

Endmill series for stainless steel machining

S⁺ Endmill

KORLOY
TECH-NEWS



- Various line-up of S⁺ Endmill is in stock.
- S⁺ Endmill ensures high performance in stainless steel, alloy, and HRSA machining due to its high rake angle and streamlined chip pocket.

Endmill series for stainless steel machining

S⁺ Endmill

Stainless steel with corrosion resistance and smooth surface is widely used in daily life and various industries.

High work hardening and shear resistance of stainless steel often making chip welding and fracture on cutting edge reduce tool life.

Therefore, exclusive tools for stainless steel machining are recommended for efficient performance.

S⁺ Endmill with optimally designed cutting edges

effectively reduces fracture from unexpected chipping by minimizing cutting load and vibration in cutting.

In addition, its new substrate and coating layer ensure higher wear and welding resistance than existing tools.

Moreover, KORLOY recommends S⁺ Endmill with increased welding and wear resistance from optimal substrate, layer, and shape for stainless steel machining to ensure customer's high productivity.



Long tool life

- Strong cutting edge

Special coating layer

- High welding and wear resistance due to good oxidation resistance of coating layer

Improved chip control

- Good chip evacuation from high rake angle and streamlined chip pocket

Special designed cutting edge

- Optimally designed cutting edge for stainless steel machining

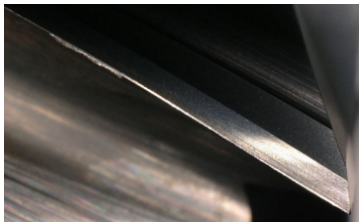
Code system

S P	F E	4	120	-	075	R10
S Plus Endmill	Type F: Flat Endmill R: Radius Endmill	No. of flutes 4: 4 flutes	Cutting Dia. 120: Ø12.0 mm		Overall length 075: 75 mm	Corner R 10: 1.0 mm 05: 0.5 mm 01: 0.1 mm

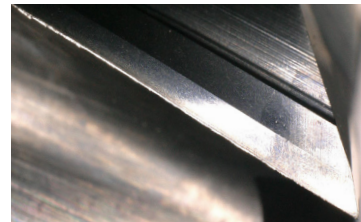
Performance evaluation

Wear resistance

- **Workpiece** X5CrNiMo17-12-2
- **Cutting conditions** vc (m/min) = 50, fz (mm/t) = 0.06, ap (mm) = 10, ae (mm) = 1, wet (70 bar)
- **Tool** SPFE4080-070



[S+ Endmill]

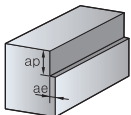


[Competitor]

Recommended cutting conditions

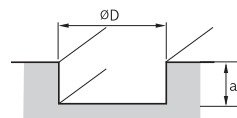
Workpiece Cutting conditions Tool diameter (Ø)	Stainless steel		Titanium alloy/ Inconel		Common steel (HRC25 below)		Stainless steel (HRC25~35 below)		Tool steel (HRC40~50 below)	
	R.P.M n (min ⁻¹)	Feed vf (mm/min)	R.P.M n (min ⁻¹)	Feed vf (mm/min)	R.P.M n (min ⁻¹)	Feed vf (mm/min)	R.P.M n (min ⁻¹)	Feed vf (mm/min)	R.P.M n (min ⁻¹)	Feed vf (mm/min)
2	5,500	240	2,600	90	9,000	540	6,000	3,200	4,000	240
4	4,000	260	2,000	90	6,600	600	4,500	340	3,000	280
6	3,000	360	1,200	90	4,800	720	3,000	360	2,500	280
8	2,000	390	1,000	100	3,600	750	2,200	460	2,000	300
10	1,700	410	800	120	2,800	750	1,800	460	1,500	300
12	1,500	380	700	100	2,400	710	1,500	410	1,200	280
14	1,200	320	600	95	2,200	660	1,300	370	1,000	270
16	1,000	270	500	90	1,800	490	1,100	320	800	230
20	750	250	400	85	900	270	900	270	600	200

Application tip



Shouldering depth (ap) and radial depth (ae)

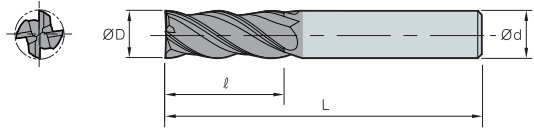
- Common steel, Alloy steel, Stainless steel:
 $ae = 0.1D$, $ap = 1.5D$
- Titanium alloy, Inconel, Hardening steel:
 $ae = 0.05D$, $ap = 1.5D$



Slotting depth (ap)

- Common steel, Alloy steel: $ap = 1.0D$
- Stainless steel: $ap = 0.3D$
- Titanium alloy, Inconel, Hardening steel:
 $ap = 0.2D$

SPFE4000 (Flat)



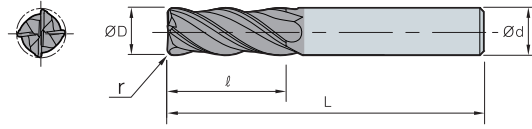
ØD	Tolerance of diameter
Ø1 ~ Ø20	0.00 ~ -0.03



(mm)

