

MIM Material Chemistries

Material Group	Alloy name	C wt%	Cr wt%	Ni wt%	Mo wt%	Cu wt%	Si wt%	Fe wt%	Other wt%
Low Alloy Steels	8% Ni-Steel	0.6 max*		6.5-8.5	0.5 max			balance	
	MIM 46XX*	0.6 max*		1.5-2.5	0.5 max			balance	
Austenitic Stainless Steels	AISI 316L	0.03 max	16-18	10-14	2-3			balance	P 0.045 max,S 0.03 max
	AISI 304L	0.03 max	18-20	8-12				balance	P 0.045 max,S 0.03 max
Ferritic Stainless Steel	AISI 430	0.12 max	16-18					balance	P 0.04 max,S 0.03 max
Martensitic Stainless Steel	AISI 420	0.15 min	12-14					balance	P 0.04 max,S 0.03 max
	AISI 440C	0.95-1.20	16-18					balance	P 0.04 max,S 0.03 max
Precipitation Hardening Stainless Steel	17-4 PH	0.07 max	15.5-17.5	3-5		3-5		balance	P 0.04 max,S 0.03 max
Duplex Structure Stainless Steel	ASTM A276 (2205)	0.03 max	21-23	4.5-6.5	2.5-3.5			balance	P 0.03 max,S 0.02 max
Soft Magnetic Materials	FeSi	0.1 max					2-3	balance	
	Alloy 50	0.1 max		50 nom				balance	
Copper Based	Cu-100%					99 nom			
Titanium	Ti-6Al-4V								6% Al,4% V, Balance Ti
High Speed steel	M2	0.8-1.1	3.5-4.5		4.5-5.5			balance	6% W, 2% V
Tungsten Heavy alloys	WHA			2.5-3.5				0.5-1	W balance

* Carbon levels are variable with application.

Note:

All chemistries and properties given are typical.

Easea International can provide special chemistry requirement upon request.

Properties of Typical MIM Materials

Material Group	Alloy Name	UTS MPa	YS (0.2%) MPa	Elong.%	Hardness	Density g/cm ³
Low Alloy Steels	8% Ni-Steel	413	255	26	60 HRB	7.6
	MIM 4605 as sintered	689	482	15	90 HRB	7.5
	MIM 4605 heat treated	1653	1446	4	48 HRC	7.5
Austenitic Stainless Steels	AISI 316L	482	172	30	65 HRB	7.7
	AISI 304L					7.7
Ferritic SS Stainless Steel	AISI 430	413	241	30	65 HRB	7.5
Martensitic Stainless Steel	AISI 420	1033			50 HRC	7.3
	AISI 420 (Premium)	1929	1653	8	52 HRC	7.6
	AISI 440C (Premium)	1584	1343	4	59 HRC	7.5
Precipitation Hardening Stainless Steel	17-4 as Sintered	827	640	12	25 HRC	7.6
	17-4 PH H900	1240	1102	7	36 HRC	7.6
Duplex Structure Stainless Steel	ASTM A276 (2205)	620	516	27	93 HRB	7.5
Soft Magnetic Materials	Fe-Si	427	262	20	68 HRB	7.5
	Alloy 50	448	158	33	58 HRB	7.7
Copper Based	Cu 100%					8.3
Titanium	Ti-6Al-4V (ANNEALED)	744	716	10		4.2
	TI-6Al-4V (AGED)	923	827	4		4.2
High Speed Steel	M2	1200	800		65 HRC	7.9
Tungsten Heavy Alloy	WHA				320Hv1	17.8

Note:

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