DURA-BAR®
METAL SERVICES

Dura-Bar®
Continuous Cast Iron Bar Stock

Quick Reference Guide

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Dura-Bar Advantages

Dura-Bar is the world 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 all of 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.

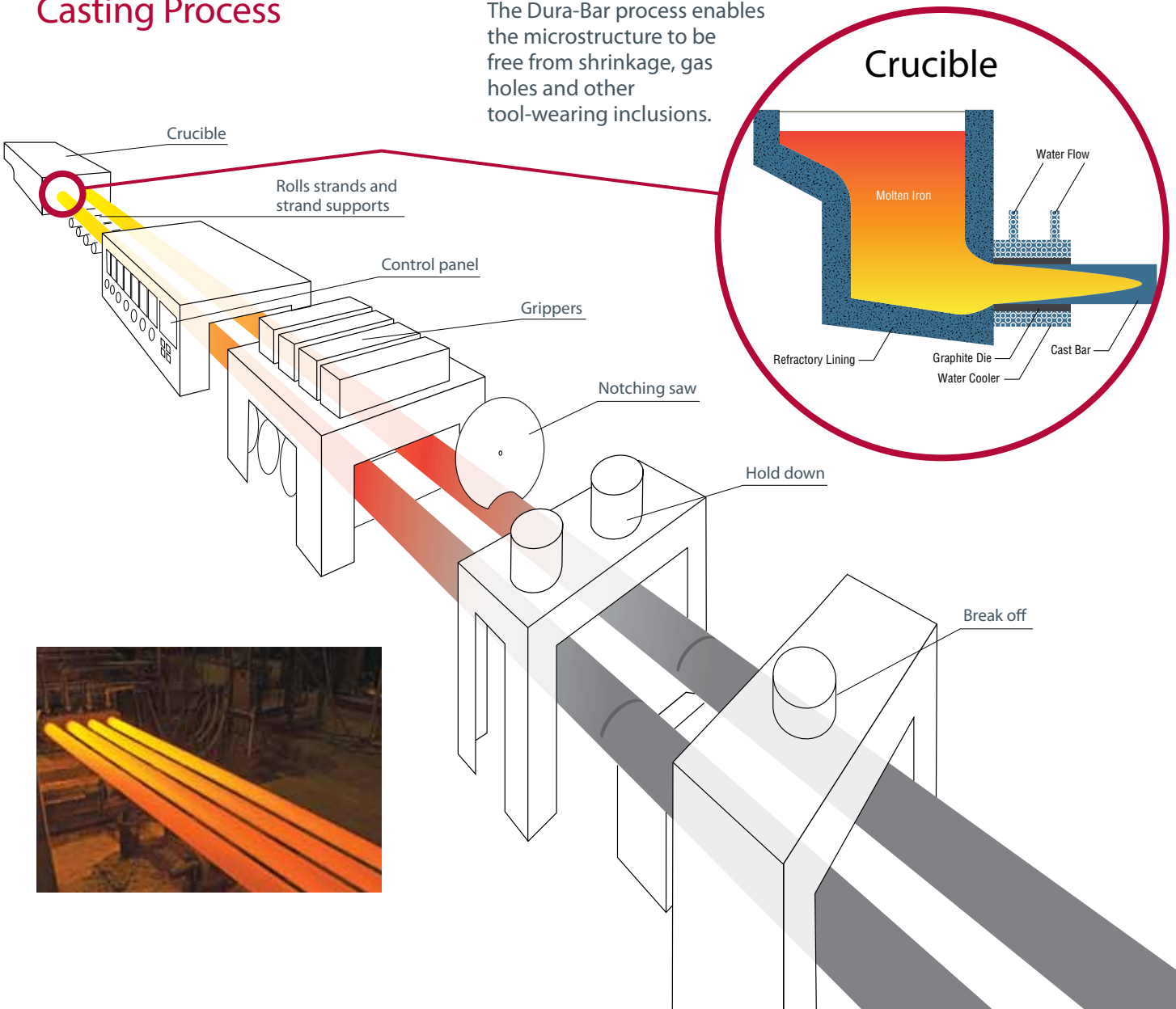
By using Dura-Bar you will be able to increase your profit margins by machining more parts per hour, thereby decreasing cycle time and increasing profitability. With Dura-Bar you will be able to:

- Optimize your machining speeds and feeds
- Lower your tooling costs
- Decrease downtime for tooling changes
- Reduce 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



Gray Iron

Dura-Bar G2 contains type A graphite in a pearlitic matrix and has excellent wear resistance and vibration damping. G1A contains type D graphite in a mostly ferritic matrix and is often used in applications where a superior machining finish is required. Both grades respond well to conventional heat treat methods.

