

Crown FH-10 & FH-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 Chrome-Moly Low-Alloy Tool Steel (Flame-Hardening)

Typical Applications

Crown FH-10 (GTAW) and FH-20 (SMAW) are high strength, chrome-moly, low alloy welding alloys that produce dense, heat-treatable deposits which are high in tensile strength and have medium elongation. **Crown FH-10 & FH-20** are used for joining high strength steels, dies, forgings and castings of similar chemical composition and for build-up applications where moderate hardness is required. **Crown FH-10 & FH-20** are commonly used to weld 4130, 4140 and 8630 steels when heat treatment or flame hardening is required. They can also be used to weld steel castings with comparable hardening characteristics. In the as welded condition, **Crown FH-10 & FH-20** deposits are readily machined. Some specific applications include tool and die block construction and repair. They are also used to weld oil field piping and valve equipment, rolled high tensile plate and foundry repair of high tensile castings.

Specifications

Chrome-Moly 4130

*Tensile Strength (typical) 150,000 – 180,000 psi

*Yield Strength (typical) 130,000 – 168,000 psi

*Elongation in 2" (typical) 11%

*Hardness 42 – 46 Rockwell C

*The above mechanical properties can be obtained by heating the welded piece(s) to 1550°F. Quench in oil. Temper at 1050°F.

Hardness (as welded) 32 – 36 Rockwell C

Identifying Color: Brown End

Procedure

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

Base metal must be clean. Remove all foreign material, fatigued metal and any sharp radii. For most applications, a preheat and interpass temperature between 375°F - 450°F should be maintained during welding, however, slight changes in the preheat temperature will be dictated by the base metal chemistry. Deposit stringer beads. Peening is advisable.

FH-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.

FH-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"	TTFH/TL-BP	TTFH/TL
3/32 x 36"	TTFH/TN-BP	TTFH/TN
1/8 x 36"	TTFH/TO-BP	TTFH/TO

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

