

EDRO400™

(Patent Pending)



EDRO #40

LOW-CARBON PREHARDENED MOLD QUALITY MARTENSITIC STAINLESS STEEL

EDRO400™ is a remelted 400 series martensitic stainless steel supplied prehardened to approximately 40 HRC (375 HB).

EDRO400™ is characterized by:

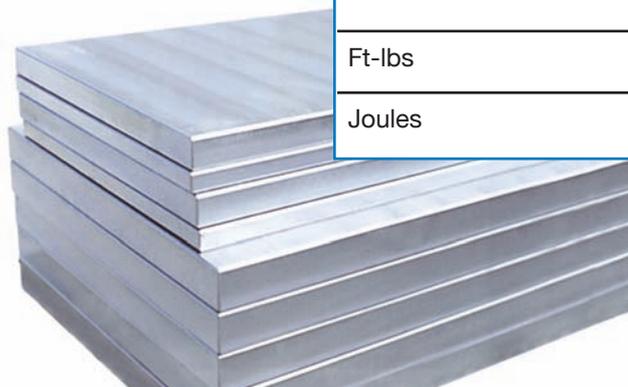
- Excellent polishability
- Superior corrosion resistance
- High level of dimensional stability
- Enhanced machinability
- Good ductility and toughness
- Uniform and consistent hardness
- Good thermal conductivity
- Good resistance to indentation (compressive strength)
- Smooth as rolled plate surfaces
- Excellent weldability

EDRO400's™ chemical composition, melting and refining practice and thermal treatment, establish physical and mechanical properties designed to provide:

- Homogeneity
- Superior polished surface finishes
- Improved corrosion resistance
- Reduced mold maintenance costs
- Dimensional stability
- Uniform and consistent hardness
- Safe and simple weld repair

Applications

- Plastic injection mold inserts / cavities
- Extrusion tooling
- Rubber molds
- Components
- Constructional parts



PROPERTIES

PHYSICAL DATA

Prehardened to 387 HB. Data at room and elevated temperatures.

Temperature	68° F (20° C)	390° F (200° C)
Density kg/m ³ lbs/in ³	7.800 .284	7.750 .282
Modulus of elasticity N/mm ² (Mpa) psi	200 x 10 ³ 29.0 x 10 ⁶	190 x 10 ³ 27.6 x 10 ⁶
Coefficient of thermal expansion per ° F from 68° F per ° C from 20° C		6.1 x 10 ⁻⁶ 11.0 x 10 ⁻⁶
Thermal conductivity Btu /ft ² h°F W/m°K		195.6 28.2

TENSILE STRENGTH

Longitudinal Tests from 6.3" (160mm) plate at 387 HB

Testing Temperature	68° F (20° C)	390° F (200° C)
Ultimate tensile strength psi N/mm ²	189,000 1,303	TBD
Yield strength @ .2% offset psi N/mm ²	146,000 1,007	TBD
% Elongation in 2"	13	TBD
% Reduction in area	33	TBD

IMPACT STRENGTH

Average Charpy V-notch from 6.3" (160mm) plate at 387 HB

Testing Temperature	68° F (20° C)	390° F (200° C)
Ft-lbs	9	TBD
Joules	12	TBD

General

EDRO400™ was developed as an improved stainless grade providing excellent polishability combined with good corrosion resistance, consistent hardness, enhanced machinability, superior dimensional stability, and good ductility and toughness within a prehardened range of 38 – 42 HRC.

Polishing

EDRO400™ demonstrates excellent polishability in the as-supplied prehardened condition, due to superior microcleanliness with very low non-metallic inclusion levels. An SPI A2 or better rating can be achieved when polishing EDRO400™ using standard lapping and hand-polishing techniques with diamond compounds.

Corrosion Resistance

Tooling made from EDRO400™ will have excellent resistance to attack caused by corrosive plastic elements and humid working / storage conditions, which may be encountered under normal molding production conditions.

Stability

Due to its unique microstructure and special production processes applied during its manufacture, EDRO400™ demonstrates superior dimensional stability during mold manufacture and during the life of the tool.

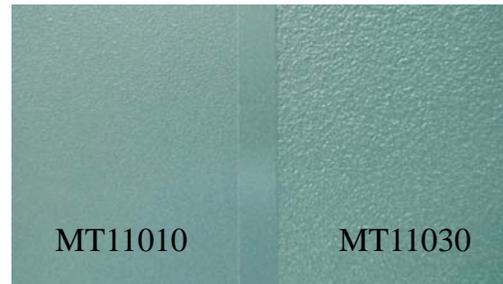
Size Availability

EDRO400™ is currently available in flat sizes up to 8.5" (216 mm) thick, and up to 90" wide (2286 mm).

Texturing and Photo Etching

EDRO400™ is suitable for texturing and photoetching.

Sample using standard process (MT11010, MT11030) formula



Welding

EDRO400™ is readily welded without pre or post heating, and provides excellent visual matching throughout the welded area and base metal. EDRO400™ will not develop an over-hardened heat affected zone (HAZ) surrounding the weld deposit, eliminating the risk of weld induced cracking during repairs or in future service.

Heat Treatment and Hardness

EDRO400™ is supplied prehardened to a range of 38 - 42 HRC, eliminating the need for costly and time consuming heat treatment during mold manufacture.

Due to its' unique composition and special thermal treatments applied during production, EDRO400™ demonstrates very uniform and consistent through hardness.

Nitriding

EDRO400™ can be nitrided to achieve a surface hardness in excess of 1000 HV. Nitriding temperatures applied to EDRO400™ should not exceed 475°C.

EDRO

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