

MIM MATERIALS , PROPERTIES AND INTERNATIONAL EQUIVALENCES

Material	Traditional MIN NAME Denominación	ISO DRAFT/ Borrador EPIMA-2000	ASTM B 883-97 MPIF 35-2000 (Equivalence)	CHEMICAL COMPOSITION / Composición Química						MECHANICAL PROPERTIES/ Propiedades Mecánicas				Heat Treatment	MECHANICAL PROPERTIES/ Propiedades Mecánicas				MAGNETIC PROPERTIES		DENSITY g/cc	Mold Factor de molde	
				%C	%Ni	%Cr	%Mo	%Si	%Mn	Others	Rm (N/mm2)	RO,2 (N/mm2)	E%		HARDNESS HB	Rm (N/mm2) 2	RO,2 (N/mm2) 2	E%2	HV10(HRC)	Permeability			Ind. Mag Field
LOW ALLOY STEEL	FN02(00)	MIM-Fe2Ni	MIM-2200	<0,1	1,5/2,5		<0,5								Case Harden				>700 Case	1.216		>7.55(7.6)	1.216
ACEROS BAJA	FN02	MIM-Fe2Ni0,6C	MIM-4605	0,4/0,7	1,5/2,5		<0,5																1.216
ALEACION Iron-Nickel (Hierro-Niquel)	FN02(05)	MIM-Fe2Ni0,6C	MIM-4605	0,4/0,6	1,5/2,5		<0,5								Full Harden	>800	>700	>5	(30 HRC)			>7.55(7.6)	1.216
	FN08(00)	MIM-Fe8Ni	MIM-2700	<0,1	6,5/8,5		<0,5								Darbonitried	>1200	>1000	>2	(55HRC carb.)			>7.55(7.6)	1.216
	FN08	MIM-Fe8Ni0,6C		0,4/0,7	6,5/8,5		<0,5								Case Harden	>380 Core			>600 Case				1.216
		MIM-Fe8Ni0,6C(HT)													Soft Annealed	>750	>500	>5	>280				
															Full Annealed	>500	>300	>15	<180				
															Full Harden	>800 (-1050)	>700 (-900)	>5	(35 HRC)				
															Full Harden	>1250	>1100	>3	(40 HRC)				
															Full Harden	>1300	>1100	>2	(50 HRC)				
																			(50-55 HRC)				
Low alloy steel	MIM-42CrMo4	MIM-42CrMo4/ MIM-4140	4140	0,35/0,50		0,9/1,2	0,15/0,3	<0,4	<0,9	<1,0					Normalized	>700	>400	>3(>6)	<180			>7.50	1.216
															Full Harden	>750	>600	>3	(25 HRC)				
															Full Harden	>1300	>1200	>2	(50 HRC)				
	MIM-8620	21NiCrMo2	8620	0,18/0,23	0,4/0,7	0,4/0,6	0,15/0,25	<0,2	<0,2						Normalized	>400	>250	>10	<130			>7.45	1.216
															Case Harden	>800 Core			>750 Case				
TOOL STEELS																							
A. Herramientas	MIM-100 Cr6	100Cr6	52100	0,85/1,05		1,35/1,65		<0,35	<0,45						Harden				(60-62 HRC)			>7.50	1.216
	MIM-M2	1.3343	M2	0,95/1,05		3,8/4,5	4,5/5,5	0,2/0,4	0,2/0,4	%V 1,75/2,20 %W 5,5/6,75					Harden				>(63 HRC)			>8.0	1,167
SOFT MAGNETIC																							
	FN02(00)		MIM-2200	<0,1	1,5/2,5			<1			290	125	40	(45 HRB)						>2000 μ	B25>14kGs	>7.6	1.216
	FN50		MIM-Fe50%Ni	<0,05	49/51			<1			455	160	30	(50 HRB)						>2000 μ	B25>13kGs	>7.7	1.216
	Fe Si3		MIM-Fe-3%Si	<0,05			2,5/3,5				530	390	24	(80 HRB)						>6000 μ	B25>14kGs	>7.45	1.216
	430 L		MIM-430L	<0,05		16/18		<1	<1		415	240	25	(65 HRB)						>1000 μ	B25>11kGs	>7.50	1.216
STAINLESS STEELS																							
oxidables																							
Ferritic	MIM-430 LA	1.4016 / X6Cr17	MIM-430L	<0,05		16/18		<1	<1,5		>345(>400)	>207(>220)	>20(>25)	>(65 HRB)								7.5	1.216
Martensitic	MIM-420 A	1.4028 / X30Cr13	420	0,25/0,45		12,0/14		<1	<1						Harden							>7.3	1.216
Precipitation Hardening	174 PHA	MIM-17-4PH/ MIM-X5CrNiCuNb17 4	MIM-17-4 PH	<0,07	3,0/5,0	15,0/17,5		<1	<1	%Cu 3,0/5,0 %Nb 0,15/0,45	>800(>900)	>600(>700)	>3	(30-35 HRC)								7.5 (>7.6)	1.216
		MIM-17-4PH(HT)																					
		MIM-17-4PH(HT)																					
	174 PHB														H1150	>850	>700	>5	30-35 HRC				
															H900	>1200	>1000	>2(>4)	40-45 HRC				
Austenitic / No magnético	316 LG	MIM-316L/ MIM-X2CrNiMo17 13 2	MIM-316L	<0,03	10,0/14	16/18,5	2,0/3,0	<1	<2	<1	>450 (>500)	>140 (180)	>40 (>50)	>115								7.6 (7.9)	1,167
Fine Surface Mejor Superficie	316 LA																					7.6 (>7.75)	1,167
	316 LS																					7.6 (>7.8)	1,167
Nickel free	PANACEA/ X15CrMnMoN17 11 3			<0,2	<0,1	16,5/17,5	3,0/3,5	<1	10,0/12	%N 0,8/1,0	>900	>550	>30	270-300 HV1								>7.5	1,167
Heat Resistat Refractorio 1150 °C	310 N/ 310 Nb C	1.4841/ X15CrNiSi 25 21	310Nbc	0,2/0,5	19/22	24/26		0,75/1,75	<1,5	%Nb 1,2/1,5 %N<1	>550	>200	>35	>150 HV1	25 °C							>7.6	1,167
											>750	>400	>10	>230 HV1	25 °C							>7.7	1,167
SPECIAL ALLOYS																							
Aleaciones especiales																							
Wear Heat Resistant desgaste a 700 C	GHS-4			2,0/2,4	38/42	11,0/13	5,0/7,0	1,5/1,9	1,0/1,3	%V 0,8/1,0 %W 0,4/0,8					300-380 HV10	25 °C						>7.95	1,167
Corrosion resistant	Hastelloy HX	2.4665/ Ni Cr22Fe18Mo		0,05/0,15	base	20,5/23	8,0/10	<1	<1	%Fe 17/20 %Co 0,5/2,5 %W 0,2/1,0	>550	>250	>20	>150 HV1								>8.0	1,167
CTE 4,5x10 - 6k-1 20-400 °C	F15/ Kovar		F15		28,5/29,5					%Co 16,5/17,5	>450	>300	>20	>110 HV1								>7.8	1,151

Notes: BLACK: Other Technologies Equivalent Standards
 BLUE: European Draft Standards / Datos en azul corresponden con borrador de norma ISO europea
 RED: American Standards/ Datos en rojo corresponden con norma ASTM ó MPIF americana
 ORANGE: MIMECRISA own results not yet international standardized/ Datos en naranja corresponden con resultados garantizados por MIMECRISA aún no estandarizados oficialmente por organismos internacionales