

END MILL

ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

**EPOCH PANACEA SQUARE
HGOS2 〰-PN**

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัศม R

Square

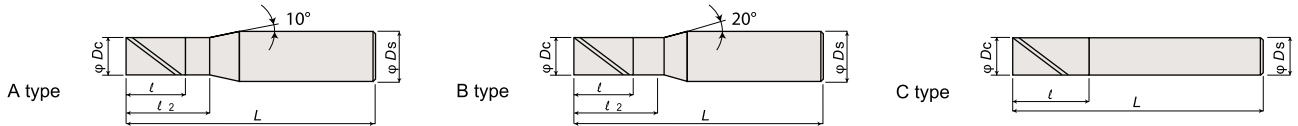
หัวสี่

Taper Ball

หัวเตเปอร์บอล

Roughing

2Flutes



2 flutes



Ø0.2~Ø0.9 : 0~-0.015
Ø1.0~Ø20 : 0~-0.02



Ds ≤ 6 : 0~-0.005
6 < Ds ≤ 10 : 0~-0.006
10 < Ds ≤ 18 : 0~-0.008
18 < Ds : 0~-0.009

(mm)

PN coating for amazing seizure resistance and wear resistance. Enables machining of a wide variety of materials.

Item Code	Stock	Size (mm)					No. of flutes	Type
		Dc Tool Dia.	l Flute Length	l2 Under Neck length	L Overall length	Ds Shank Dia.		
HGOS2002-PN	●	0.2	0.4	0.6	40	4	2	A
HGOS2003-PN	●	0.3	0.6	0.9	40	4	2	A
HGOS2004-PN	●	0.4	0.8	1.1	40	4	2	A
HGOS2005-PN	●	0.5	1	1.3	40	4	2	A
HGOS2006-PN	●	0.6	1.2	1.5	40	4	2	A
HGOS2007-PN	●	0.7	1.4	1.7	40	4	2	A
HGOS2008-PN	●	0.8	1.6	1.9	40	4	2	A
HGOS2009-PN	●	0.9	1.8	2.1	40	4	2	A
HGOS2010-PN	●	1	2	2.5	40	4	2	A
HGOS2015-PN	●	1.5	3	3.5	40	4	2	A
HGOS2020-PN	●	2	6	7	40	4	2	A
HGOS2025-PN	●	2.5	8	9	40	4	2	A
HGOS2030-PN	●	3	8	9	45	6	2	A
HGOS2035-PN	●	3.5	10	11	45	6	2	A
HGOS2040-PN	●	4	11	12	45	6	2	B
HGOS2045-PN	●	4.5	11	12	45	6	2	B
HGOS2050-PN	●	5	13	14	60	6	2	B
HGOS2055-PN	●	5.5	13	14	60	6	2	B
HGOS2060-PN	●	6	13	-	60	6	2	C
HGOS2070-PN	●	7	16	17	70	8	2	B
HGOS2080-PN	●	8	19	-	75	8	2	C
HGOS2090-PN	●	9	19	20	80	10	2	B
HGOS2100-PN	●	10	22	-	80	10	2	C
HGOS2120-PN	●	12	26	-	100	12	2	C
HGOS2160-PN	●	16	35	-	110	16	2	C
HGOS2200-PN	●	20	40	-	125	20	2	C

● : Stocked Items.

