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SECTION N

CONTINUOUS CAST IRON BAR

CONTINUOUS CAST GRAY IRON	2
CONTINUOUS CAST DUCTILE IRON	3
CONTINUOUS CAST 201/202 NI-RESIST.....	4
CONTINUOUS CAST IRON SIZES AND WEIGHTS.....	5-7

CONTINUOUS CAST GRAY IRON BARS

SIMILAR TO ASTM A 48

This material is broken down into several subsets based primarily on the developed microstructure.

ANALYSIS

	C	Si	Mn	S	P
				Max.	Max.
G1	2.60/3.75	1.80/3.00	.30/.65	.07	.12
G1A	2.60/3.75	2.30/3.00	.10/.35	.025	.12
G2	2.60/3.75	1.80/3.00	.60/.95	.07	.12
G2A	2.60/3.75	2.30/3.00	.20/.40	.025	.12

HARDNESS

	BHN Min.	BHN Max.
G1		
.625-1.500	179	235
1.501-3.000	163	229
3.001-6.000	151	229
6.001-20.00	143	201
G2		
.625-.750	229	301
.751-1.500	207	285
1.501-2.000	207	277
2.001-3.000	207	269
3.001-6.000	197	269
6.001-20.00	183	269

MACHINABILITY — The machinability ratings are G1 125%, G2 135% based on 1212.

APPLICATIONS — Hydraulic cylinder glands, manifolds and pistons; Automotive cylinder liners, gears valve guides; Pump liners, rollers, rotors and a variety of other mechanical parts.

HARDENING — G1 and G2 can be oil quenched from 1500°F to 1600°F to produce surface hardness of RC 40 (G1) and RC 50 (G2).

CONTINUOUS CAST DUCTILE IRON BARS

SIMILAR TO ASTM A 536

This material is broken down into several subsets based primarily on the developed microstructure.

ANALYSIS

C	Si	Mn	P Max.	S Max.
3.50/3.90	2.25/3.00	.15/.35	.05	.025

MECHANICAL PROPERTIES

	Tensile Strength Minimum (psi)	Yield Strength Minimum (psi)	Elongation*
65-45-12	65,000	45,000	12%
80-55-06	85,000	55,000	6%
100-70-02	100,000	70,000	2%

*Bars under 2.0" diameter, elongation will be 9% minimum.

APPLICATIONS — High pressure cylinder blocks, pistons, glands, rotors and valves. Also commonly used for bushings, flywheels, pulleys, rams, guide ways, gears, housings and liners.

HARDENING — These grades can be oil quenched from 1600° F to produce surface hardness of RC 50 minimum.

MACHINABILITY — The machinability ratings for each grade are:

65-45-12	150%
80-55-06	125%
100-70-02	75%

Based on 1212.

201/202 Ni-RESIST CAST IRON BARS

ASTM A 436 TYPE 1 AND TYPE 2

ANALYSIS

	C Max.	Si	Mn	Ni	Cu	Cr	S Max.
201 (Type 1)	3.00	1.00/2.80	.50/1.50	13.50/17.50	.50/7.50	1.50/2.50	0.12
202 (Type 2)	3.00	1.00/2.80	.50/1.50	18.00/22.00	.50 Max.	1.50/2.50	0.12

HARDNESS*:

201 (Type 1)	1"RD-6"RD	131 BHN/183 BHN
202 (Type 2)	1"RD-6"RD	118 BHN/174 BHN

*Brinell Hardness in the center of bars 1.750"RD and smaller may be lower due to thermal center microshrinkage.

HARDENING: Austenitic alloys can not be hardened by heat treatment. This material may be softened by heating to 1800°-1900°F for 3-5 hours and air cooling.

GRAIN SIZE: ASTM 4-6 based on ASTM A247

APPLICATIONS: Valve guides, Insecticides pumps, Flood gates, Piston ring inserts, Sea water valves and Pump bodies.

CONDITIONS: Hydrogen sulfide and sour crude oil, Sea Water, Sodium hydroxide, Sulfuric acid, Hydrochloric acid and Marine atmospheres.

This product should not be used in applications involving service above 1300°F.

