

MIM Material Chemistries



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Next Generation Technology

Material Group	Alloy Name	UNS Desig.	C wt%	Cr wt%	Ni wt%	Mo wt%	Cu wt%	Mn wt%	Co wt%	Si wt%	Sn wt%	Fe wt%	Other wt%
Low Alloy Steels	8% Ni-Steel MIM 46XX*		0.6 max* 0.6 max*		6.5-8.5 1.5-2.5	0.5 max 0.5 max				0.5 max 0.5 max		balance balance	
Austenitic Stainless Steels	AISI 316L	S31603	0.03 max	16-18	10-14	2-3		2 max		1 max		balance	P 0.045 max,S 0.03 max
	AISI 304L	S30403	0.03 max	18-20	8-12			2 max		1 max		balance	P 0.045 max,S 0.03 max
Ferritic Stainless Steel	AISI 430	S43000	0.12 max	16-18				1 max		1 max		balance	P 0.04 max,S 0.03 max
Martensitic Stainless Steel	AISI 420	S42000	0.15 min	12-14				1 max		1 max		balance	P 0.04 max,S 0.03 max
	AISI 440C	S44004	0.95-1.20	16-18				1 max		1 max		balance	P 0.04 max,S 0.03 max
Precipitation Hardening Stainless Steel	17-4 PH	S17400	0.07 max	15.5-17.5	3-5		3-5	1 max		1 max		balance	P 0.04 max,S 0.03 max cb + Ta = 0.015-0.045
Duplex Structure Stainless Steel	ASTM A276 (2205)	S31803	0.03 max	21-23	4.5-6.5	2.5-3.5		2 max		1 max		balance	P 0.03 max,S 0.02 max
Soft Magnetic Materials	FeSi Alloy 50		0.1 max 0.1 max		50 nom					2-3		balance balance	
Copper Based	Cu-100% Cu-15Ni-8Sn (Spinodal)	C72900			14.5-15.5		99 nom balance				7.5-8.5	0.5 max	Cb,Pb ,Zn
Titanium	Ti-6Al-4V												6% Al,4% V, Balance Ti

*Carbon levels are variable with application

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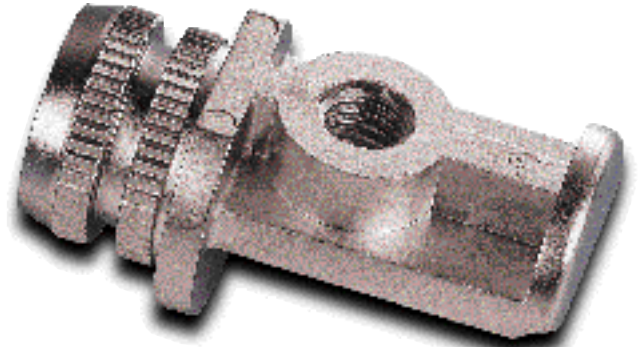
Note:

All chemistries given are typical. Advanced Forming Technology does not guarantee results or warranty that these materials are fit for any particular purpose. All materials need to be tested by the customer to assure they meet minimum performance criteria.

MIM Material Properties



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Material Group	Alloy Name	UNS Designation	UTS KSI	YS (0.2%) KSI	Elong.%	Hardness	Density g/cc	CTE 10-6/C
Low Allow Steels	8% Ni-Steel		60	37	26	60 HRB	7.6	
	MIM 4605* as sintered		100	70	15	90 HRB	7.5	
	MIM 4605* heat treated		240	210	4	48 HRC	7.5	
Austenitic Stainless Steels	AISI 316L	S31603	70	25	30	65 HRB	7.7	
	AISI 304L	S30403					7.7	
Ferritic SS Stainless Steel	AISI 430	S43000	60	35	30	65 HRB	7.5	
Martensitic Stainless Steel	AISI 420	S42000	150			50 HRC	7.3	
	AISI 420 (Premium)	S42000	280	240	8	52 HRC	7.6	
	AISI 440C (Premium)	S44004	230	195	4	59 HRC	7.5	
Precipitation Hardening Stainless Steel	17-4 as Sintered	S17400	120	93	12	25 HRC	7.6	
	17-4 PH H900	S17400	180	160	7	36 HRC	7.6	
Duplex Structure Stainless Steel	ASTM A276 (2205)	S31803	90	75	27	93 HRB	7.5	
Soft Magnetic Materials	Fe-Si		62	38	20	68 HRB	7.5	9.2
	Alloy 50		65	23	33	58 HRB	7.7	
Copper Based	Cu 100%						8.3	
	Cu-15Ni-8Sn (Spinodal)	C72900	68	45	6		8.3	
Titanium	Ti-6Al-4V (ANNEALED)		108	104	10		4.2	
	Ti-6Al-4V (AGED)		134	120	4		4.2	

*Similar to AISI 4650

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