

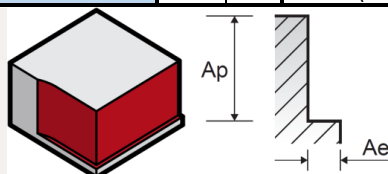
# Speeds and Feeds



\*If product's length of cut (L.O.C) is below 3D, it must be applied L.O.C x 90%

End Mill Series - **HEPM**

Material			Recommended Cutting Values - Side Cutting										
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	1/4	3/8	1/2	5/8	3/4	1"		
<b>P</b>	1	Non-alloy steel	0.05D	3.0D	SFM (Vc)	985	985	985	985	985	985		
					RPM (n)	15,050	10,020	7,520	6,010	5,010	3,760		
					IPT (Fz)	.0038	.0057	.0068	.0080	.0089	.0091		
	2		0.05D	3.0D	0.05D	3.0D	SFM (Vc)	985	985	985	985	985	985
							RPM (n)	15,050	10,020	7,520	6,010	5,010	3,760
							IPT (Fz)	.0038	.0057	.0068	.0080	.0089	.0091
	3		0.05D	3.0D	0.05D	3.0D	SFM (Vc)	985	985	985	985	985	985
							RPM (n)	15,050	10,020	7,520	6,010	5,010	3,760
							IPT (Fz)	.0038	.0057	.0068	.0080	.0089	.0091
	4		0.05D	3.0D	0.05D	3.0D	SFM (Vc)	985	985	985	985	985	985
							RPM (n)	15,050	10,020	7,520	6,010	5,010	3,760
							IPT (Fz)	.0038	.0057	.0068	.0080	.0089	.0091
	5		0.05D	3.0D	0.05D	3.0D	SFM (Vc)	665	665	665	665	665	665
							RPM (n)	10,160	6,780	5,090	4,070	3,390	2,540
							IPT (Fz)	.0028	.0042	.0050	.0059	.0066	.0069
	6		0.05D	3.0D	0.05D	3.0D	SFM (Vc)	985	985	985	985	985	985
							RPM (n)	15,050	10,020	7,520	6,010	5,010	3,760
							IPT (Fz)	.0038	.0057	.0068	.0080	.0089	.0091
	7		0.05D	3.0D	0.05D	3.0D	SFM (Vc)	985	985	985	985	985	985
							RPM (n)	15,050	10,020	7,520	6,010	5,010	3,760
							IPT (Fz)	.0038	.0057	.0068	.0080	.0089	.0091
	8		0.05D	3.0D	0.05D	3.0D	SFM (Vc)	665	665	665	665	665	665
							RPM (n)	10,160	6,780	5,090	4,070	3,390	2,540
							IPT (Fz)	.0028	.0042	.0050	.0059	.0066	.0069
	9		0.05D	3.0D	0.05D	3.0D	SFM (Vc)	665	665	665	665	665	665
							RPM (n)	10,160	6,780	5,090	4,070	3,390	2,540
							IPT (Fz)	.0028	.0042	.0050	.0059	.0066	.0069
	10		0.05D	3.0D	0.05D	3.0D	SFM (Vc)	330	330	330	330	330	330
							RPM (n)	5,040	3,340	2,510	2,010	1,670	1,250
							IPT (Fz)	.0023	.0035	.0041	.0048	.0054	.0057
11.1	0.05D	3.0D	0.05D	3.0D	SFM (Vc)	330	330	330	330	330	330		
					RPM (n)	5,040	3,340	2,510	2,010	1,670	1,250		
					IPT (Fz)	.0023	.0035	.0041	.0048	.0054	.0057		



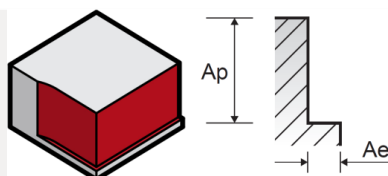
# Speeds and Feeds



\*If product's length of cut (L.O.C) is below 3D, it must be applied L.O.C x 90%

End Mill Series - **HEPM**

Material			Recommended Cutting Values - Side Cutting								
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	1/4	3/8	1/2	5/8	3/4	1"
<b>M</b>	12	Stainless steel	0.05D	3.0D	SFM (Vc)	700	700	700	700	700	700
					RPM (n)	10,700	7,120	5,340	4,270	3,560	2,670
					IPT (Fz)	.0027	.0041	.0049	.0058	.0064	.0066
	13		0.05D	3.0D	SFM (Vc)	700	700	700	700	700	700
					RPM (n)	10,700	7,120	5,340	4,270	3,560	2,670
					IPT (Fz)	.0027	.0041	.0049	.0058	.0064	.0066
	14.1		0.05D	3.0D	SFM (Vc)	480	480	480	480	480	480
					RPM (n)	7,330	4,910	3,680	2,950	2,460	1,840
					IPT (Fz)	.0023	.0035	.0041	.0048	.0054	.0056
	14.2		0.05D	3.0D	SFM (Vc)	440	440	440	440	440	440
					RPM (n)	6,720	4,480	3,360	2,690	2,240	1,680
					IPT (Fz)	.0023	.0035	.0041	.0048	.0054	.0056
<b>K</b>	15	Grey cast iron	0.05D	3.0D	SFM (Vc)	740	740	740	740	740	740
					RPM (n)	11,310	7,540	5,650	4,520	3,770	2,830
					IPT (Fz)	.0045	.0068	.0082	.0095	.0106	.0110
	16		0.05D	3.0D	SFM (Vc)	740	740	740	740	740	740
					RPM (n)	11,310	7,540	5,650	4,520	3,770	2,830
					IPT (Fz)	.0045	.0068	.0082	.0095	.0106	.0110
	17		0.05D	3.0D	SFM (Vc)	740	740	740	740	740	740
					RPM (n)	11,310	7,540	5,650	4,520	3,770	2,830
					IPT (Fz)	.0045	.0068	.0082	.0095	.0106	.0110
	18		0.05D	3.0D	SFM (Vc)	740	740	740	740	740	740
					RPM (n)	11,310	7,540	5,650	4,520	3,770	2,830
					IPT (Fz)	.0045	.0068	.0082	.0095	.0106	.0110
19	0.05D	3.0D	SFM (Vc)	740	740	740	740	740	740		
			RPM (n)	11,310	7,540	5,650	4,520	3,770	2,830		
			IPT (Fz)	.0045	.0068	.0082	.0095	.0106	.0110		
20	0.05D	3.0D	SFM (Vc)	740	740	740	740	740	740		
			RPM (n)	11,310	7,540	5,650	4,520	3,770	2,830		
			IPT (Fz)	.0045	.0068	.0082	.0095	.0106	.0110		



