	11.48	12.05	13.36
EPDSE2005-1-□□□	□	●	0.5	1.0	0.75	0.47	50	4	2	10.66	1.32	1.39	1.45	1.51	1.62
EPDSE2005-1.5-□□□	□	●	0.5	1.5	0.75	0.47	50	4	2	10.13	1.85	1.93	2.01	2.08	2.21
EPDSE2005-2-□□□	□	●	0.5	2.0	0.75	0.47	50	4	2	9.64	2.37	2.47	2.56	2.64	2.78
EPDSE2005-2.5-□□□	□	●	0.5	2.5	0.75	0.47	50	4	2	9.21	2.89	3.01	3.11	3.20	3.41
EPDSE2005-3-□□□	□	●	0.5	3.0	0.75	0.47	50	4	2	8.81	3.42	3.54	3.65	3.75	4.07
EPDSE2005-4-□□□	□	●	0.5	4.0	0.75	0.47	50	4	2	8.10	4.46	4.61	4.73	4.87	5.40

*For the last 3 digits of the part nr. enter the coating type (PN, ATH)

□ = Stocked items in Japan

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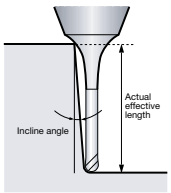

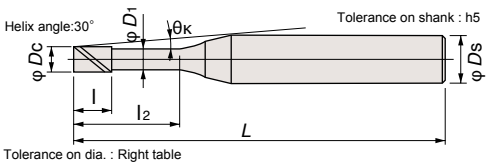

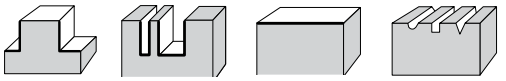

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	Stock		Size (mm)						Neck		Actual Effective Length in Incline Angles				
Part No.*	PN	ATH	D_c	l_2	l	D_1	L	D_s	R	θk	0.5°	1°	1.5°	2°	3°
EPDSE2005-5-□□□	□	□	0.5	5	0.75	0.47	50	4	2	7.50	5.49	5.66	5.79	6.06	6.72
EPDSE2005-6-□□□	□	□	0.5	6	0.75	0.47	50	4	2	6.98	6.53	6.71	6.92	7.26	8.05
EPDSE2005-8-□□□	□	□	0.5	8	0.75	0.47	50	4	2	6.13	8.59	8.80	9.20	9.65	10.71
EPDSE2005-10-□□□	□	□	0.5	10	0.75	0.47	50	4	2	5.47	10.64	10.97	11.48	12.05	13.36
EPDSE2006-2-□□□	□	●	0.6	2	0.90	0.57	50	4	4	9.59	2.54	2.70	2.84	2.96	3.19
EPDSE2006-3-□□□	□	●	0.6	3	0.90	0.57	50	4	4	8.74	3.60	3.80	3.96	4.11	4.37
EPDSE2006-4-□□□	□	●	0.6	4	0.90	0.57	50	4	4	8.02	4.66	4.89	5.07	5.24	5.53
EPDSE2006-5-□□□	□	□	0.6	5	0.90	0.57	50	4	4	7.42	5.71	5.96	6.17	6.35	6.72
EPDSE2006-6-□□□	□	□	0.6	6	0.90	0.57	50	4	4	6.90	6.76	7.04	7.26	7.45	8.05
EPDSE2006-7-□□□	□	□	0.6	7	0.90	0.57	50	4	4	6.44	7.81	8.10	8.34	8.55	9.38
EPDSE2006-8-□□□	□	□	0.6	8	0.90	0.57	50	4	4	6.04	8.85	9.17	9.42	9.65	10.71
EPDSE2006-9-□□□	□	□	0.6	9	0.90	0.57	50	4	4	5.69	9.89	10.22	10.49	10.85	12.03
EPDSE2006-10-□□□	□	□	0.6	10	0.90	0.57	50	4	4	5.38	10.93	11.28	11.56	12.05	13.36
EPDSE2007-2-□□□	□	□	0.7	2	1.05	0.67	50	4	4	9.53	2.54	2.70	2.84	2.96	3.19
EPDSE2007-4-□□□	□	□	0.7	4	1.05	0.67	50	4	4	7.94	4.66	4.89	5.07	5.24	5.53
EPDSE2007-6-□□□	□	□	0.7	6	1.05	0.67	50	4	4	6.81	6.76	7.04	7.26	7.45	8.05
EPDSE2007-8-□□□	□	□	0.7	8	1.05	0.67	50	4	4	5.95	8.85	9.17	9.42	9.65	10.71
EPDSE2007-10-□□□	□	□	0.7	10	1.05	0.67	50	4	4	5.29	10.93	11.28	11.56	12.05	13.36
EPDSE2008-4-□□□	□	●	0.8	4	1.20	0.77	50	4	4	7.86	4.66	4.89	5.07	5.24	5.53
EPDSE2008-6-□□□	□	●	0.8	6	1.20	0.77	50	4	4	6.72	6.76	7.04	7.26	7.45	8.05
EPDSE2008-8-□□□	□	□	0.8	8	1.20	0.77	50	4	4	5.86	8.85	9.17	9.42	9.65	10.71
EPDSE2008-10-□□□	□	□	0.8	10	1.20	0.77	50	4	4	5.20	10.93	11.28	11.56	12.05	13.36
EPDSE2008-12-□□□	□	□	0.8	12	1.20	0.77	55	4	4	4.67	13.00	13.38	13.76	14.44	16.02
EPDSE2009-6-□□□	□	□	0.9	6	1.35	0.86	50	4	4	6.61	6.79	7.06	7.28	7.47	8.08
EPDSE2009-8-□□□	□	□	0.9	8	1.35	0.86	50	4	4	5.76	8.87	9.18	9.43	9.68	10.74
EPDSE2009-10-□□□	□	□	0.9	10	1.35	0.86	50	4	4	5.10	10.95	11.30	11.57	12.07	13.39
EPDSE2009-12-□□□	□	□	0.9	12	1.35	0.86	55	4	4	4.58	13.02	13.40	13.79	14.47	16.05
EPDSE2010-2-□□□	□	●	1.0	2	1.50	0.96	50	4	4	9.31	2.58	2.73	2.86	2.98	3.21
EPDSE2010-3-□□□	□	●	1.0	3	1.50	0.96	50	4	4	8.41	3.64	3.82	3.99	4.13	4.39
EPDSE2010-4-□□□	□	●	1.0	4	1.50	0.96	50	4	4	7.67	4.69	4.91	5.09	5.26	5.54

