

Crown 91

Gas Tungsten Arc Welding
(GTAW) TIG Alloy

Chrome-Moly-Vanadium Steel

All Position



"The Royal Line"

CROWN ALLOYS COMPANY

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9% Chrome – 1% Moly – Vanadium Steel for GTAW (TIG)

Typical Applications

Crown 91 is excellent for TIG welding 9% chrome-moly modified steels with small additions of vanadium and niobium (columbium). This alloy is designed to provide high strength, toughness and is resistant to fatigue, corrosion and oxidation at elevated temperatures. **Crown 91** is used to join P91 alloys in its many forms including A213-T91 tubes, A335-P91 pipe, A387 Grade 91 plate and A182-F91 forgings. **Crown 91** is designed for improved long term creep properties in heavy wall components such as headers, main steam piping and turbine rotors in fossil fueled power-generating plants. P91 alloys and **Crown 91** are higher alloyed steels that enable plants to operate at higher temperatures and pressures, thus increasing operating efficiency.

Specifications

AWS A 5.28

ER 90S-B9

Chemical Composition

| | | | |
|---------------|--------------|------------|---------------|
| Silicon | 0.15 - 0.50% | Nickel | 0.800% max |
| Carbon | 0.07 - 0.13% | Chromium | 8.00 - 10.50% |
| Manganese | 1.200% max | Molybdenum | 0.85 - 1.20% |
| Phosphorus | 0.010% max | Copper | 0.200% max |
| Sulfur | 0.010% max | Niobium | 0.02 - 0.10% |
| Vanadium | 0.15 - 0.30% | Nitrogen | 0.03 - 0.07% |
| Aluminum | 0.04% max | Iron | Remainder |
| Others, Total | 0.500% max | | |

- Tensile Strength* up to 109,000 psi
- Yield Strength* up to 95,000 psi
- Elongation in 2"* up to 18%

*Post weld heat treatment: 1400°F for 2 hours.

Procedure

Clean weld area thoroughly. Remove all fatigued metal. Bevel heavy sections. A preheat temperature of 250°F (for root pass and thin-walled components) to 500°F (for thicker sections) is recommended. An interpass temperature of 550°F to 700°F should be maintained during welding. The interpass maximum helps to prevent the possibility of hot cracking due to the silicon and niobium content of the weld metal.

(GTAW) TIG Welding Parameters

Use DC straight polarity (DCEN)

| Diameter | Shielding Gas | Welding Current (amps) | Arc Voltage (volts) | Gas Flow (cfh) |
|------------|---------------|------------------------|---------------------|----------------|
| 1/16 x 36" | 100% Argon | 60 – 160 | 7 – 13 | 20 – 25 |
| 3/32 x 36" | 100% Argon | 120 – 210 | 10 – 18 | 20 – 30 |
| 1/8 x 36" | 100% Argon | 150 – 250 | 12 – 20 | 25 – 30 |

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

Sizes and Part Numbers

| TIG Diameter | Part Numbers | |
|--------------|--------------|------------|
| | 1# Package | 5# Package |
| 1/16 x 36" | MTCR91/TL-BP | MTCR91/TL |
| 3/32 x 36" | MTCR91/TN-BP | MTCR91/TN |
| 1/8 x 36" | MTCR91/TO-BP | MTCR91/TO |



!!!! 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.

