

Crown WH-10 & WH-20

Gas Tungsten Arc Welding
(GTAW) TIG Alloy

Shielded Metal Arc Welding
(SMAW) Stick Electrode

Tool Steel



"The Royal Line"

CROWN ALLOYS COMPANY

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Premium Water Hardening Tool Steel (W-2)

Typical Applications

Crown WH-10 (GTAW) and WH-20 (SMAW) are high carbon, chromium-vanadium water-hardening tool steel welding alloys that produce dense, heat-treatable deposits which resist abrasion and mild impact in cold-working service. **Crown WH-10 & WH-20** weld deposits typically form a hard, wear resistant surface or "case" and a softer, shock-resistant core. These alloys are used for joining & building-up of W-1 through W-5 grades of water-hardening tool steels. Specific applications include cold-working blanking dies, trimming dies, coining dies, forming dies, shears, punches, nibblers & for the fabrication of composite dies using lower alloy bases & for upgrading wear areas on lower alloys.

Specifications

AISI W-2	• Hardness	50-54 (Rockwell C) as welded (WH-10) 56-60 (Rockwell C) as welded (WH-20)
Identifying Color: Gold End	• Preheat	275°F for small parts that heat up quickly once arc is established 450°F for larger parts All other alloys, preheat according to base metal
	• Forging Temps.	1900°F normalizing 1475°F to 1525°F
	• Annealing	1375°F to 1425°F
	• Hardening	(In Brine or Water) 1400°F to 1435°F
	• Drawing	250°F to 450°F
	• Heat Treatment	Use W-1 procedure

Procedure

The following procedure must be followed whether using the **WH-10** or the **WH-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. Peen while hot. After welding, cool in still air. Weld deposits can be heat-treated, annealed, drawn or tempered if desired.

WH-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)
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.

WH-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
1/16 x 36"	TTWH/TL-BP	TTWH/TL
3/32 x 36"	TTWH/TN-BP	TTWH/TN
1/8 x 36"	TTWH/TO-BP	TTWH/TO

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

