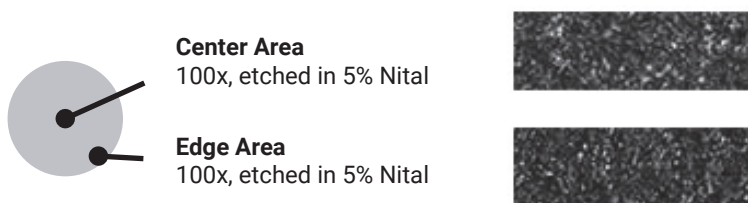


## G2 Gray Iron

### General Description:

Dura-Bar G2 is a pearlitic gray iron containing Type A graphite. Our continuous cast bars made to this robust specification are a good fit for a variety of applications, due to its good machinability, wear resistance and vibration damping properties. G2 is built around ASTM A48 Class 40 gray iron, which is validated from a separately cast bar.

### Microstructure:



The microstructure will contain Type VII, A, size 4-6 graphite as defined in ASTM A247. The matrix is fully pearlitic. The edge or rim will consist of Type D, size 4-6 graphite in a matrix that is a combination of pearlite and ferrite. Chill carbides will be less than 5% in any field at 100x and are well dispersed.

### Heat Treat Response:

Dura-Bar G2 can be oil quench hardened from 1600° F (885° C) to a minimum hardness of Rockwell C 50 on the outside of the bar. The inside diameter hardness will be less than Rockwell C 50. Lower quench hardness on the inside diameters are a result of larger graphite flakes and not as loss of matrix hardness. Get more details including typical Jominy end quench curve, methods and cycle times, and temperature effects by downloading the Dura-Bar Heat Treating Guide.

### Chemical Composition:

Element	Percentage
Carbon*	2.60 - 3.75%
Silicon*	1.80 - 3.00%
Manganese	0.60 - 0.95%
Sulfur	0.07% Max
Phosphorus	0.12% Max

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

## 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
0.625 – 0.750	16 - 19	229	301
0.751 – 1.500	19 - 38	207	285
1.501 – 2.000	38 - 51	207	277
2.001 – 3.000	51 - 76	207	269
3.001 – 6.000	76 – 152	197	269
6.001 – 20.000	152 – 508	183	269

Tensile strength of Dura-Bar G2 gray iron is determined from a separately cast, ASTM “B” test bar. Separately cast test bars will meet the minimum strength in pounds per square inch in the table. Additionally, a test bar is removed from the continuous cast bar for reference, as tensile strength varies with section thickness and bar diameter.

Mechanical Properties	
Tensile strength psi (min)	40,000
Yield strength psi (min)	N/A *
Elongation (min)	N/A*

\* Gray iron will not yield/elongate before fracture.  
 The behavior of gray iron is non-ductile.

## Typical Applications:

**Automotive:** Gears

**Fluid Power:** Cylinder blocks, Gerotors, Glands, Manifolds, Pistons, Rotors, Valves

**Machinery:** Barrel Rollers, Bushings, Chain Sheave Rollers, Chuck Bodies, Die Blocks, Flywheels, Gear Racks, Gears, Housings, Pile Drivers, Press Rams, Pulleys, Rams, Rotary Tables, Tie Rod Nuts

**Miscellaneous:** Core Boxes, Dies, Disamatic Pouring Rails, Grinding Rolls, Mill Liners, Pattern Plates, Plunger Pin

**Oil and Gas:** Slips, Cones, Retainers, Mandrels, Ball Seats, Lock Rings, Completion Tool Components

**Power Transmission:** Gears, Pulleys

**Pump and Compressor:** Gears, Housings, Liners, Pistons, Rotary Screws, Rotors

**Steel Mill:** Guide Rolls, Pinch Rolls, Runout Table Rolls

**Transportation:** Gears, Motorcycle Disk Brake, Pulleys, Rail Spacers

Visit [www.petersonsteel.com](http://www.petersonsteel.com) 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..