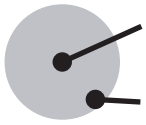
Dura-Bar®
Continuous Cast Iron Bar Stock

PRODUCT

80-55-06 Ductile Iron

General Description:

Dura-Bar 80-55-06 ductile iron will contain nodular graphite in a matrix of ferrite and pearlite. The pearlite/ ferrite structure provides higher wear resistance and strength when compared to a ferrite grade of ductile iron. This material is readily machinable with good surface finishes. Tensile and yield strengths are similar to AISI1040 steel in the as-rolled condition. This specification is similar to ASTM A536 grade 80-55-06.



Center Area
100x, etched in 5% Nital

Edge Area
100x, etched in 5% Nital

Microstructure

The microstructure consists of Type I & Type II nodular graphite as defined in ASTM A247. The matrix is pearlite and ferrite. The edge or rim has a higher nodule count and ferrite content. Chill carbides will be less than 5% in any field at 100x and will be well dispersed.

Heat Treat Response:

Dura-Bar 80-55-06 can be oil quench hardened from 1600° (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 nodules and not a 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*	3.50 - 3.90%
Silicon*	2.25 - 3.00%
Manganese	0.15 - 0.35%
Sulfur	0.025% Max
Phosphorus	0.05% Max

*Carbon and silicon targets are specified for each bar size in order to maintain mechanical properties. Magnesium is added as an inoculant to produce nodular graphite. Small amounts of alloying elements are used to stabilize the pearlitic structure.

Mechanical Properties:

Hardness properties for various diameters of 80-55-06 are shown in the table. Hardness properties listed are minimum and maximum across the bar. For rectangles, squares and shapes, the hardness properties will depend on minimum and maximum section thickness and will be supplied on request.

Size Range		BHN	
Inches	mm	Min	Max
01.000 – 1.500	25 – 38	187	255
01.501 – 3.000	35 – 76	187	255
03.001 – 20.000	76 – 508	187	255

Tensile strength is determined from a longitudinal test specimen taken from mid-radius of the as-cast bar. In bars under 1.5" diameter, elongation will be 4% minimum.

Mechanical Properties	
Tensile strength psi (min)	80,000
Yield strength psi (min)	55,000
Elongation (min)	6%

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

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.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.

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