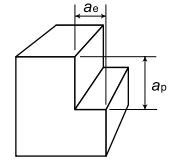


Recommended cutting conditions

HGOS2-PN

Epoch Panacea Square

Side cutting



Dc Tool Dia.	l Flute length	Copper Alloy, Aluminium Alloy				Cast Iron, Carbon Steels (150 ~ 200HB) FC250, S50C, S55C				Stainless Steels (25 ~ 35HRC) SUS304, SUS316			
		min ⁻¹	mm/min	ap mm	ae mm	min ⁻¹	mm/min	ap mm	ae mm	min ⁻¹	mm/min	ap mm	ae mm
0.2	0.4	66,879	669	0.300	0.010	55,732	557	0.300	0.010	33,439	301	0.300	0.008
0.3	0.6	44,586	446	0.450	0.015	37,155	372	0.450	0.015	22,293	201	0.450	0.012
0.4	0.8	38,217	382	0.600	0.020	27,866	279	0.600	0.020	16,720	150	0.600	0.016
0.5	1	38,217	382	0.750	0.025	25,478	255	0.750	0.025	15,287	138	0.750	0.020
0.6	1.2	41,401	662	0.900	0.030	26,539	425	0.900	0.030	15,924	229	0.900	0.024
0.7	1.4	35,487	568	1.050	0.035	29,572	473	1.050	0.035	17,743	256	1.050	0.028
0.8	1.6	33,439	535	1.200	0.040	25,876	414	1.200	0.040	15,525	224	1.200	0.032
0.9	1.8	33,970	544	1.350	0.045	24,770	396	1.350	0.045	14,862	214	1.350	0.036
1	2	38,217	764	1.500	0.050	25,478	510	1.500	0.050	15,287	275	1.500	0.040
1.5	3	28,025	561	2.250	0.150	21,231	425	2.250	0.150	12,739	229	2.250	0.135
2	6	21,019	631	3.000	0.200	17,516	525	3.000	0.200	10,510	284	3.000	0.180
2.5	8	16,815	504	3.750	0.250	14,013	420	3.750	0.250	8,408	227	3.750	0.225
3	8	15,287	611	4.500	0.300	11,677	467	4.500	0.300	7,006	252	4.500	0.270
3.5	10	13,103	524	5.250	0.350	10,919	437	5.250	0.350	6,551	236	5.250	0.315
4	11	11,465	573	6.000	0.400	9,554	478	6.000	0.400	5,732	258	6.000	0.360
4.5	11	10,191	510	6.750	0.450	8,493	425	6.750	0.450	5,096	229	6.750	0.405
5	13	9,172	550	7.500	0.500	7,643	459	7.500	0.500	4,586	248	7.500	0.450
5.5	13	8,338	500	8.250	0.550	6,948	417	8.250	0.550	4,169	225	8.250	0.495
6	13	7,643	459	9.000	0.600	6,369	382	9.000	0.600	3,822	206	9.000	0.540
7	16	6,551	459	10.500	0.700	5,460	382	10.500	0.700	3,276	206	10.500	0.630
8	19	5,732	401	12.000	0.800	4,777	334	12.000	0.800	2,866	181	12.000	0.720
9	19	5,096	408	13.500	0.900	4,246	340	13.500	0.900	2,548	183	13.500	0.810
10	22	4,586	459	15.000	1.000	3,822	382	15.000	1.000	2,293	206	15.000	0.900
12	26	3,822	459	18.000	1.200	3,185	382	18.000	1.200	1,911	206	18.000	1.080
16	35	2,866	401	24.000	1.600	2,389	334	24.000	1.600	1,433	181	24.000	1.440
20	40	2,293	367	30.000	2.000	1,911	306	30.000	2.000	1,146	165	30.000	1.800

