Dura-Bar®
Continuous Cast Iron Bar Stock

Quick Reference Guide

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Dura-Bar Advantages

Dura-Bar is the leader in the production, technology and application of continuous cast iron bar stock.

Dura-Bar is available in a wide variety of sizes and shapes in the standard ASTM A48 and ASTM A536 gray and ductile iron grades. Dura-Bar gray iron bar stock is a good alternative to iron castings because of its high quality, consistent machinability and dense fine-grained microstructure, which produces excellent surface finishes. Dura-Bar ductile iron is highly machinable, making it a superior alternative to carbon steel bar.

Why choose Dura-Bar? Dura-Bar's process and material properties make it a practical alternative to several materials, resulting in superior performance and significant cost savings.

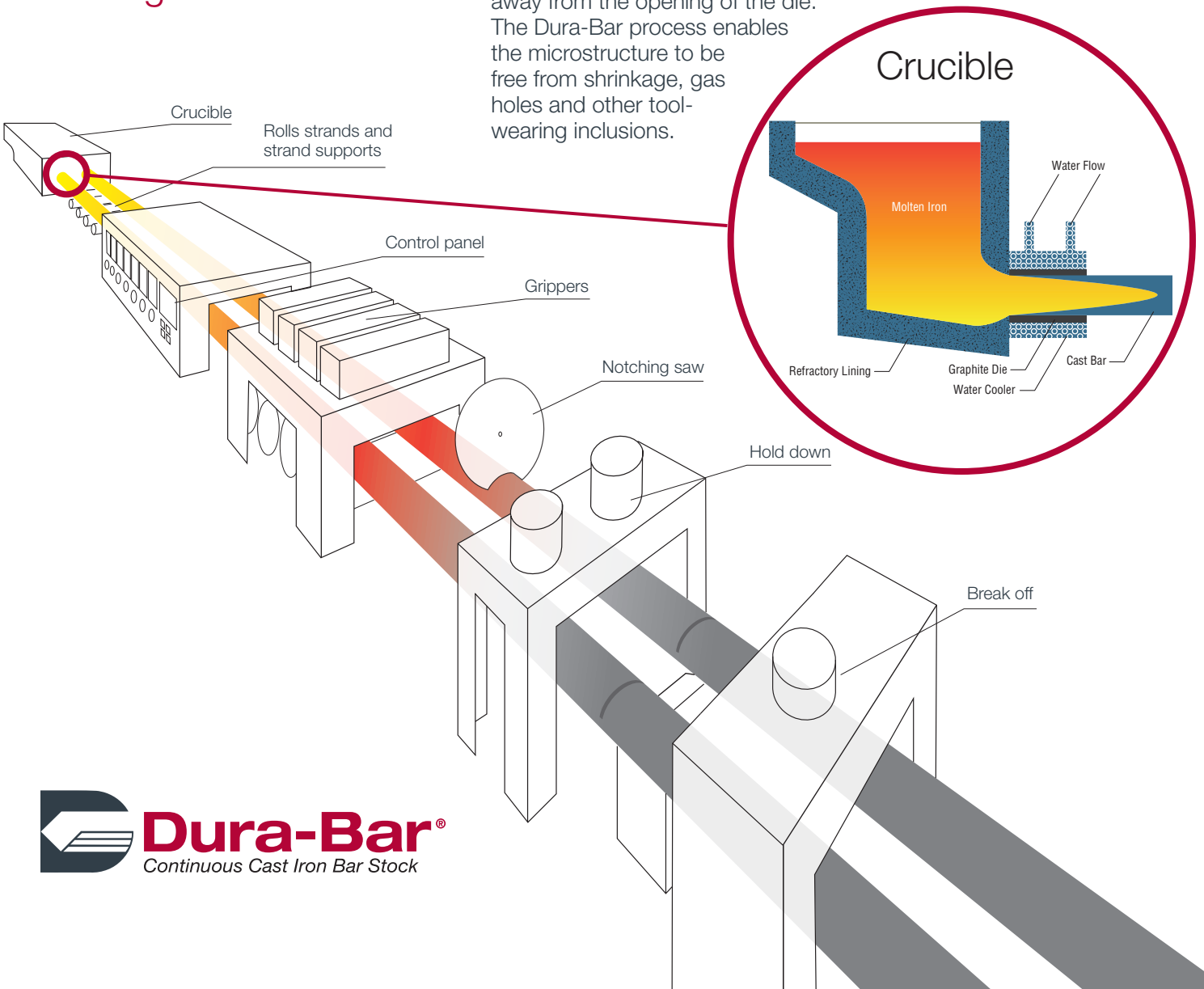
Benefits of Dura-Bar include:

- Optimization of machining speeds and feeds
- Lower tooling costs
- Decreased downtime for tooling changes
- Reduced scrap

Dura-Bar's continuous casting process begins with a water-cooled graphite die that is machined to form the shape of the bar. The die is mounted on a bar machine crucible. As the bar is pulled horizontally from the crucible, the head pressure feeds molten iron into the die, producing a fine-grained cast iron bar.

Since the bar is being pulled from the bottom of the holding crucible, dross, slag and other impurities float to the top, away from the opening of the die. The Dura-Bar process enables the microstructure to be free from shrinkage, gas holes and other tool-wearing inclusions.

The Continuous Casting Process



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Specifications

Gray Iron

Dura-Bar produces three grades of gray iron, all with excellent wear resistance, good machinability and high hardness.

- G2 has excellent wear resistance and vibration damping
- G2P was developed for enhanced surface hardening
- G2S combines both superior strength and surface hardening

Dura-Bar G2, G2P, and G2S conform to ASTM A48.

