



X-POWER PRO END MILLS

RECOMMENDED CUTTING CONDITIONS

GM210 SERIES

4FLUTE BALL NOSE - PROFILE

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(NORMAL SPEED)

ISO	VDI 3323	Material Description	Ae	Parameter	Diameter (Ø)						
					1/8	3/16	1/4	5/16	3/8	1/2	5/8
P	1-4	Non-alloy steel	0.2D	SFM(Vc)	470	495	560	475	500	545	490
				IPT(fz)	.0008	.0013	.0016	.0027	.0032	.0035	.0050
				RPM	14360	10090	8560	5810	5090	4160	3000
				IPM(FEED)	44	53	55	62	66	58	60
				SFM(Vc)	360	395	455	400	410	425	415
				IPT(fz)	.0007	.0012	.0015	.0022	.0028	.0033	.0042
	5	Non-alloy steel	0.2D	SFM(Vc)	470	495	560	475	500	545	490
				IPT(fz)	.0008	.0013	.0016	.0027	.0032	.0035	.0050
				RPM	14360	10090	8560	5810	5090	4160	3000
				IPM(FEED)	44	53	55	62	66	58	60
				SFM(Vc)	360	395	455	400	410	425	415
				IPT(fz)	.0007	.0012	.0015	.0022	.0028	.0033	.0042
6-7	Low alloy steel	0.2D	SFM(Vc)	470	495	560	475	500	545	490	
			IPT(fz)	.0008	.0013	.0016	.0027	.0032	.0035	.0050	
			RPM	14360	10090	8560	5810	5090	4160	3000	
			IPM(FEED)	44	53	55	62	66	58	60	
			SFM(Vc)	360	395	455	400	410	425	415	
			IPT(fz)	.0007	.0012	.0015	.0022	.0028	.0033	.0042	
8-9	Low alloy steel	0.2D	SFM(Vc)	470	495	560	475	500	545	490	
			IPT(fz)	.0008	.0013	.0016	.0027	.0032	.0035	.0050	
			RPM	14360	10090	8560	5810	5090	4160	3000	
			IPM(FEED)	44	53	55	62	66	58	60	
			SFM(Vc)	360	395	455	400	410	425	415	
			IPT(fz)	.0007	.0012	.0015	.0022	.0028	.0033	.0042	
10	High alloyed steel, and tool steel	0.2D	SFM(Vc)	470	495	560	475	500	545	490	
			IPT(fz)	.0008	.0013	.0016	.0027	.0032	.0035	.0050	
			RPM	14360	10090	8560	5810	5090	4160	3000	
			IPM(FEED)	44	53	55	62	66	58	60	
			SFM(Vc)	360	395	455	400	410	425	415	
			IPT(fz)	.0007	.0012	.0015	.0022	.0028	.0033	.0042	
11.1-11.2	High alloyed steel, and tool steel	0.2D	SFM(Vc)	470	495	560	475	500	545	490	
			IPT(fz)	.0008	.0013	.0016	.0027	.0032	.0035	.0050	
			RPM	14360	10090	8560	5810	5090	4160	3000	
			IPM(FEED)	44	53	55	62	66	58	60	
			SFM(Vc)	360	395	455	400	410	425	415	
			IPT(fz)	.0007	.0012	.0015	.0022	.0028	.0033	.0042	
H	38.1-38.2	Hardened steel	0.1D	SFM(Vc)	165	200	230	190	190	195	210
				IPT(fz)	.0005	.0007	.0009	.0013	.0016	.0021	.0024
				RPM	5040	4080	3510	2320	1940	1490	1280
				IPM(FEED)	10	12	12	12	12	12	12
				SFM(Vc)	360	395	455	400	410	425	415
				IPT(fz)	.0007	.0012	.0015	.0022	.0028	.0033	.0042
	40	Chilled Cast Iron	0.2D	SFM(Vc)	360	395	455	400	410	425	415
				IPT(fz)	.0007	.0012	.0015	.0022	.0028	.0033	.0042
				RPM	11000	8050	6950	4890	4180	3250	2540
				IPM(FEED)	30	37	41	43	46	43	42
				SFM(Vc)	165	200	230	190	190	195	210
				IPT(fz)	.0005	.0007	.0009	.0013	.0016	.0021	.0024
41	Hardened Cast Iron	0.1D	SFM(Vc)	165	200	230	190	190	195	210	
			IPT(fz)	.0005	.0007	.0009	.0013	.0016	.0021	.0024	
			RPM	5040	4080	3510	2320	1940	1490	1280	
			IPM(FEED)	10	12	12	12	12	12	12	

AP	~HRc45		HRc45~55	
	D1/8 ~ D1/4 = .008		D1/8 ~ D1/4 = .008	
	D5/16 ~ D5/8 = .012		D5/16 ~ D5/8 = .012	

(HIGH SPEED)

ISO	VDI 3323	Material Description	Ae	Parameter	Diameter (Ø)						
					1/8	3/16	1/4	5/16	3/8	1/2	5/8
P	1-11.2	Non-alloy steel Low alloy steel High alloyed steel, and tool steel	0.05D	SFM(Vc)	755	1135	1510	1420	1475	1510	1475
				IPT(fz)	.0007	.0013	.0016	.0027	.0033	.0037	.0047
				RPM	23070	23120	23070	17360	15030	11540	9020
				IPM(FEED)	65	117	150	184	198	171	171
				SFM(Vc)	610	650	755	710	680	760	680
				IPT(fz)	.0005	.0007	.0009	.0014	.0020	.0023	.0028
H	38.1-38.2	Hardened steel	0.05D	SFM(Vc)	610	650	755	710	680	760	680
				IPT(fz)	.0005	.0007	.0009	.0014	.0020	.0023	.0028
				RPM	18640	13240	11540	8680	6930	5810	4160
				IPM(FEED)	34	39	41	48	55	55	46
				SFM(Vc)	610	650	755	710	680	760	680
				IPT(fz)	.0005	.0007	.0009	.0014	.0020	.0023	.0028
40-41	Chilled Cast Iron Hardened Cast Iron	0.05D	SFM(Vc)	610	650	755	710	680	760	680	
			IPT(fz)	.0005	.0007	.0009	.0014	.0020	.0023	.0028	
			RPM	18640	13240	11540	8680	6930	5810	4160	
			IPM(FEED)	34	39	41	48	55	55	46	

AP	~HRc55	
	D1/8 ~ D1/4 = .008	
	D5/16 ~ D5/8 = .012	