Designation		ØD	Ød	ℓ	L
SPFE	4010-050	1	6	2.5	50
	4012-050	1.2	6	3	50
	4015-050	1.5	6	4	50
	4020-050	2	6	6	50
	4025-050	2.5	6	7	50
	4030-055	3	6	8	55
	4030-060-V10	3	6	10	60
	4035-055	3.5	6	10	55
	4040-055	4	6	10	55
	4040-060-V12	4	6	12	60
	4045-055	4.5	6	12	55
	4050-055	5	6	15	55
	4055-060	5.5	6	15	60
	4060-060	6	6	15	60
	4060-065-V20	6	6	20	65
	4065-060	6.5	8	15	60
	4070-080	7	8	20	80
	4080-070	8	8	20	70
	4080-070-V25	8	8	25	70
	4080-080-V30	8	8	30	80
4085-070	8.5	10	20	70	
4090-080	9	10	25	80	
4100-075	10	10	25	75	
4100-085-V35	10	10	35	85	
4120-080	12	12	30	80	
4120-090-V40	12	12	40	90	
4140-090	14	16	35	90	
4160-100	16	16	42	100	
4180-100	18	16	45	100	
4200-100	20	20	48	100	

SPRE4000 (Radius)



ØD	Tolerance of diameter
Ø1 ~ Ø20	0.00 ~ -0.03



(mm)

Designation	ØD	Ød	ℓ	L	R	
SPRE	4010-050-R0.1	1	6	2.5	50	0.1
	4010-050-R0.2	1	6	2.5	50	0.2
4	4012-050-R0.1	1.2	6	3	50	0.1
	4015-050-R0.1	1.5	6	4	50	0.1
	4015-050-R0.2	1.5	6	4	50	0.2
	4020-050-R0.1	2	6	6	50	0.1
	4020-050-R0.2	2	6	6	50	0.2
	4025-050-R0.2	2.5	6	7	50	0.2
	4030-055-R0.2	3	6	8	55	0.2
	4030-055-R0.3	3	6	8	55	0.3
	4030-055-R0.5	3	6	8	55	0.5
	4040-055-R0.2	4	6	10	55	0.2
	4040-055-R0.3	4	6	10	55	0.3
	4040-055-R0.5	4	6	10	55	0.5
	4050-055-R0.2	5	6	15	55	0.2
	4050-055-R0.3	5	6	15	55	0.3
	4050-055-R0.5	5	6	15	55	0.5
	4060-060-R0.3	6	6	15	60	0.3
	4060-060-R0.5	6	6	15	60	0.5
	4060-060-R1.0	6	6	15	60	1
	4080-070-R0.3	8	8	20	70	0.3
	4080-070-R0.5	8	8	20	70	0.5
	4080-070-R1.0	8	8	20	70	1
	4100-075-R0.3	10	10	25	75	0.3
	4100-075-R0.5	10	10	25	75	0.5
	4100-075-R1.0	10	10	25	75	1
	4100-075-R1.5	10	10	25	75	1.5
	4100-075-R2.0	10	10	25	75	2
	4100-075-R3.0	10	10	25	75	3
	4120-080-R0.5	12	12	30	80	0.5
	4120-080-R1.0	12	12	30	80	1
	4120-080-R1.5	12	12	30	80	1.5
	4120-080-R2.0	12	12	30	80	2
	4120-080-R3.0	12	12	30	80	3
	4120-080-R4.0	12	12	30	80	4
	4140-090-R0.5	14	16	35	90	0.5
	4140-090-R1.0	14	16	35	90	1
	4160-100-R0.5	16	16	42	100	0.5
	4160-100-R1.0	16	16	42	100	1
	4180-100-R0.5	18	16	45	100	0.5
	4200-100-R0.5	20	20	48	100	0.5
	4200-100-R1.0	20	20	48	100	1

www.korloy.com



Holystar B/D, 1350, Nambusunhwan-ro, Geumcheon-gu, Seoul, 08536, Korea
Tel : +82-2-522-3181 Fax : +82-2-522-3184, +82-2-3474-4744 Web : www.korloy.com E-mail : export@korloy.com

KORLOY AMERICA

620 Maple Avenue, Torrance, CA 90503, USA
Tel : +1-310-782-3800 Toll Free : +1-888-711-0001 Fax : +1-310-782-3885
E-mail : sales.kai@korloy.com

KORLOY INDIA

Plot No. 415, Sector 8, IMT Manesar, Gurgaon 122051, Haryana, India
Tel : +91-124-4391790 Fax : +91-124-4050032
E-mail : sales.kip@korloy.com

KORLOY TURKEY

Orucreis Mah. Vadi Cad. No: 108 Istanbul Ticaret Sarayi
Kat 5 No: 318 Giyimkent Sitesi-Esenler/Istanbul, Turkey
Tel : +90-212-438-5197 E-mail : sales.ktl@korloy.com

KORLOY RUSSIA

KRASIVY DOM office No. 305, Bld. 5, Novovladykinskiy proezd 8,
127106, Moscow, Russia
E-mail : sales.krc@korloy.com

KORLOY EUROPE

Gablonzer Str. 25-27, 61440 Oberursel, Germany
Tel : +49-6171-277-83-0 Fax : +49-6171-277-83-59
E-mail : sales.keg@korloy.com

KORLOY BRASIL

Av. Aruana 280, conj.12, WLC, Alphaville, Barueri,
CEP06460-010, SP, Brasil
Tel : +55-11-4193-3810 E-mail : sales.kbl@korloy.com

KORLOY CHILE

Av. Providencia 1650, Office 1009, 7500027
Providencia-Santiago, Chile
Tel : +56-229-295-490 E-mail : sales.kcs@korloy.com

KORLOY MEXICO

Queretaro, Mexico
E-mail : sales.kml@korloy.com

KORLOY FACTORY QINGDAO

Ground Dongjing Road 56(B) District Free Trade Zone. Qingdao, China
Tel : +86-532-86959880 Fax : +86-532-86760651
E-mail : pro.kfq@korloy.com

KORLOY FACTORY INDIA

Plot No. 415, Sector 8, IMT Manesar, Gurgaon 122051, Haryana, India
Tel : +91-124-4391790 Fax : +91-124-4050032
E-mail : pro.kim@korloy.com