



Special TIG Rod Designed to
Repair H-Class Hot Work
Tool & Die Steels

TigTectic[®] **5HW**



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

TigTectic® 5HW

TigTectic 5HW TIG rod is designed to weld H-Series Tool Steels such as H11, H12, and H13 and to surface enhance lower alloy tool and 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.

TECHNICAL DATA

Typical Values

Hardness:	50 - 53 HRC as-deposited
Hot Hardness:	45 - 50 HRC up to 1200°F (649°C)
Annealing Temperature:	1600°F (871°C)
Hardening Temperature:	Typically 1850°F (1010°C) followed by air quenching
Preheat Temperature:	950 - 1000°F (510 - 537°C) when welding H11, H12, and H13 grades. For general applications a preheat of 400°F (204°C) is suitable.
Inter-pass Temperature:	900 - 1150°F (510 - 621°C) when welding H13-grade steels. For general applications use a $\pm 50^\circ\text{F}$ inter-pass range
Current & Polarity:	DCEN (-) and AC

SUGGESTED WELDING PARAMETERS:

Diameter	Amperage	Shielding Gas
1/16" (1.6mm)	85 - 100	100% Argon @ 25 - 35 scfh

PROCEDURE 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" of the electrode protrudes past the gas cup edge. Preheating is generally not needed when welding stainless steels.

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 wave 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.

TYPICAL 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.