Dc Mill Dia.	l Flute length	Alloy Steels (25 ~ 35HRC) HPM7, SKD61®, DKT4				Pre-hardened Steels (35 ~ 45HRC) HPM-MAGIC, CENA1, NAK80				Hardened Steels (45 ~ 52HRC) SKD61®, HPM38, DAC-MAGIC			
		min ⁻¹	mm/min	ap mm	ae mm	min ⁻¹	mm/min	ap mm	ae mm	min ⁻¹	mm/min	ap mm	ae mm
0.2	0.4	33,439	301	0.300	0.008	26,752	217	0.300	0.006	16,720	105	0.300	0.006
0.3	0.6	22,293	201	0.450	0.012	17,834	144	0.450	0.009	11,146	70	0.450	0.009
0.4	0.8	16,720	150	0.600	0.016	13,376	108	0.600	0.012	8,360	53	0.600	0.012
0.5	1	15,287	138	0.750	0.020	12,229	99	0.750	0.015	7,643	48	0.750	0.015
0.6	1.2	15,924	229	0.900	0.024	12,739	165	0.900	0.018	7,962	80	0.900	0.018
0.7	1.4	17,743	256	1.050	0.028	14,195	184	1.050	0.021	8,872	89	1.050	0.021
0.8	1.6	15,525	224	1.200	0.032	12,420	161	1.200	0.024	7,763	78	1.200	0.024
0.9	1.8	14,862	214	1.350	0.036	11,890	154	1.350	0.027	7,431	75	1.350	0.027
1	2	15,287	275	1.500	0.040	12,229	198	1.500	0.030	7,643	96	1.500	0.030
1.5	3	12,739	229	2.250	0.135	10,191	165	2.250	0.120	6,369	80	2.250	0.045
2	6	10,510	284	3.000	0.180	6,115	149	3.000	0.160	5,732	108	3.000	0.060
2.5	8	8,408	227	3.750	0.225	5,707	139	3.750	0.200	5,350	101	3.750	0.075
3	8	7,006	252	4.500	0.270	5,096	165	4.500	0.240	4,777	120	4.500	0.090
3.5	10	6,551	236	5.250	0.315	4,659	151	5.250	0.280	4,368	110	5.250	0.105
4	11	5,732	258	6.000	0.360	4,331	175	6.000	0.320	4,061	128	6.000	0.120
4.5	11	5,096	229	6.750	0.405	4,076	165	6.750	0.360	3,822	120	6.750	0.135
5	13	4,586	248	7.500	0.450	3,873	188	7.500	0.400	3,631	137	7.500	0.150
5.5	13	4,169	225	8.250	0.495	3,706	180	8.250	0.440	3,474	131	8.250	0.165
6	13	3,822	206	9.000	0.540	3,397	165	9.000	0.480	3,185	120	9.000	0.180
7	16	3,276	206	10.500	0.630	2,912	165	10.500	0.560	2,730	120	10.500	0.210
8	19	2,866	181	12.000	0.720	2,548	144	12.000	0.640	2,389	105	12.000	0.240
9	19	2,548	183	13.500	0.810	2,265	147	13.500	0.720	2,123	107	13.500	0.270
10	22	2,293	206	15.000	0.900	2,038	165	15.000	0.800	1,911	120	15.000	0.300
12	26	1,911	206	18.000	1.080	1,699	165	18.000	0.960	1,592	120	18.000	0.360
16	35	1,433	181	24.000	1.440	1,274	144	24.000	1.280	1,194	105	24.000	0.480
20	40	1,146	165	30.000	1.800	1,019	132	30.000	1.600	955	96	30.000	0.600

[Note]

- ① PN coating is less electro conductive. Therefore, electric transmitted measuring systems may not work.
- ② The cutting conditions given above is applied to 2 flutes type end mills. As for 4 flutes type, increase the feed rate by 1.5 times.
- ③ Use a highly rigid and accurate machine as possible.
- ④ Use the appropriate coolant for the work material and machining shape.
- ⑤ These conditions are for general guidance; in actual machining conditions adjust the parameters according to your actual machine and work-piece conditions.
- ⑥ If the rpm available is lower than that recommended please reduce the feed rate to the same ratio.