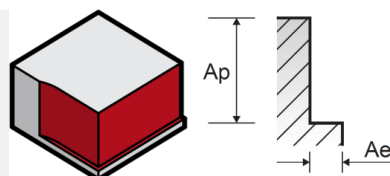
# Speeds and Feeds



\*If product's length of cut (L.O.C) is below 3D, it must be applied L.O.C x 90%

End Mill Series - **HEPM**

Material			Recommended Cutting Values - Side Cutting								
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	1/4	3/8	1/2	5/8	3/4	1"
<b>S</b>	31	Heat Resistant Super Alloys	0.05D	3.0D	SFM (Vc)	110	110	110	110	110	110
					RPM (n)	1,680	1,100	830	660	550	410
					IPT (Fz)	.0019	.0028	.0032	.0038	.0044	.0045
					IPM (Vf)	19	18	16	15	15	11
	32		0.05D	3.0D	SFM (Vc)	110	110	110	110	110	110
					RPM (n)	1,680	1,100	830	660	550	410
					IPT (Fz)	.0019	.0028	.0032	.0038	.0044	.0045
					IPM (Vf)	19	18	16	15	15	11
	33		0.05D	3.0D	SFM (Vc)	110	110	110	110	110	110
					RPM (n)	1,680	1,100	830	660	550	410
					IPT (Fz)	.0019	.0028	.0032	.0038	.0044	.0045
					IPM (Vf)	19	18	16	15	15	11
	34		0.05D	3.0D	SFM (Vc)	110	110	110	110	110	110
					RPM (n)	1,680	1,100	830	660	550	410
					IPT (Fz)	.0019	.0028	.0032	.0038	.0044	.0045
					IPM (Vf)	19	18	16	15	15	11
	35		0.05D	3.0D	SFM (Vc)	110	110	110	110	110	110
					RPM (n)	1,680	1,100	830	660	550	410
					IPT (Fz)	.0019	.0028	.0032	.0038	.0044	.0045
					IPM (Vf)	19	18	16	15	15	11
36	0.05D	3.0D	SFM (Vc)	380	380	380	380	380	380		
			RPM (n)	5,810	3,880	2,910	2,330	1,940	1,460		
			IPT (Fz)	.0019	.0028	.0033	.0038	.0045	.0046		
			IPM (Vf)	66	64	57	53	52	40		
37	0.05D	3.0D	SFM (Vc)	380	380	380	380	380	380		
			RPM (n)	5,810	3,880	2,910	2,330	1,940	1,460		
			IPT (Fz)	.0019	.0028	.0033	.0038	.0045	.0046		
			IPM (Vf)	66	64	57	53	52	40		



# Technical Details



**Feed Rate, Per Revolution (in/min)**

$$v_f = f_n \cdot n$$

**Feed Rate, Per Tooth (in/min)**

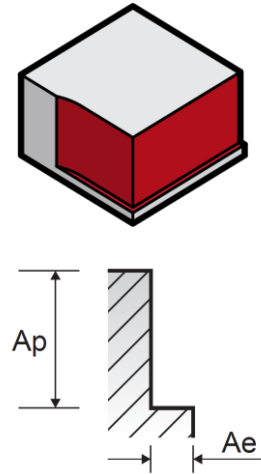
$$v_f = f_z \cdot n \cdot Z$$

**Feed Per Revolution (in/rev)**

$$f_n = \frac{v_f}{n}$$

**Feed Per Tooth (in)**

$$f_z = \frac{v_f}{n \cdot Z}$$



**Cutting Speed (ft/min)**

$$v_c = \frac{\pi \cdot D_{tool} \cdot n}{12}$$

**Spindle Speed (rev/min)**

$$n = \frac{v_c \cdot 12}{\pi \cdot D_{tool}}$$

**Material Removal Rate (in<sup>3</sup>/min)**

$$MMR = a_p \cdot a_e \cdot v_f$$

Symbol	Definition	Unit
$v_f$	Feed rate	<i>in/min</i>
$f_n$	Feed per revolution	<i>in/rev</i>
$f_z$	Feed per tooth	<i>in</i>
$v_c$	Cutting speed	<i>ft/min (SFM)</i>
$n$	Spindle speed	<i>rev/min (RPM)</i>
$D_{tool}$	Tool cutting diameter	<i>in</i>
$MMR$	Material removal rate	<i>(in<sup>3</sup>/min)</i>
$a_e$	Radial depth of cut	<i>in</i>
$a_p$	Axial depth of cut	<i>in</i>
$Z$	Number of teeth/flutes	