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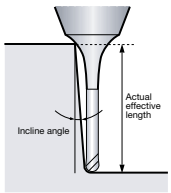

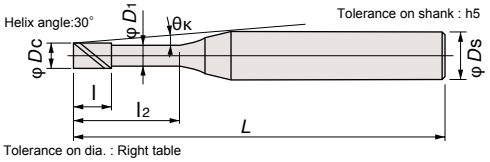

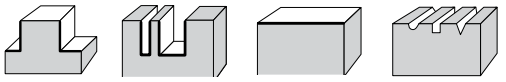

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ϕDs	h5	Dc (Ø0.6 – Ø0.9)	0/-0.01
		Dc (Ø1– Ø6)	0/-0.015

	Stock		Size (mm)						Neck		Actual Effective Length in Incline Angles				
Part No.*	PN	ATH	D_c	l_2	l	D_1	L	D_s	R	θk	0.5°	1°	1.5°	2°	3°
EPDSE2010-5-□□□	□	●	1.0	5	1.50	0.96	50	4	4	7.04	5.74	5.99	6.19	6.37	6.76
EPDSE2010-6-□□□	□	●	1.0	6	1.50	0.96	50	4	4	6.51	6.79	7.06	7.28	7.47	8.08
EPDSE2010-7-□□□	□	●	1.0	7	1.50	0.96	50	4	4	6.06	7.83	8.12	8.36	8.56	9.41
EPDSE2010-8-□□□	□	●	1.0	8	1.50	0.96	50	4	4	5.66	8.87	9.18	9.43	9.68	10.74
EPDSE2010-9-□□□	□	●	1.0	9	1.50	0.96	50	4	4	5.31	9.91	10.24	10.50	10.88	12.07
EPDSE2010-10-□□□	□	●	1.0	10	1.50	0.96	50	4	4	5.00	10.95	11.30	11.57	12.07	13.39
EPDSE2010-12-□□□	□	□	1.0	12	1.50	0.96	55	4	4	4.48	13.02	13.40	13.79	14.47	16.05
EPDSE2010-14-□□□	□	□	1.0	14	1.50	0.96	55	4	4	4.06	15.09	15.49	16.07	16.86	18.70
EPDSE2010-16-□□□	□	□	1.0	16	1.50	0.96	55	4	4	3.71	17.15	17.58	18.35	19.25	21.36
EPDSE2010-20-□□□	□	□	1.0	20	1.50	0.96	60	4	4	3.17	21.26	21.89	22.91	24.04	26.66
EPDSE2010-25-□□□	□	□	1.0	25	1.50	0.96	65	4	4	2.68	26.39	27.33	28.61	30.02	-
EPDSE2012-6-□□□	□	□	1.2	6	1.80	1.15	50	4	4	6.29	6.81	7.08	7.29	7.48	8.11
EPDSE2012-8-□□□	□	□	1.2	8	1.80	1.15	50	4	4	5.44	8.90	9.20	9.45	9.71	10.77
EPDSE2012-10-□□□	□	□	1.2	10	1.80	1.15	50	4	4	4.80	10.97	11.31	11.58	12.10	13.42
EPDSE2012-12-□□□	□	□	1.2	12	1.80	1.15	55	4	4	4.29	13.04	13.41	13.82	14.49	16.08
EPDSE2012-16-□□□	□	□	1.2	16	1.80	1.15	55	4	4	3.53	17.16	17.59	18.38	19.28	21.39
EPDSE2014-6-□□□	□	□	1.4	6	2.10	1.34	50	4	4	6.06	6.84	7.09	7.31	7.50	8.15
EPDSE2014-12-□□□	□	□	1.4	12	2.10	1.34	55	4	4	4.08	13.06	13.43	13.84	14.52	16.11
EPDSE2015-4-□□□	□	●	1.5	4	2.25	1.44	50	4	4	7.11	4.75	4.95	5.13	5.29	5.57
EPDSE2015-6-□□□	□	●	1.5	6	2.25	1.44	50	4	4	5.94	6.84	7.09	7.31	7.50	8.15
EPDSE2015-8-□□□	□	●	1.5	8	2.25	1.44	50	4	4	5.10	8.92	9.22	9.46	9.74	10.80
EPDSE2015-10-□□□	□	●	1.5	10	2.25	1.44	50	4	4	4.47	10.99	11.33	11.59	12.13	13.45
EPDSE2015-12-□□□	□	□	1.5	12	2.25	1.44	55	4	4	3.97	13.06	13.43	13.84	14.52	16.11
EPDSE2015-14-□□□	□	□	1.5	14	2.25	1.44	55	4	4	3.58	15.12	15.52	16.12	16.92	18.76
EPDSE2015-16-□□□	□	□	1.5	16	2.25	1.44	55	4	4	3.25	17.18	17.60	18.40	19.31	21.42
EPDSE2015-18-□□□	□	□	1.5	18	2.25	1.44	60	4	4	2.98	19.24	19.76	20.69	21.70	-
EPDSE2015-20-□□□	□	□	1.5	20	2.25	1.44	60	4	4	2.76	21.29	21.94	22.97	24.10	-
EPDSE2015-25-□□□	□	□	1.5	25	2.25	1.44	65	4	4	2.31	26.42	27.39	28.67	30.08	-
EPDSE2015-30-□□□	□	□	1.5	30	2.25	1.44	70	4	4	1.99	31.53	32.83	34.37	-	-
EPDSE2015-35-□□□	□	□	1.5	35	2.25	1.44	75	4	4	1.75	36.64	38.28	40.07	-	-

