



Castle Metals®



Continuous Cast Iron



*Your foremost provider
of specialty products,
services and solutions*

Quik Guide



Continuous Cast Iron Quik Guide

TYPE	CAST IRON	MACHINABILITY RATING ¹	TYPICAL APPLICATIONS
GRAY IRON	G1	125%	Hydraulic cylinder glands, manifolds, pistons, spools, valves, bushings gears, gibs, pulleys, rams, sheaves, side frames, slides, machine tool ways, shock absorber pistons, rotors, casting plates, core boxes, pattern plates.
	G1A	155%	Glass mold components, baffles, full molds, blank molds, bottom plates, discs, funnels, guide & neck rings, plungers, sleeves, thimbles
	G2	135%	Hydraulic cylinder pistons, glands, manifolds, valves, spools, bushings, gears, gibs, pulleys, rams, sheaves, side frames, slides, machine tool ways, spindle housings, cylinder liners, lash adjusters, shock absorber pistons, valve guides, valve seat inserts, brake rotors, rotors, mechanical seals, bridge plugs, cement plugs, cones, mandrels, retainers, slips, steel mill rolls, aluminum casting mold plates, cams, chain sheave rollers, core boxes, pattern plates.
	G2A	110%	Molding applications including: battery grid molds, baffles, full molds, blank molds, bottom plates, discs, funnels, guide & neck rings, plungers, sleeves, thimbles.
	Alloyed Gray Iron	80%	Automotive distributor gears, oil pump gears, compressor wear rings, valve guides, hydrostatic transmission rotors, steel mill rolls
DUCTILE IRON	65-45-12	150%	Hydraulic cylinder pistons, glands, valves, manifolds, rotors, gerotors, actuator housings, end caps, machine tool spindle housings, bushings, gears, journals, pulleys, tie rod nuts, flywheels, side frames, railroad frog fillers, pump screws, impellers, rotors, glass mold plungers and molds.
	65-45-12 HRDS	125%	Glass molds, plate glass furnace rolls, turbocharger bushings, steel mill rod mill rolls, hot sealing knives
	80-55-06	125%	Hydraulic cylinder pistons, glands, valves, manifolds, rotors, cylinder blocks, machine tool bushings, chain sheave rollers, chuck bodies, tie rod nuts, ways, trunion rollers, flywheels, pile driver rams, pulleys, press rams, gears, pump gears, housings, liners, steel mill guide rolls, pinch rolls, run-out table rolls.
	100-70-02	75%	High pressure hydraulic cylinder blocks, gerotors, manifolds, pistons, glands, valves, printing press & machine tool gears, die blocks, chuck bodies, rams, barrel rollers, dismatic pouring rails.
NI-RESIST	201 Type-1 202 Type-2	135%	Mechanical seal plates, valve guides, pump bodies, pulp & paper equipment, sea water valves, insecticide pump components, oil & gas refinery components.
HTN	Grade-1	130% as cast	Gears, pump rings, camshafts, trailer pins, sprockets, bushings, chain sheave rollers, steel mill guide rolls, pinch rolls, run-out table rolls, crushing rolls.
	Grade-2	130% as cast	
	Grade-3	130% as cast	
	Grade-4	130% as cast	
	Grade-5	130% as cast	

¹ Based on 1212 as 100%

SHAPE	SIZE RANGE IN STOCK																			
	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"
ROUNDS SQUARES RECTANGLES TUBES	.625" – 20" upon request																			
	1.50" – 12.25" sq. upon request																			
	.75" x 1.50" up to – 18.50" x 22.00" upon request																			
	Upon Request																			
ROUNDS SQUARES RECTANGLES TUBES	.625" – 20" upon request																			
	1.50" thru 12.25" sq. upon request																			
	.75" x 1.50" up to – 18.50" x 22.00" upon request																			
	Upon Request																			
ROUNDS SQUARES RECTANGLES TUBES	.625" – 20"																			
	1.50" thru 12.25"																			
	.75" x 1.50" up to – 14.00" x 21.00" (up to 18.50" x 22.00" upon request)																			
	1.50" ID x 3.50" OD up to 7.00" ID x 9.50" OD																			
ROUNDS SQUARES RECTANGLES TUBES	.625" – 20" upon request																			
	1.50" thru 12.25" sq. upon request																			
	.75" x 1.50" up to – 18.50" x 22.00" upon request																			
	Upon Request																			
ROUNDS SQUARES RECTANGLES TUBES	.625" – 20" upon request																			
	1.50" thru 12.25" sq. upon request																			
	.75" x 1.50" up to – 18.50" x 22.00" upon request																			
	Upon Request																			
ROUNDS SQUARES RECTANGLES TUBES	1.25" – 16" Over 16" upon request																			
	3.25" – 10.375" sq.																			
	.75" x 1.50" up to – 18.50" x 22.00"																			
	Upon Request																			
ALL SHAPES	Upon Request																			
ROUNDS SQUARES RECTANGLES TUBES	1.25" – 20"																			
	1.50" thru 12.25" sq. upon request																			
	.75" x 1.50" up to – 18.50" x 22.00" upon request																			
	Upon Request																			
ALL SHAPES	Upon Request																			
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* All Cast Iron grades can be produced in rounds, tubes, rectangles, squares, and special profiles. Condition listed is the most commonly produced/stocked form.



