



Series 56MB Metric	Hardness	Ae x DC	Ap x DC	Vc (m/min)	DC • mm									
					1	1.5	3	5	6	10	12	20		
<b>TOOL STEELS MOLD AND DIE STEEL 300M, 4340, 52100, HP-9-4-20, M50, A2, D2, H13, L2, M2, P20, S7, T15, W2</b>	≤ 375 Bhn or ≤ 40 HRc	Rough 	≤ 0.4	≤ 0.1	191	RPM	60748	40498	20249	12150	10125	6075	5062	3037
					(153-229)	Fz	0.015	0.038	0.076	0.102	0.127	0.203	0.254	0.305
					Feed (mm/min)	1822	3078	3078	2479	2572	2466	2572	1853	
		HSM 	≤ 0.4	≤ 0.03	290	RPM	92235	61490	46117	18447	15372	9223	7686	4612
					(232-348)	Fz	0.018	0.043	0.084	0.112	0.117	0.224	0.279	0.330
					Feed (mm/min)	3320	5288	7748	4132	3597	4132	4289	3044	
	≤ 475 Bhn or ≤ 50 HRc	Rough 	≤ 0.4	≤ 0.05	229	RPM	72833	48556	24278	14567	12139	7283	6069	3642
					(183-275)	Fz	0.013	0.028	0.058	0.076	0.097	0.152	0.191	0.216
					Feed (mm/min)	1894	2719	2816	2214	2355	2214	2319	1573	
		HSM 	≤ 0.4	≤ 0.02	351	RPM	111636	74424	37212	22327	18606	11164	9303	5582
					(281-421)	Fz	0.015	0.030	0.064	0.084	0.107	0.168	0.208	0.254
					Feed (mm/min)	3349	4465	4763	3751	3982	3751	3870	2836	
≤ 655 Bhn or ≤ 60 HRc	Rough 	≤ 0.4	≤ 0.04	152	RPM	48344	32229	16115	9669	8057	4834	4029	2417	
				(122-182)	Fz	0.010	0.020	0.043	0.058	0.074	0.114	0.145	0.160	
				Feed (mm/min)	967	1289	1386	1122	1192	1102	1168	773		
	HSM 	≤ 0.4	≤ 0.01	305	RPM	97005	64670	32335	19401	16168	9701	8084	4850	
				(244-366)	Fz	0.013	0.023	0.048	0.064	0.081	0.127	0.160	0.180	
				Feed (mm/min)	2522	2975	3104	2483	2619	2464	2587	1746		

Bhn (Brinell)    HRc (Rockwell C)    HSM (High Speed Machining)  
 $rpm = (Vc \times 1000) / (DC \times 3.14)$   
 $mm/min = Fz \times 2 \times rpm$   
 reduce speed and feed for materials harder than listed  
 reduce feed and Ae when finish milling (.02 x DC maximum)  
 feed rates listed have chip thinning adjustments included where applicable  
 refer to the SGS Tool Wizard® for complete technical information ([www.kyocera-sgstool.com](http://www.kyocera-sgstool.com))