

# Crown AH-10 & AH-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 Air Hardening Tool Steel (A-2)

### Typical Applications

**Crown AH-10 (GTAW) and AH-20 (SMAW)** are high carbon, 5% chromium air-hardening tool steel welding alloys that produce dense, heat-treatable deposits which resist high abrasion and mild impact and wear. **Crown AH-10 & AH-20** weld deposits match the hardening characteristics of A-2 base metal and can also be used for joining and building-up of A-2 through A-8 tool steels as well as D-1 through D-7. These alloys are also well suited for upgrading wear areas on lower type alloys. Some specific applications include work on air-hardening tool steel punches, blanking dies, extrusion dies, coining dies, forming dies, mandrels and for the fabrication of composite dies.

### Specifications

AISI A-2

- Hardness 45-50 (Rockwell C) as welded (AH-10)  
56-58 (Rockwell C) as welded (AH-20)

Identifying Color:  
Red End

- Preheat 5% chrome types (A-2 through A-8) to 600°F  
High carbon-high chrome types (D-1 through D-7) to 900°F  
All other alloys, preheat according to base metal
- Forging Temps. 1650°F to 1900°F
- Annealing 1700°F to 1775°F
- Drawing 350°F to 1000°F
- Heat Treatment Use A-2 procedure

### Procedure

The following procedure must be followed whether using the **AH-10** or the **AH-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 to 400°F & then temper at the preheat temperature for one hour per inch of thickness.

#### AH-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.

#### AH-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"	TTAH/TL-BP	TTAH/TL
3/32 x 36"	TTAH/TN-BP	TTAH/TN
1/8 x 36"	TTAH/TO-BP	TTAH/TO

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

