



APP MATERIAL DATA SHEET – MIM LOW-ALLOY 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 low-alloy steels. Low-alloy steels exhibit superior mechanical properties to plain carbon steels due to the addition of alloying elements. MIM low-carbon steels can achieve higher densities and greater mechanical properties over castings. 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	Alloy Features	Applications
2200,2700,8620,9310	Case Hardenable	Firearms, Consumer Goods, General Industrial, Wood and Metal Cutting
400 Series	General Purpose	
52100	High Wear Resistance	

ALLOY COMPOSITION

Element	MIM 4605	MIM 4140	MIM 4340	MIM 2700 (FN08)	MIM 2200 (Fe-2Ni)	MIM 52100	MIM 8620	MIM 9310	MIM 430L
C	.4-.6	.3-.5	.3-.5	.1 max	.1 max	.8-1.2	.15-.23	.2 max	.05 (max)
Si	1.0 max	.6 max	.5 max	1.0 max	1.0 max	-	1.0 max	-	1.0 max
Cr	-	.8-1.2	.6-1.2	-	-	1.3-1.6	.4-.6	.3-.8	16-18
Mo	.2-.5	.2-.3	.5 max	.5 max	.5 max	-	.15-.25	.1-.25	-
Mn	-	1.0 max	.8 max	-	-	.25-.45	.7-.9	-	1.0 max
Fe	Bal.	Bal.	Bal.	Bal.	Bal.	Bal.	Bal.	Bal.	Bal.
Ni	1.5-2.5	-	1.25-2.0	6.5-8.5	1.5-2.5	-	.4-.7	2.5-3.5	-
Cu	-	-	-	-	-	.025 max	.035 max	.025 max	-
Nb	-	-	-	-	-	.025 max	.040 max	.025 max	-

TYPICAL MATERIAL PROPERTIES

Material	Density (g/cm ³)	YS (MPa)	UTS (MPa)	Elongation (%)	Unnotched Charpy impact energy (J)	Macro Hardness	Case Hardened	Young's modulus (GPa)
MIM 4605 HT	7.55	1480	1650	1	55	43-48 HRC	-	210
MIM 4140 HT	7.5	1200	1600	5	75	43-48 HRC	-	200
MIM 4340 HT	7.5	1100	1200	6	-	40-45	-	-
MIM 2700	7.6	250	400	12	175	69 HRB	50-56 HRC	190
MIM 2200	7.6	125	280	35	135	45 HRB	56-62 HRC	190
MIM 52100 HT	7.5	1100	1500	2	-	55-62 HRC	-	-
MIM 8620	7.5	130	320	25	-	100 HRB	-	-
MIM 9310	7.5	350	540	15	-	375 HV1	56-62 HRC	-

*Handbook of Metal Injection Molding , 2nd ed. 2019. D.F. Heaney, founder and CEO of Advanced Powder Products. ISBN:9780081021521