Dura-Bar G2 conforms to ASTM A48, Class 40.

Mechanical Properties (Typical)

Dura-Bar Grade	G2	G1A
Tensile strength psi*	40,000	30,000
Hardness (BHN) mid-radius	207-285	143-229
Compressive strength psi	120,000	120,000
Modulus of elasticity (million psi)	20	20
Heat-treat response	Rc 50 min	Rc 50 min
Graphite	Flake	Fine Flake
Microstructure	Highly Pearlitic	Highly Ferritic

* 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 10% alloy carbides, and is often used in corrosive environments.

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

Mechanical Properties (Typical)

ASTM A436 Grade	Type 1
Tensile strength psi*	25,000
Hardness (BHN) mid-radius	131-183
Compressive strength psi	100,000
Modulus of elasticity (psi x 10 at 25% of tensile)	12.0-14.0
Heat-treat response	n/a
Magnetic response	Non-magnetic
Graphite	Flake
Microstructure	Austenitic

* As taken from a separately cast test bar.

Ductile Iron

Dura-Bar ductile iron is often used as an alternative to plain carbon steel and has similar strengths with excellent free machining properties. Dura-Bar 65-45-12 is a good replacement for low-carbon steel grades such as 1018, 1117, 1212 and 12L14. 80-55-06 can be an alternative to the medium-carbon steels such as 1141, 1144 and 1045. All grades are equally hardenable.

Dura-Bar ductile iron conforms to ASTM A536.

Mechanical Properties (Typical)

ASTM A536 Grade	65-45-12	80-55-06	100-70-03
Tensile strength min psi*	65,000	80,000	100,000
Yield strength min psi*	45,000	55,000	70,000
Elongation min %*	12	6	3
Hardness (BHN) mid-radius	131-180	187-241	241-302
Compressive strength psi	110,000	115,000	120,000
Modulus of elasticity (million psi)	23-26	23-26	23-26
Heat-treat response	Rc 55 min	Rc 55 min	Rc 55 min
Graphite	Nodular	Nodular	Nodular
Microstructure	Ferritic (min. 75% ferrite)	Partially Pearlitic (approx. 50% pearlite)	Pearlitic (approx. 75% pearlite)

* As taken from the continuous cast bar.

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Dura-Bar Shapes and Sizes

Rounds

Nominal Diameter*	Increments Available
0.625" - 4.000"	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 up to 6.000" diameter.

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 18.500" thick and 25.000" wide are available. Standard square sizes range from 1.250" to 12.250".

Dura-Bar XL

Dura-Bar XL permanent mold ingots are available in diameters of 21", 23", 24" and 25", in ductile grade 65-45-12 and gray grade G2. (For more information visit www.dura-barXL.com).

Shapes

Quoted on request.

Typical Industries and Applications for Dura-Bar

Industries

Aerospace & Defense
Agriculture
Automotive
Construction
Fluid Power
Industrial
Oil & Gas
Primary Metals

Applications

Bushings
Cams
Collets
Conveyor Guide Rollers
Couplings
Cylinder Liners
Dies
Gears
Gibs
Manifolds
Molds
Pistons
Pulleys
Rams
Rolls
Rotors
Seal Rings
Shafts
Sleeves
Sprockets
Valve Bodies
Valve Guides
Ways

zero defect guarantee

A Commitment to Quality

Dura-Bar is an ISO-9001 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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DURA-BAR® METAL SERVICES

Three locations to serve you

Woodstock, IL	Salisbury, NC	York, PA
800-526-0548	800-438-9174	800-722-5858

www.dura-barms.com

1800 West Lake Shore Drive
Woodstock, IL 60098 USA

Building No. 8B
No. 388 West Huanghe Road
Changzhou, PRC

CONTACT INFORMATION
800-227-6455 • 815-338-7800
FAX: 815-338-1549

www.dura-bar.com
sales@dura-bar.com