ALLOY DESCRIPTION AND APPLICATION;
Ni-Fe 36 aka INVAR® is a nickel-iron low-expansion alloy containing roughly 36% nickel. This alloy is designed to have similar properties of the base metal which maintains nearly constant dimensions over the range of normal atmospheric temperatures, and has a low coefficient of expansion from cryogenic temperatures to about 500°F (260°C). The alloy also retains good strength and toughness at cryogenic temperatures. Similar base metals used for standards of length, measuring devices, laser components, bi-metal thermostat strip, thermostat rods, and tanks and piping for storing and transporting liquefied gases.

TYPICAL GMAW WELDING PROCEDURES; DCEP (Spray arc)
<table>
<thead>
<tr>
<th>Wire Diameter</th>
<th>Wire Speed (ipm)</th>
<th>Amps</th>
<th>Volts</th>
<th>Argon (cfh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.035</td>
<td>395-525</td>
<td>175-250</td>
<td>26-32</td>
<td>35-45</td>
</tr>
<tr>
<td>0.045</td>
<td>295-425</td>
<td>200-275</td>
<td>29-33</td>
<td>40-50</td>
</tr>
<tr>
<td>1/16”</td>
<td>175-275</td>
<td>250-325</td>
<td>29-33</td>
<td>40-50</td>
</tr>
</tbody>
</table>

TYPICAL GTAW WELDING PROCEDURES; DCEN with EWTh-2 truncated conical tip

<table>
<thead>
<tr>
<th>Filler Wire Size</th>
<th>Tungsten</th>
<th>Amps</th>
<th>Volts</th>
<th>Gas Cup Size</th>
<th>Argon (cfh)</th>
<th>Base thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>.045</td>
<td>1/16”</td>
<td>45-85</td>
<td>12</td>
<td>3/8”</td>
<td>20</td>
<td>1/16-1/8”</td>
</tr>
<tr>
<td>1/16”</td>
<td>1/16”</td>
<td>80-150</td>
<td>12</td>
<td>3/8”</td>
<td>20</td>
<td>1/16-1/8”</td>
</tr>
<tr>
<td>3/32”</td>
<td>3/32”</td>
<td>150-250</td>
<td>12</td>
<td>3/8”</td>
<td>20</td>
<td>1/8-3/16”</td>
</tr>
<tr>
<td>1/8”</td>
<td>1/8”</td>
<td>200-375</td>
<td>12</td>
<td>1/2”</td>
<td>25</td>
<td>1/4-1/2”</td>
</tr>
</tbody>
</table>

Procedures may vary with change in position, base metals, filler metals, equipment and other changes.

INVAR 36 TYPICAL CHEMISTRY (%) AND WELD METAL PROPERTIES;

- Nickel: 35.0-38.0%
- Carbon: 0.10 max.
- Manganese: 0.60 max
- Silicon: 0.35 max
- Copper: 0.50 max.
- Chromium: 0.50 max.
- Tensile Strength (psi): 70-80,000
- Yield Strength (psi): 40-60,000
- Elongation in 2”: 24-42 %

AVAILABLE SIZES: TN INVAR36= Spools of .045, 1/16”, 3/32”
Tig wire of .045, 1/16”, 3/32”, 1/8”

Other sizes available – please inquire

Invar-36® is a registered trademark of Carpenter Technology Corporation

SPECIFICATIONS; WASHINGTON ALLOY

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