Special TIG Rod Designed to Repair H-Class Hot Work Tool & Die Steels and for Surface Modification of Low-Alloy Steels

TigTectic® 5HW

TIG ROD

- Ideal solution for welding H Series Tool Steels
- Deposits show minimum heat crazing
- Deposits maintain excellent hot-hardness properties
**DESCRIPTION:**

TigTectic 5HW TIG rod is designed to weld H-series tool steels such as H11, H12, & H13 and to surface enhance lower alloy Tool & Die steels during composite fabrication. Weld deposits show minimum heat crazing and are tolerant of high and inservice quenching operations. Deposits maintain excellent hot-hardness properties.

**APPLICATIONS:**

For H-series tool steels, particularly grade H13. This grade, and other grades, are typically used for repairing forging dies, hot piercing punches, die casting dies and gripper and header dies. Weld deposits maintain impression profiles over many forging cycles and resist time-in-service tempering while maintaining superior toughness.

**TECHNICAL DATA:**

Typical Hardness: 50-53 HRC as-deposited
Typical Hot Hardness: 45-50 HRC up to 1200°F
Annealing Temperature: 1600°F
Hardening Temperature: Typically 1850°F followed by air quenching
Tempering Temperature: 900-1200°F...also known as the “draw” temperature.
Preheat Temperature: 950-1000°F when welding H11, H12, and H13 grades. For general applications a preheat of 400°F is suitable.
Inter-pass Temperature: 900-1150°F when welding H13-grade steel. For general applications use a ± 50°F inter-pass range.
Current & Polarity: DCEN (-) and AC

**INSTRUCTIONS FOR USE:**

**Preparation:** Clean weld area of scale and oxide. Remove grease and oil by using a suitable VOC-free solvent. Grind a lengthwise taper on the tungsten electrode and set so that about 1/8-in of the electrode protrudes passed the gas cup edge. Preheating is generally not needed when welding stainless steels. For hardenable tool steels check the preheat/inter-pass temperature guidelines in the Reference Section.

**Technique:** Start the arc by using impulse high-frequency or by using a copper startblock. Do not use a carbon block as this will contaminate the weld deposit! Deposit stringer beads. Do not weave more than 2x as wide beads can cause distortion.

**Post-welding:** Parts which have been preheated should be wrapped or covered with heat-retardant material to help with slow cooling.

**HEALTH AND SAFETY:**

Observe normal welding practices, respiratory protection and proper air flow pattern advised. For general welding practices, see AWS publications Z49.1 “Safety in Welding and Cutting and Allied Process”. Welding is a completely safe process when performed in accordance with proper safety measures. Become familiar with local safety regulations before beginning welding operations. DO NOT operate welding equipment or use welding materials before you have thoroughly read the proper instruction manual(s).

Please refer to the Eutectic internet site for Material Safety Data Sheet (MSDS) information.

**DISREGARDING THESE INSTRUCTIONS, AND/OR THE INSTRUCTIONS OF WELDING EQUIPMENT OR MATERIAL MANUALS, MAY BE HAZARDOUS TO YOUR HEALTH.**

**WELD PARAMETERS:**

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Amperage</th>
<th>Shielding Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/16” (1.6mm)</td>
<td>85-100</td>
<td>100 Ar @ 25-35 scfh</td>
</tr>
</tbody>
</table>