



APP MATERIAL DATA SHEET – MIM TOOL STEELS

As a leader in metal injection molding for the last 20 years, we pride ourselves on our material expertise. This guide walks you through typical material properties for MIM Tool Steels. Tool steels are a family of steels that contain dispersed carbides in a hardened steel matrix. These steels are used in high impact, metal cutting, and many other hot and cold wear applications. Need help choosing the best option? Let our application experts take a closer look. Call us at **814-342-5895** or email us at engineer@4-app.com

FEATURES AND APPLICATIONS

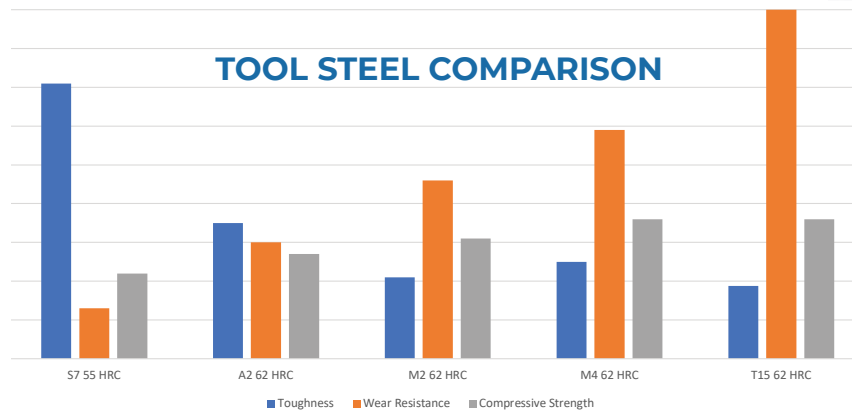
Grade	Hardness	Alloy Features	Applications
S7	55-60 HRC	High Impact Resistance, High Toughness	Firearms, Consumer Goods, General Industrial, Cutting Tools
A2	60-65 HRC	Good Toughness, Moderate Wear Resistance	
M2/M4	60-65 HRC	Very Good Wear Resistance, Good Toughness	
T15	60-65 HRC	Extremely Good Wear Resistance	

ALLOY COMPOSITION

Alloy	C	Mn	Si	Cr	W	V	Ni	Mo	Co	Cu	Fe
MIM S7	.45-.65	.9 max	.2-1.0	3.0-3.5	-	-	-	1.3-1.8	-	-	Bal
MIM A2	.95-1.05	1.00 Max	.5 Max	4.75-5.5	-	.15-.5	-	.9-1.4	-	-	Bal
MIM M2	.8-0.9	-	-	3.5-4.5	5.5-6.5	1.5-2.2	-	4.5-5.5	-	-	Bal
MIM M4	1.25-1.4	.15-.4	.2-.45	3.75-4.75	5.25-6.65-	3.75-4.5	-	4.25-5.5	-	-	Bal

TYPICAL MATERIAL PROPERTIES

Material	Density (g/cm ³)	YS (MPa)	UTS (MPa)	Elongation (%)	Unnotched Charpy impact energy (J)	Marco Hardness	Case Hardened	Young's modulus (GPa)
MIM S7 HT	7.4	1550	1750	2	-	45-53 HRC	-	-
MIM A2 HT	7.5	-	-	-	-	55-63 HRC	-	-
MIM M2 HT	7.9	-	-	-	-	55-65 HRC	-	-
MIM M4 HT	7.9	-	-	-	-	60-65 HRC	-	-
MIM T15 HT	8.2	-	-	-	-	60-65 HRC	-	-



All figures used with permission from the Handbook of Metal Injection Molding, 2nd ed 2019. D.F. Heaney, founder of Advanced Powder Products. ISBN: 9780081021521