Dura-Bar® Metal Services

Product

80-55-06X Ductile Iron

Description:

80-55-06X is a grade of ductile iron available in larger rounds and rectangles. This grade tends to contain more pearlite making the material a good fit in applications where considerations to wear resistance and surface finish are required. The additional pearlite also makes this material responsive to heat treating, like through-hardening and surface hardening.

Applications

Fluid power:
Cylinder blocks, Gerotors, Glands, Manifolds, Pistons, Rotors, Valves

Automotive:
Gears

Machinery:
Barrell 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

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

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

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

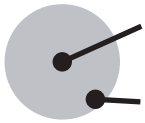
Hardness properties listed are minimum and maximum across the bar. For rectangles and squares the hardness properties will depend on minimum and maximum section thickness and will be supplied on request. This specification conforms to ASTM A536 grade 80-55-06.

Size Range		BHN	
Inches	mm	Min	Max
01.000 – 28.000	25 –711	187	255

Tensile strength of 80-55-06X is determined from a longitudinal test specimen taken from mid-radius of the as-cast bar.

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

Microstructure

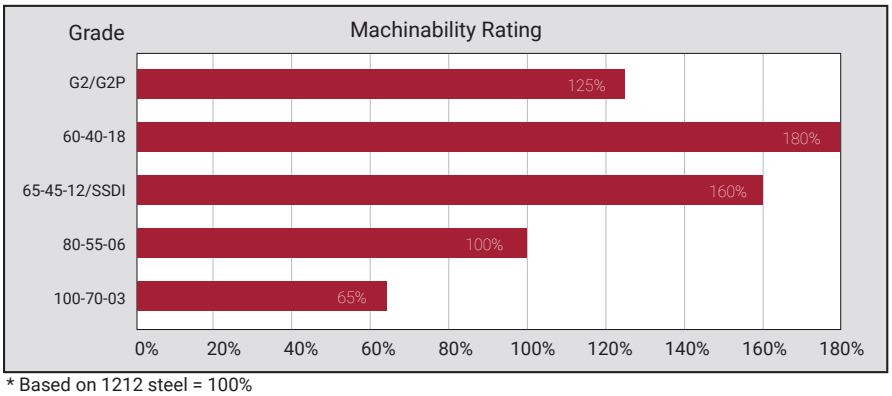


Center Area
100x, etched in 5% Nital

Edge Area
100x, etched in 5% Nital

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 a mixture of ferrite and pearlite. Chill carbides will be less than 5% in any field at 100x and will be well dispersed.

Machinability



* Based on 1212 steel = 100%

Heat Treat Response

Dura-Bar 80-55-06X 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 accomplish the desired hardness and microstructure.

Chemical Composition

Element	Percentage
Carbon*	3.40 - 3.85%
Silicon*	2.30 - 3.10%
Manganese	0.10 - 0.40%
Sulfur	0.02% Max
Phosphorus	0.08% 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.

Applicable Specifications

N/A

Forms Manufactured

Rounds: 25.180” to 29.500”

Rectangles: 14.600” x 24.400” to 14.600” x 24.400”

Custom shapes available on 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.

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