

MAR-10

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Special points of interest:

Mar-10 is the market premium in age-hardening, stainless pump shafting.

Mar-10 is designed for pump-shaft applications which need greater strength and corrosion resistance than the generic stainless steel on the market.

The chief benefit of Mar-10 is its excellence in nearly all forms of resistance, from corrosion to fatigue.

Mar-10 is stocked in an array of sizes, with additional sizes available upon inquiry.

MAR-10 CAN HELP YOUR BUSINESS

Mar-10 is a vacuum remelt grade of martensitic age-hardenable stainless steel, custom-designed for pump-shaft type applications which require higher strengths than type 304, 316/317 stainless steels, and greater corrosion resistance than type 410/416, or 17-4PH stainless steels (CEVM ASTM-A-565-92A). MAR-10 also meets aircraft industry specifications: (SAE/Aerospace Materials Specification) AMS 5773. In addition, MAR-10 is specially ground and polished, straightened to pump shaft requirements, and crated for protection. MAR-10 is the premium age-hardening stainless grade of pump shaft in the market.



THE BENEFITS OF MAR-10

Corrosion Resistance: MAR-10 resists atmospheric corrosion, including salt water atmospheres, equal to type 304 stainless and, in many cases, equal to 316 stainless steel. Because of the various factors affecting corrosion, predictive abilities are limited. Please consult a Baldwin representative with your specific application.

Heat Resistance: Maintains physical properties in high heat service up to 900°F. With some applications, it may perform at even higher temperatures.

Excellent oxidation resistance up to 1200°F.

Galling Resistance: Excellent resistance to galling. Exceeds commercial stainless grades, including 18-8 stainless.

Wear Resistance: MAR-10 provides excellent wear resistance, yet remains machinable.

Fatigue Resistance: High degree of toughness provides excellent resistance to fatigue failures.

TYPICAL MAR-10 APPLICATIONS

- Petrochemical
- Splines
- Pins
- Extreme Temperature
- Mandrels
- Spindles
- Marine
- Rotary Parts
- Rods
- Valves
- Arbors
- Bolts
- Shafts
- Axles



We have the steel to meet your needs.

- Pump Parts

MAR-10 STOCKING SIZES

“Mar-10 bars come in standard 10-12 ft and 20-24 random lengths. We will cut to size upon inquiry.”

diameter size (inches)	
5/8	2-7/16
3/4	2-1/2
15/16	2-11/16
1	2-3/4
1-1/8	2-15/16
1-3/16	3
1-1/4	3-1/8
1-5/16	3-3/16
1-3/8	3-7/16
1-7/16	3-1/2
1-1/2	3-3/4
1-9/16	3-15/16
1-5/8	4
1-11/16	4-7/16
1-3/4	4-1/2
1-13/16	4-15/16
1-7/8	5
1-15/16	5-1/2
2	6
2-1/8	6-1/2
2-3/16	7
2-1/4	

*LARGER SIZES AVAILABLE UPON INQUIRY

TYPICAL MAR-10 CHEMISTRY

C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Co	Al	Pb
0.03%	0.30%	0.02%	0.00%	0.50%	1.50%	6.50%	15.00%	0.85%	0.03%	0.60%	0.02%	.15/.35%

MAR-10 Vs. 316, 410, AND 416 STAINLESS

316 Stainless is most often selected for its ability to resist corrosive attack. In heavy industrial maintenance applications however, it would be very unusual to find an application where the problem was just limited to corrosion.

Often the failure of shafting is the result of several influences: corrosion, twist, chatter, stress, wear, flex, etc. The unique properties of Mar-10 resist failure where any or all of those conditions exist.

When you consider that 316 Stainless:

- Can be mushy to machine
- Does not wear as well
- Has much lower strength levels (i.e. tensile)
- Is harder to weld
- Is susceptible to stress corrosion cracking
- May invite galling
- Can cause premature wear on the mechanical seals due to flex



Mar-10 is a logical step toward increasing service life.

In areas where types 410 and 416 Stainless have been utilized, Mar-10 should also be considered.

410 Stainless is most often selected because it is hardenable and weldable, **but it is difficult to machine.**

416 Stainless is most often selected because it is hardenable and easy to machine, **but welding is not recommended.**

Mar-10 provides greater resistance to corrosion. Even 410 and 416 do not resist Atmospheric Pitting as well as Mar-10. As delivered Mar-10 provides an unusual degree of toughness, is easy to machine, and is weldable.

Consider the savings with Mar-10 in not only the extended service life but also in the replacement of three materials in inventory with just one.

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Specialty Steels for Industry

If you are looking for a specialty steel supplier that has the quality and the experience to fulfill your unique material needs, then look no further. Merging in 1986 from two of the leading alloy steel companies in the U.S., Baldwin International has become the recognized leader in finding answers for your maintenance problems. No other company can provide the



unique materials, generations of experience and the on-site assistance that we provide daily to our customers.

For almost 50 years, Baldwin International has been developing unique materials that provide longer life and less down time in maintenance applications of shafting, wear liners, and steel fabrications. Unlike steel suppliers that provide a whole gamut of "generic" steels, we have "enhanced" materials, engineered for specific needs, and the wisdom to guide you in your selection.

Please check out some of our products and the related information. And please contact us for any further questions that you may have. We would be happy to have one of our experienced representatives at your service.

TYPICAL MECHANICAL PROPERTIES OF MAR-10

Tensile	165,000 psi
Yield	135,000 psi
% of elongation	18%
Reduction in area	50%
Charpy V notch impact	60 ft. lbs.

Heat Treatment

Furnished in a ductile hardened condition. Further hardening generally not required.

Critical Temperatures	
AC₁	1170°F
AC₂	1305°F
M₃	245°F
M₁	100°F

Note: Mar-10 represents a balance of corrosion resistant and abrasion resistant properties. As the hardness range is adjusted, the balance of these properties will be affected. Consult a Baldwin representative before you alter hardness.

Welding

Use standard good welding practice for chrome, nickel, stainless steel (i.e. fusion or resistance weld). Insure surface is clean; weld so as to cause minimum heat input (e.g. stringer beads, rapid travel, smallest diameter electrode or wire, etc.)