MACHINABILITY: This material machines similarly to Ductile Iron.

CONTINUOUS CAST IRON SIZES AND WEIGHTS

Size	Gray Iron Stock Allowance	Rough Size	Wt/Ft Gray Iron	Size	Ductile Iron Stock Allowance	Rough Size	Wt/Ft
0.625	0.0850	0.7100	1.2	0.625	0.088	0.7130	1.2
0.750	0.0850	0.8350	1.7	0.750	0.088	0.8380	1.7
0.875	0.0850	0.9600	2.3	0.875	0.088	0.9630	2.2
1.000	0.0850	1.0850	2.9	1.000	0.088	1.0880	2.8
1.125	0.0850	1.2100	3.6	1.125	0.088	1.2130	3.5
1.250	0.0850	1.3350	4.4	1.250	0.088	1.3380	4.3
1.375	0.0900	1.4650	5.3	1.375	0.095	1.4700	5.2
1.500	0.0900	1.5900	6.2	1.500	0.095	1.5950	6.1
1.625	0.0900	1.7150	7.2	1.625	0.095	1.7200	7.1
1.750	0.0900	1.8400	8.3	1.750	0.095	1.8450	8.2
1.875	0.0900	1.9650	9.5	1.875	0.095	1.9700	9.3
2.000	0.0900	2.0900	10.7	2.000	0.095	2.0950	10.5
2.125	0.1100	2.2350	12.2	2.125	0.118	2.2430	12.1
2.250	0.1100	2.3600	13.6	2.250	0.118	2.3680	13.5
2.375	0.1100	2.4850	15.1	2.375	0.118	2.4930	14.9
2.500	0.1100	2.6100	16.7	2.500	0.118	2.6180	16.5
2.625	0.1100	2.7350	18.3	2.625	0.118	2.7430	18.1
2.750	0.1100	2.860	20.0	2.750	0.118	2.8680	19.8
2.875	0.1100	2.9850	21.8	2.875	0.118	2.9930	21.5
3.000	0.1100	3.1100	23.7	3.000	0.118	3.1180	23.4
3.125	0.1250	3.2500	25.9	3.125	0.136	3.2610	25.6
3.250	0.1250	3.3750	27.9	3.250	0.136	3.3860	27.6
3.375	0.1250	3.5000	30.0	3.375	0.136	3.5110	29.6
3.500	0.1250	3.6250	32.2	3.500	0.136	3.6360	31.8
3.625	0.1250	3.7500	34.5	3.625	0.136	3.7610	34.0
3.750	0.1250	3.8750	36.8	3.750	0.136	3.8860	36.3
3.875	0.1250	4.0000	39.2	3.875	0.136	4.0110	38.7
4.000	0.1250	4.1250	41.7	4.000	0.136	4.1360	41.1
4.125	0.1400	4.2650	44.6	4.125	0.154	4.2790	44.0
4.250	0.1400	4.3900	47.2	4.250	0.154	4.4040	46.6
4.375	0.1400	4.5150	50.0	4.375	0.154	4.5290	49.3
4.500	0.1400	4.6400	52.8	4.500	0.154	4.6540	52.1
4.625	0.1400	4.7650	55.6	4.625	0.154	4.7790	54.9
4.750	0.1400	4.8900	58.6	4.750	0.154	4.9040	57.8
4.875	0.1400	5.0150	61.6	4.875	0.154	5.0290	60.8
5.000	0.1400	5.1400	64.7	5.000	0.154	5.1540	63.8

CONTINUOUS CAST IRON SIZES AND WEIGHTS (continued)

