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.

<table>
<thead>
<tr>
<th>Property</th>
<th>68°F (20°C)</th>
<th>390°F (200°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>68°F (20°C)</td>
<td>390°F (200°C)</td>
</tr>
<tr>
<td>Density</td>
<td>7.800 kg/m³</td>
<td>7.750 kg/m³</td>
</tr>
<tr>
<td></td>
<td>.284 lbs/in³</td>
<td>.282 lbs/in³</td>
</tr>
<tr>
<td>Modulus of elasticity</td>
<td>200 x 10⁶ psi</td>
<td>190 x 10⁶ psi</td>
</tr>
<tr>
<td></td>
<td>29.0 x 10³ psi</td>
<td>27.6 x 10³ psi</td>
</tr>
<tr>
<td>Coefficient of thermal expansion</td>
<td>6.1 x 10⁻⁶ per °F from 68°F</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11.0 x 10⁻⁶ per °C from 20°C</td>
<td></td>
</tr>
<tr>
<td>Thermal conductivity</td>
<td>195.6 Btu/ft²ºF</td>
<td></td>
</tr>
<tr>
<td></td>
<td>28.2 W/m²K</td>
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</tr>
</tbody>
</table>

#### TENSILE STRENGTH
Longitudinal Tests from 6.3” (160mm) plate at 387 HB

<table>
<thead>
<tr>
<th>Property</th>
<th>68°F (20°C)</th>
<th>390°F (200°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultimate tensile strength</td>
<td>189,000 psi</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td>1,303 N/mm²</td>
<td></td>
</tr>
<tr>
<td>Yield strength @ .2% offset</td>
<td>146,000 psi</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td>1,007 N/mm²</td>
<td></td>
</tr>
<tr>
<td>% Elongation in 2”</td>
<td>13</td>
<td>TBD</td>
</tr>
<tr>
<td>% Reduction in area</td>
<td>33</td>
<td>TBD</td>
</tr>
</tbody>
</table>

#### IMPACT STRENGTH
Average Charpy V-notch from 6.3” (160mm) plate at 387 HB

<table>
<thead>
<tr>
<th>Property</th>
<th>68°F (20°C)</th>
<th>390°F (200°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ft-lbs</td>
<td>9</td>
<td>TBD</td>
</tr>
<tr>
<td>Joules</td>
<td>12</td>
<td>TBD</td>
</tr>
</tbody>
</table>
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

![Texturing and Photo Etching Sample](MT11010 MT11030)

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.