*For the last 3 digits of the part nr. enter the coating type (PN, ATH)

□ = Stocked items in Japan

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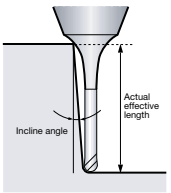

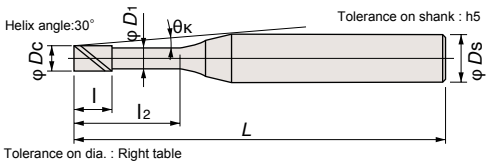

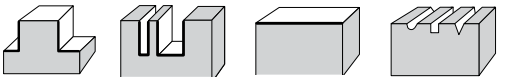

Helix Angle	30°	Dc (Ø0.1 – Ø0.5)	0/-0.007
ϕDs	h5	Dc (Ø0.6 – Ø0.9)	0/-0.01
		Dc (Ø1– Ø6)	0/-0.015

	Stock		Size (mm)						Neck		Actual Effective Length in Incline Angles				
Part No.*	PN	ATH	D_c	l_2	l	D_1	L	D_s	R	θk	0.5°	1°	1.5°	2°	3°
EPDSE2015-40-□□□	□	□	1.5	40	2.25	1.44	80	4	4	1.56	41.85	43.73	45.78	-	-
EPDSE2016-6-□□□	□	□	1.6	6	2.40	1.54	50	4	4	5.82	6.84	7.09	7.31	7.50	8.15
EPDSE2016-8-□□□	□	□	1.6	8	2.40	1.54	50	4	4	4.98	8.92	9.22	9.46	9.74	10.80
EPDSE2018-6-□□□	□	□	1.8	6	2.70	1.73	50	4	4	5.55	6.86	7.11	7.32	7.51	8.18
EPDSE2018-8-□□□	□	□	1.8	8	2.70	1.73	50	4	4	4.72	8.94	9.23	9.47	9.76	10.83
EPDSE2020-4-□□□	□	●	2.0	4	3.00	1.92	50	4	4	6.42	4.80	5.00	5.17	5.32	5.59
EPDSE2020-6-□□□	□	●	2.0	6	3.00	1.92	50	4	4	5.25	6.88	7.13	7.34	7.52	8.21
EPDSE2020-8-□□□	□	●	2.0	8	3.00	1.92	50	4	4	4.44	8.96	9.25	9.49	9.79	10.86
EPDSE2020-10-□□□	□	●	2.0	10	3.00	1.92	50	4	4	3.85	11.03	11.35	11.62	12.19	13.52
EPDSE2020-12-□□□	□	●	2.0	12	3.00	1.92	55	4	4	3.39	13.10	13.45	13.90	14.58	16.17
EPDSE2020-14-□□□	□	●	2.0	14	3.00	1.92	55	4	4	3.03	15.16	15.54	16.18	16.97	18.83
EPDSE2020-16-□□□	□	□	2.0	16	3.00	1.92	55	4	4	2.75	17.21	17.63	18.46	19.37	-
EPDSE2020-18-□□□	□	□	2.0	18	3.00	1.92	60	4	4	2.51	19.27	19.81	20.74	21.76	-
EPDSE2020-20-□□□	□	□	2.0	20	3.00	1.92	60	4	4	2.31	21.32	21.99	23.02	24.15	-
EPDSE2020-25-□□□	□	□	2.0	25	3.00	1.92	65	4	4	1.92	26.44	27.44	28.72	-	-
EPDSE2020-30-□□□	□	□	2.0	30	3.00	1.92	70	4	4	1.65	31.55	32.88	34.42	-	-
EPDSE2020-35-□□□	□	□	2.0	35	3.00	1.92	75	4	4	1.44	36.69	38.33	-	-	-
EPDSE2020-40-□□□	□	□	2.0	40	3.00	1.92	80	4	4	1.28	41.90	43.78	-	-	-
EPDSE2020-50-□□□	□	□	2.0	50	3.00	1.92	90	4	4	1.05	52.33	54.67	-	-	-
EPDSE2025-8-□□□	□	□	2.5	8	3.75	2.40	50	4	4	3.65	9.00	9.28	9.51	9.85	10.93
EPDSE2025-12-□□□	□	□	2.5	12	3.75	2.40	55	4	4	2.73	13.13	13.48	13.95	14.64	-
EPDSE2025-16-□□□	□	□	2.5	16	3.75	2.40	55	4	4	2.18	17.25	17.68	18.51	19.42	-
EPDSE2025-20-□□□	□	□	2.5	20	3.75	2.40	60	4	4	1.81	21.35	22.04	23.07	-	-
EPDSE2025-30-□□□	□	□	2.5	30	3.75	2.40	70	4	4	1.28	31.58	32.94	-	-	-
EPDSE2025-40-□□□	□	□	2.5	40	3.75	2.40	80	4	4	0.99	41.95	-	-	-	-
EPDSE2025-50-□□□	□	□	2.5	50	3.75	2.40	90	4	4	0.80	52.38	-	-	-	-
EPDSE2030-8-□□□	□	●	3.0	8	4.50	2.88	55	6	4	5.59	9.04	9.31	9.54	9.91	10.99
EPDSE2030-12-□□□	□	●	3.0	12	4.50	2.88	60	6	4	4.44	13.16	13.50	14.00	14.69	16.30
EPDSE2030-16-□□□	□	●	3.0	16	4.50	2.88	60	6	4	3.68	17.28	17.73	18.57	19.48	21.61
EPDSE2030-20-□□□	□	□	3.0	20	4.50	2.88	65	6	4	3.15	21.38	22.09	23.13	24.26	26.91

