GX Gray Iron

Description

GX is a pearlitic gray iron offered in a variety of small and large rounds and rectangles for non-typical size applications. GX benefits include wear resistance, noise and vibration damping, and can be heat treated using conventional methods.

Applications

Oil/Gas:
Bridge Plugs, Cement Plugs, Cones, Mandrels, Retainers, Slips

Fluid Power:
Cylinder Blocks, Glands, Manifolds, Pistons, Rotors, Spools, Valves

Automotive:
Gears

Machinery:
Bushings, Gears, Gibs, Housings, Pulleys, Rams, Sheaves, Side Frames, Slides, Spindles, Ways

Miscellaneous:
Aluminum Molds Plates, Cams, Chain Sheaves, Core Boxes, Dies, Pattern Plates, Wheels

Power Transmission:
Gears, Pulleys

Pump/Compressor:
Gears, Housings, Liners, Pistons, Rollers, Rotors, Seals

Steel Mill:
Continuous Caster Rolls, Pattern Plates, Core Box Patterns, Foot Rolls, Table Rolls, Torch Rolls

Transportation:
Brake Rotors, Cylinder Liners, Gears, Lash Adjusters, Pulleys, Shock Absorber Pistons, Valve Guides, Valve Seat Inserts

Physical Properties

Property	Measurement
Density (lbs/in^3)	
Poisson's ratio [ν]	
Modulus of elasticity (Tension) (psi) [E]	
Modulus of rigidity (Shearing) (psi) [G]	
Thermal conductivity (BTU/Hr/ft^2/inch/°F), (Range: Room Temp - 212°F)	
Thermal expansion coefficient(/°F) [a], (Range: 70 - 212°F)	
Damping capacity	
Electrical resistivity (μ Ohm. Cm) [ρ] (Cu =1.67)	
Magnetic properties (KiloGauss/Oersteds@100 Oersteds	
Heat treat response (Rc)	
Electrical Resistivity (Microhms x Cm)	

Mechanical Properties

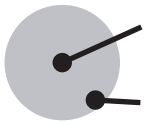
Hardness values listed are minimum and maximum across the bar. Hardness values for rectangles and squares are a function of the height and width ratios and will be supplied on request.

Size Range		BHN	
Inches	mm	Min	Max
01.000 – 28.000	25 –711	190	260

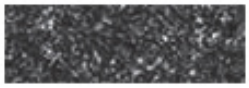
GX Gray Iron conforms to ASTM A48 Class 40. Tensile data from the as-cast bar, in conjunction with separately cast tensile data, correlates to a Class 40 Gray Iron.

For more information refer to the GX Class 40 Tensile Table.

Microstructure



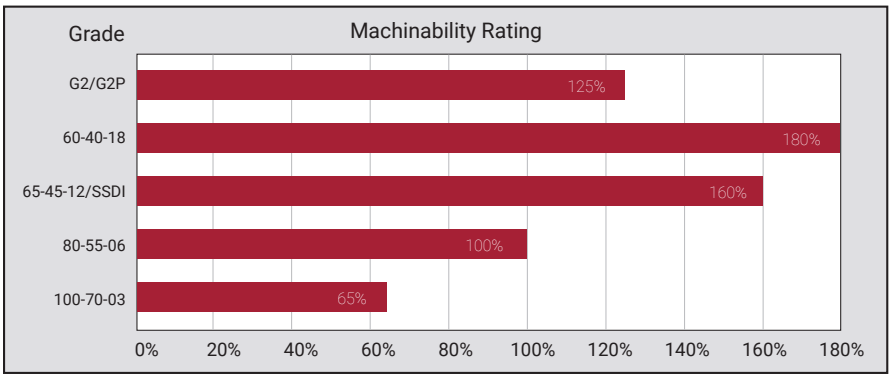
Center Area
100x, etched in 5% Nital



Edge Area
100x, etched in 5% Nital

The core microstructure will consist of Type A graphite flake, per ASTM A247, with a matrix containing a minimum of 90% pearlite. The edge or rim will have a combination of Type D and Type E graphite flake and a matrix with a mixture of ferrite and pearlite. The rim will contain as much as 5% carbides.

Machinability



* Based on 1212 steel = 100%

Heat Treat Response:

GX can be heat treated by conventional methods. Hardening can be accomplished by heating and quenching the material from 1600° F resulting in Rockwell C hardness up to 50 HRC. Induction and flame hardening can be performed but may require an additional pre-heat treatment to reach the desired hardness and microstructure.

Chemical Composition:

Element	Percentage
Carbon*	2.95 - 3.45%
Silicon*	2.10 - 2.90%
Manganese	0.50 - 0.80%
Sulfur	0.04 - 0.80%
Phosphorus	0.15% Max

*Carbon and silicon targets are specified for each bar size in order to control the size and shape of the graphite flake.

Applicable Specifications

ASTM A247

Forms Manufactured

Rounds: 21.640” to 29.500” Rectangles - 0.750” x 1.500” to 16.000” x 28.000”

Squares: 1.500” x 1.500” to 21.000” x 21.000” Custom shapes available per request

Disclaimer

All of the above information is for reference only. Actual results are influenced by process variables and actual size of the raw material.

*Visit **www.dura-bar.com/applications/index.cfm** to see successful applications being made from Dura-Bar, including their design and cost benefits. Contact us today to discuss your application and how you can start saving with Dura-Bar.*