

Crown HW-10

Gas Tungsten Arc Welding
(GTAW) TIG Alloy

Tool Steel

& HW-20

Shielded Metal Arc Welding
(SMAW) Stick Electrode



"The Royal Line"

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Premium Hot Work Tool Steel (H-12)

Typical Applications

Crown HW-10 (GTAW) and HW-20 (SMAW) are 5% chromium-moly-tungsten hot working tool steel welding alloys that produce dense, fine-grained, heat-treatable deposits which resist abrasion and mild impact in hot or cold working service. **Crown HW-10 & HW-20** are used on hot working tool steels H-10 through H-12 and H-14 through H-16 as well as SAE 52100 steel. Some specific applications include hot or cold working blanking dies, trimming dies, coining dies, forming dies, press-brake forming tools, header dies, punches, extrusion mandrels and tong bits. They resist spalling, cracking and chipping. **Crown HW-10 & HW-20** can be used for heavy or light build-up.

Specifications

AISI H-12

Identifying Color:
Lavender End

- Hardness 52-56 (Rockwell C) as welded.
- Preheat 800°F for all "H" Series tool steels. All other alloys, preheat according to base metal.
- Annealing 1500°F to 1550°F
- Hardening in Air 1800°F to 1900°F
- Hardening in Oil 1750°F to 1850°F
- Heat Treatment Use H-12 procedure

Procedure

The following procedure must be followed whether using the **HW-10** or the **HW-20**:

Base metal must be clean. Remove all foreign material, fatigued metal & any sharp radii. Preheat according to above chart. Interpass temperature should at least match the preheat temperature. Deposit stringer beads. Peening while hot is advisable. After welding, cool in still air to 300°F to obtain ultimate grain refinement & uniform hardness in the weld deposit.

HW-10 Welding Parameters: TIG (GTAW)

Manual Welding – DC straight polarity (DCEN) – Use Argon Shielding Gas

Tungsten: Traditional choice is a 2% thoriated tungsten (Red Band), however, the more recent and safer introductions of 2% ceriated tungsten (Orange Band) or 1.5% lanthanated tungsten (Gold Band) have demonstrated superior performance in most applications. Safety note: Thorium is radioactive & may present risks which are negligible under normal conditions of use.

Material Thickness (inches)	Tungsten Diameter	Filler Rod Diameter	Arc Voltage (volts)	Welding Current (amperage)	Gas Flow (cfh)
.035 to .045	.040	.045	7 – 14	60 – 100	15 – 20
1/16 to 3/32	1/16	1/16	9 – 14	100 – 160	20
1/8	3/32	1/16	12 – 15	125 – 200	20
3/16	3/32	3/32	12 – 17	130 – 195	25
3/16 to 1/2	1/8	1/8	15 – 20	150 – 300	25

All suggested settings are approximate. Inverter-based welders generally require lower amps. Welds should be tested to comply to your specifications.

HW-20 Welding Parameters: Stick Electrode (SMAW)

Welding current can be DC reverse polarity (DCEP) or AC. However, DCEP ensures the best weldability & penetration.

Electrode Diameter (inches)	Welding Current (amperage)
3/32	50 – 90
1/8	75 – 135
5/32	100 – 180

Sizes and Part Numbers

TIG Diameter	Part Numbers	
	1# Package	5# Package
.045 x 36"	TTHW/TG-BP	TTHW/TG
1/16 x 36"	TTHW/TL-BP	TTHW/TL
3/32 x 36"	TTHW/TN-BP	TTHW/TN
1/8 x 36"	TTHW/TO-BP	TTHW/TO

Electrode Diameter	Part Numbers	
	1# Package	5# Package
3/32	TEHW/EN-BP	TEHW/EN
1/8	TEHW/EO-BP	TEHW/EO
5/32	TEHW/EP-BP	TEHW/EP



!!!! WARNING !!!!



WELDING FUMES AND GASES CAN BE DANGEROUS TO YOUR HEALTH.

BEFORE USING THIS PRODUCT THE WELDER (END-USER) MUST READ AND UNDERSTAND THE COMPLETE PRODUCT WARNING LABEL AND THE NEW 16 SECTION SAFETY DATA SHEET (SDS).

THE SAFETY DATA SHEET (SDS) WHICH OUTLINES THE POTENTIAL HEALTH HAZARDS AND SAFETY INFORMATION RELATED TO THIS PRODUCT CAN BE DOWNLOADED FROM THE SDS PORTION OF THIS WEBSITE. IT IS ALSO AVAILABLE FROM YOUR EMPLOYER AND WELDING SUPPLY DISTRIBUTOR.

DO NOT PROCEED WITH USE OF THIS PRODUCT UNTIL YOU READ AND UNDERSTAND THE SAFETY DATA SHEET (SDS) AND PRODUCT WARNING STATEMENT.

BE SURE TO CONSULT THE LATEST VERSION OF THE SDS.

SEE THE PRODUCT WARNING LABEL AND SDS FOR COMPLETE WARNING INFORMATION.