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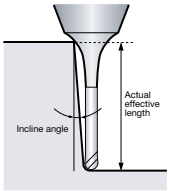

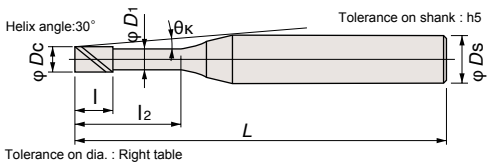

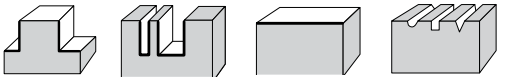

Helix Angle	30°	Dc (Ø0.1 – Ø0.5)	0/-0.007
ϕDs	h5	Dc (Ø0.6 – Ø0.9)	0/-0.01
		Dc (Ø1– Ø6)	0/-0.015

	Stock		Size (mm)						Neck		Actual Effective Length in Incline Angles				
Part No.*	PN	ATH	D_c	l_2	l	D_1	L	D_s	R	θk	0.5°	1°	1.5°	2°	3°
EPDSE2030-25-□□□	□	□	3.0	25	4.5	2.88	70	6	4	2.66	26.49	27.54	28.83	30.25	-
EPDSE2030-30-□□□	□	□	3.0	30	4.5	2.88	75	6	4	2.31	31.60	32.99	34.53	36.23	-
EPDSE2030-40-□□□	□	□	3.0	40	4.5	2.88	90	6	4	1.82	42.00	43.88	45.94	-	-
EPDSE2030-50-□□□	□	□	3.0	50	4.5	2.88	100	6	4	1.50	52.43	54.78	-	-	-
EPDSE2040-12-□□□	□	●	4.0	12	6.0	3.85	60	6	4	3.36	13.21	13.54	14.08	14.78	16.39
EPDSE2040-16-□□□	□	●	4.0	16	6.0	3.85	60	6	4	2.72	17.32	17.81	18.65	19.56	-
EPDSE2040-20-□□□	□	●	4.0	20	6.0	3.85	70	6	4	2.29	21.42	22.17	23.21	24.35	-
EPDSE2040-25-□□□	□	□	4.0	25	6.0	3.85	70	6	4	1.91	26.53	27.62	28.91	-	-
EPDSE2040-30-□□□	□	□	4.0	30	6.0	3.85	80	6	4	1.64	31.65	33.06	34.61	-	-
EPDSE2040-35-□□□	□	□	4.0	35	6.0	3.85	80	6	4	1.44	36.86	38.51	-	-	-
EPDSE2040-40-□□□	□	□	4.0	40	6.0	3.85	90	6	4	1.28	42.08	43.96	-	-	-
EPDSE2040-50-□□□	□	□	4.0	50	6.0	3.85	100	6	4	1.05	52.50	54.85	-	-	-
EPDSE2050-20-□□□	□	●	5.0	20	7.5	4.85	70	6	4	1.27	21.42	22.17	-	-	-
EPDSE2050-25-□□□	□	●	5.0	25	7.5	4.85	70	6	4	1.04	26.53	27.62	-	-	-
EPDSE2050-30-□□□	□	□	5.0	30	7.5	4.85	80	6	4	0.88	31.65	-	-	-	-
EPDSE2050-40-□□□	□	□	5.0	40	7.5	4.85	90	6	4	0.68	42.08	-	-	-	-
EPDSE2050-50-□□□	□	□	5.0	50	7.5	4.85	100	6	4	0.55	52.50	-	-	-	-
EPDSE2060-20-□□□	□	●	6.0	20	9.0	5.85	70	6	-	0.00	-	-	-	-	-
EPDSE2060-30-□□□	□	●	6.0	30	9.0	5.85	80	6	-	0.00	-	-	-	-	-
EPDSE2060-40-□□□	□	□	6.0	40	9.0	5.85	90	6	-	0.00	-	-	-	-	-
EPDSE2060-50-□□□	□	□	6.0	50	9.0	5.85	100	6	-	0.00	-	-	-	-	-