Size	Gray Iron Stock Allowance	Rough Size	Wt/Ft Gray Iron	Size	Ductile Iron Stock Allowance	Rough Size	Wt/Ft
5.125	0.1550	5.2800	68.3	5.125	0.172	5.2970	67.4
5.250	0.1550	5.4050	71.6	5.250	0.172	5.4220	70.7
5.375	0.1550	5.5300	74.9	5.375	0.172	5.5470	73.9
5.500	0.1550	5.6550	78.4	5.500	0.172	5.6720	77.3
5.625	0.1550	5.7800	81.9	5.625	0.172	5.7970	80.8
5.750	0.1550	5.9050	85.4	5.750	0.172	5.9220	84.3
5.875	0.1550	6.0300	89.1	5.875	0.172	6.0470	87.9
6.000	0.1550	6.1550	92.8	6.000	0.172	6.1720	91.6
6.250	0.1700	6.4200	101.0	6.250	0.19	6.4400	99.7
6.500	0.1700	6.6700	109.0	6.500	0.19	6.6900	107.6
6.750	0.1700	6.9200	117.3	6.750	0.19	6.9400	115.8
7.000	0.1700	7.1700	126.0	7.000	0.19	7.1900	124.2
7.250	0.1900	7.4400	135.6	7.250	0.213	7.4630	133.9
7.500	0.1900	7.6900	144.9	7.500	0.213	7.7130	143.0
7.750	0.1900	7.9400	154.5	7.750	0.213	7.9630	152.4
8.000	0.1900	8.1900	164.4	8.000	0.213	8.2130	162.1
8.250	0.2160	8.4660	175.6	8.250	0.242	8.4920	173.3
8.500	0.2160	8.7160	186.2	8.500	0.242	8.7420	183.7
8.750	0.2160	8.9660	197.0	8.750	0.242	8.9920	194.3
9.000	0.2160	9.2160	208.1	9.000	0.242	9.2420	205.3
9.250	0.2540	9.5040	221.3	9.250	0.283	9.5330	218.4
9.500	0.2540	9.7540	233.1	9.500	0.283	9.7830	230.0
10.000	0.2540	10.2540	257.7	10.000	0.283	10.2830	254.1
10.250	0.4000	10.6500	277.9	10.250	0.432	10.6820	274.2
10.500	0.4000	10.9000	291.1	10.500	0.432	10.9320	287.2
11.000	0.4000	11.4000	318.5	11.000	0.432	11.4320	314.1
11.500	0.5820	12.0820	357.7	11.500	0.623	12.1230	353.2
12.000	0.5820	12.5820	387.9	12.000	0.623	12.6230	382.9
13.000	0.5820	13.5820	452.0	13.000	0.623	13.6230	446.0
13.500	0.5820	14.0820	485.9	13.500	0.623	14.1230	479.4
14.000	0.5820	14.5820	521.1	14.000	0.623	14.6230	513.9
14.500	0.5820	15.0820	557.4	14.500	0.623	15.1230	549.7
15.000	0.5820	15.5820	595.0	15.000	0.623	15.6230	586.6
16.000	0.5820	16.5820	673.8	16.000	0.623	16.6230	664.1
17.000	0.7620	17.7620	773.1	17.000	0.815	17.8150	762.8
18.000	0.7620	18.7620	862.6	18.000	0.815	18.8150	850.8
19.000	0.7620	19.7620	957.0	19.000	0.815	19.8150	943.6
20.000	0.7620	20.7620	1056.3	20.000	0.819	20.8190	1041.7
21.000	NA	INGOT	1099.6	21.000	NA	INGOT	1099.6
22.000	NA	INGOT	1205.5	22.000	NA	INGOT	1205.5

CONTINUOUS CAST IRON SIZES AND WEIGHTS (continued)

Size	Gray Iron Stock Allowance	Rough Size	Wt/Ft Gray Iron	Size	Ductile Iron Stock Allowance	Rough Size	Wt/Ft
23.500	NA	INGOT	1373.6	23.500	NA	INGOT	
24				24			
+ .125/-				+ .125/-			
000	NA	INGOT	1106.4	0000	NA	INGOT	1106.4
24.250	NA	INGOT	1461.7	24.250	NA	INGOT	1461.7
25.000	NA	INGOT	1552.5	25.000	NA	INGOT	1552.5
25.500	NA	INGOT	1595.3	25.500	NA	INGOT	1595.3
26.000	NA	INGOT	1677.9	26.000	NA	INGOT	1677.9
26.750	NA	INGOT	1775.2	26.750	NA	INGOT	1775.2
27.500	NA	INGOT	1875.2	27.500	NA	INGOT	1875.2
28.250	NA	INGOT	1977.9	28.250	NA	INGOT	1977.9

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