END MILL

ดอกเอ็นมิลล์

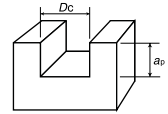


Recommended cutting conditions

HGOS2-PN

Epoch Panacea Square

Side cutting



DEEP SERIES เอ็นมิลล์ตระกูลดีฟ	CBN END MILL CBN เอ็นมิลล์	Carbide Endmill เอ็นมิลล์คาร์ไบด์	HSS Endmill เอ็นมิลล์ไฮสปีด	Ball หัวบอล	Radius หัวก้นมุม R	Square หัวตัด	Taper Ball หัวเตเปอร์บอล	Roughing	Dc Tool Dia.	l Flute length	Copper Alloy, Aluminium Alloy			Cast Iron, Carbon Steels (150 ~ 200HB) FC250, S50C, S55C			Stainless Steels (25 ~ 35HRC) SUS304, SUS316		
											min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm
									0.2	0.4	58,678	235	0.01	53,344	213	0.01	37,341	157	0.01
									0.3	0.6	39,119	156	0.02	35,563	142	0.02	24,894	120	0.02
									0.4	0.8	35,032	140	0.02	26,672	107	0.02	22,293	103	0.02
									0.5	1	31,529	126	0.03	25,478	102	0.03	20,064	103	0.03
									0.6	1.2	32,113	180	0.03	23,885	191	0.03	20,435	143	0.03
									0.7	1.4	30,027	240	0.04	25,023	200	0.04	19,108	161	0.04
									0.8	1.6	28,025	228	0.04	23,885	191	0.04	18,113	152	0.04
									0.9	1.8	21,019	218	0.05	23,001	184	0.05	17,339	143	0.05
									1	2	28,025	215	0.05	22,293	175	0.05	17,834	125	0.05
									1.5	3	21,019	210	0.08	16,985	170	0.08	12,739	115	0.08
									2	6	15,764	189	0.12	14,331	172	0.12	8,917	96	0.12
									2.5	8	12,611	151	0.18	11,465	138	0.18	7,643	83	0.18
									3	8	11,677	163	0.30	9,554	134	0.30	6,794	86	0.30
									3.5	10	10,009	140	0.35	9,099	127	0.35	6,187	78	0.35
									4	11	8,758	140	0.60	7,962	127	0.60	5,732	83	0.60
									4.5	11	7,785	125	0.90	7,077	113	0.90	4,034	58	0.90
									5	13	7,006	140	1.25	6,369	127	1.25	3,822	69	1.25
									5.5	13	6,369	127	1.38	5,790	116	1.38	3,648	66	1.38
									6	13	5,839	160	1.80	5,308	150	1.80	3,503	90	1.80
									7	16	5,005	200	2.45	4,550	182	2.45	3,139	113	2.45
									8	19	4,379	215	3.20	3,981	200	3.20	1,672	125	3.20
									9	19	3,892	234	4.05	3,539	212	4.05	1,486	146	4.05
									10	22	3,503	210	5.00	3,185	191	5.00	1,338	134	5.00
									12	26	2,919	234	6.00	2,654	212	6.00	1,115	103	6.00
									16	35	2,189	219	8.00	1,990	199	8.00	975	100	8.00
									20	40	1,752	210	10.00	1,592	191	10.00	836	103	10.00

Dc Mill Dia.	l Flute length	Alloy Steels (25 ~ 35HRC) HPM7, SKD61®, DKT4			Pre-hardened Steels (35 ~ 45HRC) HPM-MAGIC, CENA1, NAK80			Hardened Steels (45 ~ 52HRC) SKD61®, HPM38, DAC-MAGIC		
		min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm
0.2	0.4	24,005	122	0.01	14,936	56	0.01	8,402	34	0.01
0.3	0.6	16,003	109	0.02	9,958	50	0.01	5,601	30	0.01
0.4	0.8	14,331	109	0.02	8,917	56	0.02	5,016	34	0.02
0.5	1	12,898	93	0.03	8,025	51	0.02	4,514	31	0.02
0.6	1.2	13,137	112	0.03	8,174	51	0.03	4,598	31	0.02
0.7	1.4	12,284	125	0.04	7,643	58	0.03	4,299	35	0.03
0.8	1.6	11,644	119	0.04	7,245	55	0.04	4,075	33	0.03
0.9	1.8	11,146	133	0.05	6,936	61	0.04	3,901	37	0.04
1	2	11,465	125	0.05	7,134	58	0.05	4,013	35	0.04
1.5	3	9,554	114	0.08	5,945	52	0.07	3,344	32	0.06
2	6	7,166	122	0.12	4,459	56	0.11	2,508	34	0.10
2.5	8	5,732	97	0.18	3,567	45	0.16	2,006	27	0.14
3	8	4,777	81	0.30	2,972	37	0.27	1,672	23	0.24
3.5	10	4,095	104	0.35	2,548	48	0.32	1,433	29	0.28
4	11	3,583	91	0.60	2,229	42	0.54	1,254	26	0.49
4.5	11	3,185	92	0.90	1,982	50	0.81	1,115	30	0.73
5	13	2,866	103	1.25	1,783	45	1.13	1,003	27	1.01
5.5	13	2,606	89	1.38	1,621	41	1.24	912	25	1.11
6	13	2,389	105	1.80	1,486	48	1.62	836	30	1.46
7	16	2,047	122	2.45	1,274	56	2.21	717	34	1.98
8	19	1,075	120	3.20	669	54	2.88	376	33	2.59
9	19	955	114	4.05	594	52	3.65	334	32	3.28
10	22	860	117	5.00	535	54	4.50	301	33	4.05
12	26	717	110	6.00	446	51	5.40	251	31	4.86
16	35	627	107	8.00	390	49	7.20	219	30	6.48
20	40	537	100	10.00	334	51	9.00	188	31	8.10