Mechanical Properties

Dura-Bar Grade	G2	G2P	G2S
Tensile strength, psi* min	40,000*	40,000*	40,000
Hardness BHN	183-301	183-301	207-290
Heat Treat Response	Rc 50 min	Rc 50 min	Rc 50 min
Core Graphite Type	Flake, A	Flake, A	Flake, A
Microstructure	Pearlitic	Highly Pearlitic	Highly Pearlitic

* As taken from a separately cast test bar. Reduced tensile properties can be expected in larger diameter continuous cast bars.

Ni-Resist

Dura-Bar Ni-Resist irons contain flake graphite in an austenitic matrix with alloy carbides and is often used in corrosive environments.

Dura-Bar Type 1 Ni-Resist conforms to ASTM A436, Type 1.

Mechanical Properties

ASTM A436 Grade	Type 1
Tensile strength psi*	25,000
Hardness (BHN) mid-radius	131-183
Magnetic response	Non-magnetic
Graphite	Flake A
Microstructure	Austenitic

* Tensile strength is measured by separately cast bar over 2.500" dimension.

Ductile Iron

Dura-Bar ductile iron is often used as an alternative to plain carbon steel as it has similar strengths with excellent free machining properties. All grades are equally hardenable.

- 60-40-18 is a sub-critical annealed ductile iron which offers excellent ductility and good impact strength
- 65-45-12 is a good replacement for low-carbon steel grades such as 1018, 1117, 1212, 11L17 and 12L14
- SSDI combines the elevated mechanical strengths of a pearlitic ductile iron with the machinability advantages of a ferritic ductile iron and is an excellent alternative to medium carbon steels.*
- 80-55-06 can be an alternative to the medium-carbon steels such as 1141, 1144 and 1045
- 100-70-03 maximizes strength and wear characteristics

Dura-Bar ductile iron conforms to ASTM A536.
*SSDI is similar to ISO 1083/JS/500-10.

Mechanical Properties

ASTM A536 Grade	60-40-18	65-45-12	SSDI	80-55-06	100-70-03
Tensile strength, psi* min	60,000	65,000	75,000	80,000	100,000
Yield strength, psi* min	40,000	45,000	55,000	55,000	70,000
Elongation, %* min	18	12	15	6	3
Hardness BHN	143-187	131-217	167-229	187-255	255-302
Heat Treat Response	n/a	Rc 55	Rc 40	Rc 55	Rc 55
Core Graphite Type	Nodular	Nodular	Nodular	Nodular	Nodular
Microstructure	Ferritic	Ferritic-Pearlitic	Ferritic-Pearlitic	Pearlitic-Ferritic	Pearlitic

* As taken from the continuous cast bar.

Dura-Bar Shapes and Sizes

Rounds

Nominal Diameter*	Increments Available
0.625" - 4.125"	0.125"
4.250" - 11.000"	0.250"
11.500" - 15.000"	0.500"
16.000" - 20.000"	1.000"

*As-cast Dura-Bar will finish at the size specified with minimum stock removal. Cold finished bars are available via grinding, turning, and milling upon request.

Trepanned Tubes

Outside diameters from 2.500" to 16.000" and inside diameters from 1.500" to 7.000".

Rectangles and Squares

Rectangular sizes up to 18.75" thick and 25.000" wide are available. Standard square sizes range from 1.500" to 12.250".

Dura-Bar XL

Dura-Bar XL permanent mold ingots are available in diameters of 21", 23", 24", 25" and 26", in ductile grades 65-45-12 and 80-55-06, and gray grade G2.

Shapes

Quoted on request.

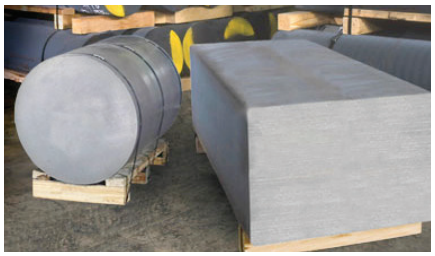
Typical Industries and Applications for Dura-Bar

Industries

Agriculture
Automotive
Construction
Fluid Power
Industrial
Oil & Gas
Machinery
Primary Metals
Renewable Energy
Transportation

Applications

Axial Piston Pump
Bushings
Cams
Conveyor Guide Rollers
Core Boxes
Couplings
Cylinder Liners
Dies
Gears
Manifolds
Molds
Pattern Plates
Pistons
Plungers
Pony Rods
Pulleys
Rams
Rolls
Rotors
Seal Rings
Shafts
Sleeves
Slips
Sprockets
Valve Bodies
Valve Guides
Ways



zero defect guarantee

A Commitment to Quality

Dura-Bar is an ISO-9001:2015 registered company committed to quality. We maintain our position as industry leader by producing the most consistently reliable, highest quality products. Dura-Bar is sold with a Zero-Defect guarantee. (For more information on the Zero-Defect guarantee, visit www.dura bar.com).

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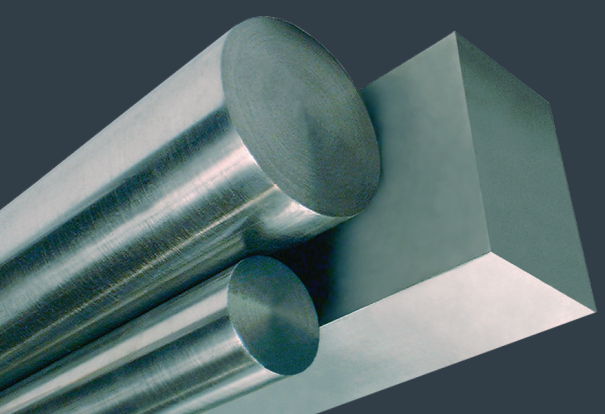

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