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Cutting Conditions
High Efficiency (Metric)

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			PN Coating											
									ATH Coating					
			Copper (Cu)		Carbon steels Alloy steel (180 - 250HB)		Stainless steels Tool steels (25 - 35HRC)		Pre-harden steels (35 - 45HRC)		Hardened steel (45 - 55HRC)		Hardened steel (55 - 65HRC)	
Ratio to standard depth of cut			120%		100%		90%		70%		50%		45%	
Mill dia.	Under neck length	a_p	n (RPM)	vf (mm/min)	n (RPM)	vf (mm/min)	n (RPM)	vf (mm/min)	n (RPM)	vf (mm/min)	n (RPM)	vf (mm/min)	n (RPM)	vf (mm/min)
0.1	**0.3**	0.006	50,000	500	50,000	500	50,000	475	48,600	348	42,750	255	40,050	208
0.1	**0.5**	0.004	50,000	500	50,000	500	50,000	475	48,600	348	42,750	255	40,050	208
0.1	**1.0**	0.003	50,000	455	50,000	455	48,600	430	43,700	315	38,500	232	36,050	187
0.2	**0.5**	0.020	50,000	708	45,000	638	40,500	574	38,250	403	33,750	301	31,500	242
0.2	**1.0**	0.014	50,000	708	45,000	638	40,500	574	38,250	403	33,750	301	31,500	242
0.2	**1.5**	0.008	48,600	630	40,500	525	36,450	472	34,425	362	30,375	271	28,350	218
0.2	**2.0**	0.005	43,200	504	36,000	420	32,400	378	30,600	286	27,000	214	25,200	172
0.2	**3.0**	0.003	43,200	454	36,000	378	32,400	340	30,600	257	27,000	193	25,200	155
0.3	**1.0**	0.021	48,000	680	40,000	567	36,000	510	34,000	358	30,000	267	28,000	216
0.3	**1.5**	0.021	48,000	680	40,000	567	36,000	510	34,000	358	30,000	267	28,000	216
0.3	**2.0**	0.012	43,200	560	36,000	467	32,400	420	30,600	322	27,000	241	25,200	194
0.3	**2.5**	0.010	43,200	560	36,000	467	32,400	420	30,600	322	27,000	241	25,200	194
0.3	**3.0**	0.008	43,200	560	36,000	467	32,400	420	30,600	322	27,000	241	25,200	194
0.4	**1.0**	0.040	38,400	847	32,000	706	28,800	635	27,200	446	24,000	333	22,400	268
0.4	**1.5**	0.028	38,400	847	32,000	706	28,800	635	27,200	446	24,000	333	22,400	268
0.4	**2.0**	0.028	38,400	847	32,000	706	28,800	635	27,200	446	24,000	333	22,400	268
0.4	**2.5**	0.022	34,560	697	28,800	581	25,920	523	24,480	401	21,600	299	20,160	241
0.4	**3.0**	0.016	34,560	697	28,800	581	25,920	523	24,480	401	21,600	299	20,160	241
0.4	**3.5**	0.012	34,560	697	28,800	581	25,920	523	24,480	401	21,600	299	20,160	241
0.4	**4.0**	0.010	34,560	697	28,800	581	25,920	523	24,480	401	21,600	299	20,160	241
0.4	**5.0**	0.010	30,720	542	25,600	452	23,040	406	21,760	260	19,200	230	17,920	181
0.4	**6.0**	0.006	30,720	542	25,600	452	23,040	406	21,760	260	19,200	230	17,920	181
0.4	**8.0**	0.003	26,880	413	22,400	344	20,160	310	19,040	200	16,800	172	15,680	131
0.4	**10.0**	0.002	23,040	304	19,200	253	17,280	228	16,320	147	14,400	127	13,440	96
0.5	**1.0**	0.050	38,400	847	32,000	706	28,800	635	27,200	535	24,000	333	22,400	268
0.5	**1.5**	0.050	38,400	847	32,000	706	28,800	635	27,200	535	24,000	333	22,400	268
0.5	**2.0**	0.035	38,400	847	32,000	706	28,800	635	27,200	535	24,000	333	22,400	268
0.5	**2.5**	0.030	34,560	697	28,800	581	25,920	523	24,480	441	21,600	299	20,160	241
0.5	**3.0**	0.020	34,560	697	28,800	581	25,920	523	24,480	441	21,600	299	20,160	241
0.5	**4.0**	0.020	34,560	697	28,800	581	25,920	523	24,480	401	21,600	299	20,160	241
0.5	**5.0**	0.013	34,560	697	28,800	581	25,920	523	24,480	401	21,600	299	20,160	241
0.5	**6.0**	0.013	30,720	542	25,600	452	23,040	406	21,760	260	19,200	230	17,920	181
0.5	**8.0**	0.008	30,720	464	25,600	387	23,040	348	21,760	247	19,200	194	17,920	147
0.5	**10.0**	0.004	26,880	360	22,400	300	20,160	270	19,040	174	16,800	150	15,680	114
0.6	**2.0**	0.042	38,400	1,210	32,000	1,008	28,800	907	27,200	636	24,000	475	22,400	383
0.6	**3.0**	0.035	34,560	995	28,800	829	25,920	746	24,480	573	21,600	428	20,160	345
0.6	**4.0**	0.024	34,560	995	28,800	829	25,920	746	24,480	573	21,600	428	20,160	345
0.6	**5.0**	0.020	34,560	995	28,800	829	25,920	746	24,480	573	21,600	428	20,160	345
0.6	**6.0**	0.015	34,560	995	28,800	829	25,920	746	24,480	573	21,600	428	20,160	345
0.6	**7.0**	0.015	30,720	859	25,600	716	23,040	644	21,760	494	19,200	369	17,920	298
0.6	**8.0**	0.015	30,720	774	25,600	645	23,040	581	21,760	372	19,200	328	17,920	258
0.6	**9.0**	0.012	30,720	774	25,600	645	23,040	581	21,760	372	19,200	328	17,920	258
0.6	**10.0**	0.009	30,720	774	25,600	645	23,040	581	21,760	372	19,200	328	17,920	258