GUARANTEED MECHANICAL PROPERTIES					CAST IRON
TENSILE (PSI)	YIELD (PSI)	% ELONG. IN 2"	DIA	BHN	
30,000 ²	N/A	N/A	.75"–1.50" 1.50"–3" 3"–6" 6"–20"	179–235 163–229 151–229 143–201	G1
25,000 ²	N/A	N/A	All Sizes	143–201	G1A
40,000 ²	N/A	N/A	.50"–.75" .75"–1.50" 1.50"–2.00" 2"–3" 3"–6" 6"–20"	229–301 207–285 207–285 207–269 197–269 183–269	G2
50,000 ²	N/A	N/A	All Sizes	248–311	G2A
40,000 ²	N/A	N/A	350 Max. To Customer Request		Alloyed Gray Iron
65,000	45,000	12%	.75"–2" 2"–3" 3"–6" 6"–10" 10"–20"	156–217 153–207 143–207 131–207 131–201	65-45-12
65,000	45,000	12%	All Sizes	167–229	65-45-12 HRDS
80,000	55,000	6%	.75"–1.50" 1.50"–3" 3"–20"	207–269 207–262 207–255	80-55-06
100,000	70,000	2%	All Sizes	241–302	100-70-02
25,000 ²	N/A	N/A	All Sizes	131–183	201 Type-1
25,000 ²	N/A	N/A	All Sizes	118–174	202 Type-2
125,000	85,000	10%		269–331	Grade-1
150,000	100,000	7%		302–363	Grade-2
175,000	120,000	4%		341–415	Grade-3
200,000	140,000	2%		375–461	Grade-4
230,000	185,000	N/A		444–555	Grade-5

² Estimates only: actual tensile strength is a function of section size and test bar type and location.

TOLERANCE TABLES

LENGTH

Continuous cast bars are notched and broken off on the production line in standard lengths of 6 feet and 12 feet. Larger bars will be shorter because of their weight. Stock is added on to the break-off length in order to guarantee the nominal length.

Nominal Bar Diameter (or) Smallest Nominal Diameter	Break-Off Length	
	Add-On	6 FT. Bars
.625"– 3.999"	2.0"	74"
4.000"– 9.999"	3.0"	75"
10.000"– 20.000"	3.5"	75.5"

DIAMETER

Standard cold finished tolerances.

Nominal Length	Bar Diameter	Cold Finish Tolerance
72"	.750"–4.00"	+ .010"/- .000"
72"	4.001"–6.00"	+ .015"/- .000"
144"	7.50"–3.00"	+ .010"/- .000"
144"	3.001"–4.00"	+ .015"/- .000"

STOCK ALLOWANCE

ROUNDS

Round bars are made with sufficient stock on the outside diameter to guarantee clean-up at the nominal dimensions. Total stock allowances and allowable deviations for round bars are listed in the table to the right.

Outside Diameter Bar Size	Gray Iron	Ductile Iron & Ni Resist	Stock Allowance Variation (+/-) All Metal Specs
.750–1.250"	.085"	.088"	.017"
1.251–2.000"	.090"	.095"	.024"
2.001–3.000"	.110"	.118"	.030"
3.001–4.000"	.125"	.136"	.038"
4.001–5.000"	.140"	.154"	.048"
5.001–6.000"	.155"	.172"	.055"
6.001–7.000"	.170"	.190"	.062"
7.001–8.000"	.190"	.213"	.085"
8.001–9.000"	.216"	.242"	.108"
9.001–10.000"	.254"	.283"	.129"
10.001–11.000"	.400"	.432"	.150"
11.001–16.000"	.582"	.623"	.206"
16.001–18.000"	.762"	.815"	.262"
18.001–20.000"	.762"	.819"	.262"

RECTANGLES

Rectangles are made to the actual dimensions. Clean-up stock must be considered when ordering. Stock allowances per side are listed in the table to the right.

Height	Ratio–Width: Height				
	0.000–1.99	2.000–2.999	3.000–4.999	5.000–7.999	8.001 & Up
.750–1.250"	.090"	0.100"	0.125"	0.188"	0.188"
1.501–2.500"	.090"	0.100"	0.125"	0.125"	0.188"
2.501–4.000"	0.100"	0.188"	0.250"	0.250"	
4.001–6.000"	0.112"	0.188"	0.250"		
6.001–8.500"	0.125"	0.250"	0.250"		
8.501–11.500"	0.188"	0.250"			
11.501–14.125"	0.250"				

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