

ASTM	HIERRO			COMPOSICIÓN QUÍMICA														PROPIEDADES MECÁNICAS				
	Código ASTM	Grado	Condición	Carbón C% Max.	Silicio Si% Max.	Manganeso Mn% Max.	Níquel Ni%	Cromo Cr%	Molibdeno Mo%	Fósforo P% Max.	Azufre S% Max.	Cobre Cu%	Vanadio V%	Magnesio Mg%	Niobium (Columbium) Nb%	Hierro Fe%	Aleación% Total - Sin hierro	Charpy "V" muesca pies lb.	Resistencia a la tracción K.S.I.	Resistencia al rendimiento K.S.I.	Elong%	Brinell Dureza #
Hierros grises	A48	Class 20	As cast	3.50 to 3.60	2.50 to 2.60	0.30 to 0.50	0.00 to 0.50	0.00 to 0.10	0.00 to 0.10	0.02 to 0.03	0.06 to 0.12	0.00 to 0.50	0.00 to 0.05			92.76	7.24		20			143-187
	A48	Class 25	As cast	3.40 to 3.50	2.40 to 2.50	0.30 to 0.70	0.00 to 0.50	0.00 to 0.10	0.00 to 0.10	0.02 to 0.03	0.06 to 0.12	0.00 to 0.50	0.00 to 0.05			92.86	7.14		25			159-223
	A48	Class 30	As cast	3.30 to 3.40	2.30 to 2.40	0.60 to 0.80	0.00 to 0.50	0.00 to 0.15	0.00 to 0.20	0.02 to 0.25	0.06 to 0.12	0.00 to 0.50	0.00 to 0.05			92.68	7.33		30			179-229
	A48	Class 35	As cast	3.15 to 3.25	2.10 to 2.25	0.70 to 0.90	0.00 to 0.75	0.00 to 0.15	0.00 to 0.30	0.02 to 0.20	0.06 to 0.12	0.00 to 0.75	0.00 to 0.10			92.60	7.40		35			187-241
	A48	Class 40	As cast	3.05 to 3.15	1.80 to 1.95	0.70 to 0.90	0.00 to 1.00	0.00 to 0.15	0.00 to 0.30	0.02 to 0.10	0.06 to 0.12	0.00 to 1.00	0.00 to 0.10			92.80	7.20		40			197-255
	A48	Class 45	As cast	2.95 to 3.05	1.70 to 1.85	0.80 to 1.00	0.00 to 1.00	0.00 to 0.20	0.00 to 0.30	0.02 to 0.10	0.06 to 0.10	0.00 to 1.00	0.00 to 0.10			92.89	7.12		45			207-269
A48	Class 50	As cast	2.90 to 3.00	1.65 to 1.80	0.80 to 1.00	0.00 to 1.00	0.00 to 0.20	0.00 to 0.50	0.02 to 0.08	0.06 to 0.10	0.00 to 1.00	0.00 to 0.10			92.90	7.11		50			217-269	
Hierros resistentes a la abrasión de alta aleación	A532	CLI-A (NiHard-1)	As Cast	2.80 to 3.60	0.80	2.00	3.30 to 5.00	1.40 to 4.00	1.00	0.30	0.15					85.70	14.30					530-550
	A532	CLI-A (NiHard-1)	SR Harden	2.80 to 3.60	0.80	2.00	3.30 to 5.00	1.40 to 4.00	1.00	0.30	0.15					85.70	14.30					600 Min
	A532	CLI-B (NiHard-2)	As Cast	2.40 to 3.00	0.80	2.00	3.30 to 5.00	1.40 to 4.00	1.00	0.30	0.15					86.20	13.80					530-550
	A532	CLI-B (NiHard-2)	SR Harden	2.40 to 3.00	0.80	2.00	3.30 to 5.00	1.40 to 4.00	1.00	0.30	0.15					86.20	13.80					600 Min
	A532	CLI-C (NiHard-3)	As Cast	2.50 to 3.70	0.80	2.00	4.00 to 4.00	1.00 to 2.50	1.00	0.30	0.15					86.90	13.10					530-550
	A532	CLI-C (NiHard-3)	SR Harden	2.50 to 3.70	0.80	2.00	4.00 to 4.00	1.00 to 2.50	1.00	0.30	0.15					86.90	13.10					600 Min
	A532	CLI-D (NiHard-4)	As Cast	2.50 to 3.60	2.00	2.00	4.50 to 7.00	7.00 to 11.00	1.50	0.10	0.15					76.45	23.55					480-510
	A532	CLI-D (NiHard-4)	SR Harden	2.50 to 3.60	2.00	2.00	4.50 to 7.00	7.00 to 11.00	1.50	0.10	0.15					76.45	23.55					600 Min
	A532	CLII-B (15% Chrome)	Anneal	2.00 to 3.30	1.50	2.00	2.50 Max.	14.00 to 18.00	3.00	0.10	0.06	1.20				70.99	29.01					400 Max
	A532	CLII-B (15% Chrome)	Harden	2.00 to 3.30	1.50	2.00	2.50 Max.	14.00 to 18.00	3.00	0.10	0.06	1.20				70.99	29.01					600 Min
	A532	CLII-D (20% Chrome)	Anneal	2.00 to 3.30	1.00 to 2.20	2.00	2.50 Max.	18.00 to 23.00	3.00	0.10	0.06	1.20				66.39	33.61					400 Max
	A532	CLII-D (20% Chrome)	Harden	2.00 to 3.30	1.00 to 2.20	2.00	2.50 Max.	18.00 to 23.00	3.00	0.10	0.06	1.20				66.39	33.61					600 Min
	A532	CLIII-A (25% Chrome)	Anneal	2.00 to 3.30	1.50	2.00	2.50	23.00 to 30.00	3.00	0.10	0.06	1.20				61.74	38.26					400 Max
	A532	CLIII-A (25% Chrome)	Harden	2.00 to 3.30	1.50	2.00	2.50	23.00 to 30.00	3.00	0.10	0.06	1.20				61.74	38.26					600 Min
Hierro dúctil de alta aleación austenítica	A439	NIRESIST-D2		3.00	1.50 to 3.00	0.70 to 1.25	18.00 to 22.00	1.75 to 2.75		0.08						71.45	28.56		58	30	8	139-202
	A439	NIRESIST-D2B		3.00	1.50 to 3.00	0.70 to 1.25	18.00 to 22.00	2.75 to 4.00		0.08						70.32	29.68		58	30	7	148-211
	A571	NIRESIST-D2W		3.00	3.00	1.50	18.00 to 22.00	1.75 to 2.25							0.10	70.40	29.60		58	30	8	140-210

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SÍMBOLOS	Al	Aluminio	Fe	Hierro	S	Azufre	Zn	Zinc
	As	Arsénico	Mg	Magnesio	Sb	Antimonio		
	B	Boro	Mn	Manganeso	Se	Selenio		
	C	Carbón	Mo	Molibdeno	Si	Silicio		
	Cb	Columbio (niobio)	N	Nitrógeno	Sn	Estaño		
	Ce	Cerio	Nb	Niobio (ahora Columbium)	Ta	Tantalio		
	Co	Cobalto	Ni	Níquel	Ti	Titanio		
	Cr	Cromo	P	Fósforo	V	Vanadio		
	Cu	Cobre	Pb	Dirigir	W	Tungsteno		