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Cutting Conditions
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			PN Coating						ATH Coating					
			Copper (Cu)		Carbon steels Alloy steel (180 - 250HB)		Stainless steels Tool steels (25 - 35HRC)		Pre-harden steels (35 - 45HRC)		Hardened steel (45 - 55HRC)		Hardened steel (55 - 65HRC)	
Ratio to standard depth of cut			120%		100%		90%		70%		50%		45%	
Mill dia.	Under neck length	a_p	n (RPM)	vf (mm/min)	n (RPM)	vf (mm/min)	n (RPM)	vf (mm/min)	n (RPM)	vf (mm/min)	n (RPM)	vf (mm/min)	n (RPM)	vf (mm/min)
0.7	**2**	0.070	38,400	1,210	32,000	1,008	28,800	907	27,200	636	24,000	475	22,400	384
0.7	**4**	0.049	34,560	995	28,800	829	25,920	746	24,480	573	21,600	428	20,160	345
0.7	**6**	0.018	34,560	995	28,800	829	25,920	746	24,480	573	21,600	428	20,160	345
0.7	**8**	0.018	30,720	774	25,600	645	23,040	581	21,760	372	19,200	328	17,920	258
0.7	**10**	0.018	30,720	774	25,600	645	23,040	581	21,760	372	19,200	328	17,920	258
0.8	**4**	0.056	38,400	1,210	32,000	1,008	28,800	907	27,200	780	24,000	688	22,400	422
0.8	**6**	0.032	34,560	995	28,800	829	25,920	746	24,480	678	24,000	665	20,160	379
0.8	**8**	0.020	34,560	995	28,800	829	25,920	746	24,480	573	21,600	428	20,160	345
0.8	**10**	0.020	30,720	774	25,600	645	23,040	581	21,760	372	19,200	328	17,920	258
0.8	**12**	0.012	30,720	774	25,600	645	23,040	581	21,760	372	19,200	328	17,920	258
0.9	**6**	0.036	34,560	1094	28,800	994	25,920	895	24,480	687	21,600	556	20,160	414
0.9	**8**	0.023	34,560	1094	28,800	911	25,920	820	24,480	630	21,600	513	20,160	379
0.9	**10**	0.023	30,720	774	25,600	645	23,040	581	21,760	372	19,200	328	17,920	258
0.9	**12**	0.023	30,720	774	25,600	645	23,040	581	21,760	372	19,200	328	17,920	258
1.0	**2**	0.100	34,560	1,628	28,800	1,356	25,920	1,220	24,480	1150	22,930	1008	20,160	846
1.0	**3**	0.085	34,560	1,628	28,800	1,356	25,920	1,220	24,480	1150	22,930	1008	20,160	846
1.0	**4**	0.070	34,560	1,628	28,800	1,356	25,920	1,220	24,480	1077	22,930	963	20,160	766
1.0	**5**	0.055	34,560	1,628	28,800	1,356	25,920	1,220	24,480	1028	22,930	871	20,160	685
1.0	**6**	0.040	31,104	1,344	25,920	1,120	23,328	1,008	22,032	903	20,700	745	18,144	465
1.0	**7**	0.040	31,104	1,344	25,920	1,120	23,328	1,008	22,032	837	20,700	703	18,144	465
1.0	**8**	0.040	31,104	1,344	25,920	1,120	23,328	1,008	22,032	837	20,700	622	18,144	465
1.0	**9**	0.033	31,104	1,344	25,920	1,120	23,328	1,008	22,032	773	19,440	577	18,144	465
1.0	**10**	0.025	31,104	1,344	25,920	1,120	23,328	1,008	22,032	773	19,440	577	18,144	465
1.0	**12**	0.025	27,648	1,045	23,040	871	20,736	784	19,584	502	17,280	443	16,128	348
1.0	**14**	0.025	27,648	1,045	23,040	871	20,736	784	19,584	502	17,280	443	16,128	348
1.0	**16**	0.015	27,648	896	23,040	746	20,736	672	19,584	476	17,280	373	16,128	283
1.0	**20**	0.010	24,828	732	20,690	610	22,345	549	17,587	348	15,518	305	14,483	226
1.0	**25**	0.005	21,000	569	17,500	474	18,900	427	14,875	270	13,125	237	12,250	175
1.2	**6**	0.084	30,720	1,452	25,600	1,210	23,040	1,089	21,760	870	19,200	570	17,920	460
1.2	**8**	0.048	27,648	1,194	23,040	995	20,736	896	19,584	783	17,280	513	16,128	414
1.2	**10**	0.030	27,648	1,194	23,040	995	20,736	896	19,584	744	17,280	513	16,128	414
1.2	**12**	0.030	27,648	1,194	23,040	995	20,736	896	19,584	687	17,280	513	16,128	414
1.2	**16**	0.020	24,576	1,061	20,480	884	18,432	796	17,408	611	15,360	456	14,336	368
1.4	**6**	0.100	26,880	1,270	22,400	1,058	20,160	953	19,040	668	16,800	499	15,680	403
1.4	**12**	0.035	24,192	1,045	20,160	871	18,144	784	17,136	601	15,120	449	14,112	362
1.5	**4**	0.110	26,880	1,397	22,400	1,163	20,160	1048	19,040	801	16,800	648	15,680	482
1.5	**6**	0.110	26,880	1,397	22,400	1,163	20,160	1048	19,040	801	16,800	623	15,680	482
1.5	**8**	0.080	24,192	1,149	20,160	958	18,144	940	17,136	721	15,120	538	14,112	416
1.5	**10**	0.060	24,192	1,149	20,160	871	18,144	862	17,136	721	15,120	538	14,112	416
1.5	**12**	0.060	24,192	1,045	20,160	871	18,144	784	17,136	721	15,120	449	14,112	362
1.5	**14**	0.038	24,192	1,045	20,160	871	18,144	784	17,136	721	15,120	449	14,112	362
1.5	**16**	0.038	21,504	813	17,920	677	16,128	610	15,232	391	13,440	345	12,544	271

EPDSE

EPDSE
Cutting Conditions
High Efficiency (Metric)

MOLDINO
The Edge To Innovation

			PN Coating											
									ATH Coating					
			Copper (Cu)		Carbon steels Alloy steel (180 - 250HB)		Stainless steels Tool steels (25 - 35HRC)		Pre-harden steels (35 - 45HRC)		Hardened steel (45 - 55HRC)		Hardened steel (55 - 65HRC)	
Ratio to standard depth of cut			120%		100%		90%		70%		50%		45%	
Mill dia.	Under neck length	a_p	n (RPM)	vf (mm/min)	n (RPM)	vf (mm/min)	n (RPM)	vf (mm/min)	n (RPM)	vf (mm/min)	n (RPM)	vf (mm/min)	n (RPM)	vf (mm/min)
1.5	**18**	0.038	21,504	813	17,920	677	16,128	610	15,232	391	13,440	345	12,544	271
1.5	**20**	0.038	21,504	813	17,920	677	16,128	610	15,232	391	13,440	345	12,544	271
1.5	**25**	0.023	16,128	523	13,440	435	12,096	392	11,424	278	10,080	218	9,408	165
1.5	**30**	0.015	13,440	355	11,200	296	12,096	266	9,520	178	8,400	139	7,840	112
1.5	**35**	0.010	13,440	355	11,200	296	12,096	266	9,520	178	8,400	139	7,840	112
1.5	**40**	0.005	10,752	190	8,960	158	8,064	142	7,616	95	6,720	74	6,272	60
1.6	**6**	0.110	24,960	1,310	20,800	1,201	18,720	1130	17,680	759	15,600	566	14,560	456
1.6	**8**	0.110	24,960	1,310	20,800	1,201	18,720	983	17,680	690	15,600	566	14,560	456
1.8	**6**	0.130	24,960	1,310	20,800	1,201	18,720	1179	17,680	759	15,600	618	14,560	498
1.8	**8**	0.130	24,960	1,310	20,800	1,201	18,720	1081	17,680	690	15,600	618	14,560	498
2.0	**4**	0.200	20,160	1,397	16,800	1,174	15,120	1048	14,280	734	12,600	548	11,760	443
2.0	**6**	0.200	20,160	1,397	16,800	1,174	15,120	1048	14,280	734	12,600	548	11,760	443
2.0	**8**	0.140	20,160	1,397	16,800	1,174	15,120	1048	14,280	734	12,600	548	11,760	443
2.0	**10**	0.140	20,160	1,397	16,800	1,174	15,120	1048	14,280	734	12,600	548	11,760	443
2.0	**12**	0.100	18,144	1,149	15,120	958	13,608	862	12,852	661	11,340	493	10,584	398
2.0	**14**	0.080	18,144	1,149	15,120	958	13,608	862	12,852	661	11,340	493	10,584	362
2.0	**16**	0.080	18,144	1,045	15,120	914	13,608	862	12,852	601	11,340	449	10,584	362
2.0	**18**	0.050	18,144	1,045	15,120	914	13,608	862	12,852	601	11,340	449	10,584	362
2.0	**20**	0.050	18,144	1,045	15,120	871	13,608	784	12,852	601	11,340	449	10,584	362
2.0	**25**	0.050	16,128	813	13,440	677	12,096	610	11,424	391	10,080	345	9,408	271
2.0	**30**	0.030	16,128	813	13,440	677	12,096	610	11,424	391	10,080	345	9,408	271
2.0	**35**	0.020	14,112	583	11,760	486	10,584	437	9,996	282	8,820	228	8,232	185
2.0	**40**	0.010	14,112	583	11,760	486	10,584	437	9,996	282	8,820	228	8,232	185
2.0	**50**	0.005	12,096	355	10,080	296	9,072	266	8,568	172	7,560	139	7,056	112
2.5	**8**	0.180	17,280	1,497	14,400	1,247	12,960	1,123	12,240	787	10,800	642	10,080	474
2.5	**12**	0.180	17,280	1,260	14,400	1,247	12,960	1,123	12,240	716	10,800	588	10,080	431
2.5	**16**	0.100	15,552	1,120	12,960	1073	11,664	966	11,016	644	9,720	529	9,072	388
2.5	**20**	0.100	15,552	1,120	12,960	933	11,664	840	11,016	644	9,720	529	9,072	388
2.5	**30**	0.060	13,824	870	11,520	725	10,368	653	9,792	435	8,640	341	8,064	276
2.5	**40**	0.030	12,096	625	10,080	521	9,072	469	8,568	313	7,560	245	7,056	198
2.5	**50**	0.010	12,096	625	10,080	521	9,072	469	8,568	313	7,560	245	7,056	198
3.0	**8**	0.300	15,360	1,331	12,800	1,108	11,520	997	10,880	699	10,600	570	8,960	422
3.0	**12**	0.210	15,360	1,331	12,800	1,108	11,520	997	10,880	699	10,600	570	8,960	422
3.0	**16**	0.150	13,824	1144	11,520	994	10,368	820	9,792	630	9,450	513	8,064	379
3.0	**20**	0.120	13,824	995	11,520	911	10,368	820	9,792	630	9,450	513	8,064	379
3.0	**25**	0.080	13,824	995	11,520	911	10,368	820	9,792	630	9,450	513	8,064	379
3.0	**30**	0.080	13,824	995	11,520	829	10,368	746	9,792	630	9,450	513	8,064	347
3.0	**40**	0.050	12,288	884	10,240	737	9,216	663	8,704	509	7,680	380	7,168	307
3.0	**50**	0.020	10,752	556	8,960	463	8,064	417	7,616	278	6,720	218	6,272	176

EPDSE

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			PN Coating											
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			Copper (Cu)		Carbon steels Alloy steel (180 - 250HB)		Stainless steels Tool steels (25 - 35HRC)		Pre-harden steels (35 - 45HRC)		Hardened steel (45 - 55HRC)		Hardened steel (55 - 65HRC)	
Ratio to standard depth of cut			120%		100%		90%		70%		50%		45%	
Mill dia.	Under neck length	a_p	n (RPM)	vf (mm/min)	n (RPM)	vf (mm/min)	n (RPM)	vf (mm/min)	n (RPM)	vf (mm/min)	n (RPM)	vf (mm/min)	n (RPM)	vf (mm/min)
4	**12**	0.40	11,500	2,300	9,400	1,880	8,460	1,524	7,990	1,358	7,050	902	6,580	728
4	**16**	0.28	11,500	2,300	9,400	1,880	8,460	1,524	7,990	1,358	7,050	902	6,580	728
4	**20**	0.28	10,350	2,070	8,460	1,692	7,614	1,371	7,191	1,222	6,345	812	5,922	655
4	**25**	0.16	10,350	1,863	8,460	1,524	7,614	1,233	7,191	1,100	6,345	812	5,922	655
4	**30**	0.16	10,350	1,863	8,460	1,524	7,614	1,233	7,191	1,100	6,345	812	5,922	655
4	**35**	0.10	9,137	1,645	7,614	1,371	6,853	1,110	6,472	990	5,711	731	5,330	589
4	**40**	0.10	9,137	1,645	7,614	1,371	6,853	1,110	6,472	990	5,711	731	5,330	589
4	**50**	0.06	7,896	1,128	6,580	940	5,922	846	5,593	658	4,935	442	4,606	357
5	**20**	0.30	9,014	1,802	7,512	1,652	6,761	1,487	6,385	1,051	5,634	706	5,258	571
5	**25**	0.30	8,112	1,621	6,760	1,351	6,084	1,216	5,746	946	5,070	635	4,732	513
5	**30**	0.20	8,112	1,461	6,760	1,217	6,084	1,094	5,746	851	5,070	573	4,732	462
5	**40**	0.15	7,301	1,315	6,084	1,096	5,476	986	5,171	767	4,563	515	4,259	416
5	**50**	0.10	7,301	1,315	6,084	1,096	5,476	986	5,171	767	4,563	515	4,259	416
6	**20**	0.50	7,418	1,629	6,182	1,481	5,564	1,333	5,255	1036	4,637	766	4,327	562
6	**30**	0.40	6,744	1,480	5,620	1,346	5,058	1,212	4,777	942	4,215	696	3,934	511
6	**40**	0.30	6,744	1,332	5,620	1,109	5,058	998	4,777	847	4,215	625	3,934	459
6	**50**	0.20	6,000	1,090	5,000	986	4,500	887	4,250	690	3,750	515	3,500	379