

Crown ER 2209

Gas Tungsten Arc Welding
(GTAW) TIG Wire

Duplex Stainless Steel Alloy

All Position



"The Royal Line"

CROWN ALLOYS COMPANY

30105 Stephenson Hwy, Madison Heights, MI 48071
(248) 588-3790 (800) 521-7878 www.crownalloys.com

Premium Duplex Stainless Steel TIG Alloy

Typical Applications

The term duplex stainless steel describes an alloy with a microstructure containing approximately equal amounts of ferrite and austenite. Like all duplex stainless steels, **Crown ER 2209** resists chloride stress corrosion cracking (CSCC) and exhibits excellent resistance to pitting, crevice corrosion and general corrosion. **Crown ER 2209** is used extensively in food and brewery equipment, pulp and paper industries, petroleum and petrochemical industries, chemical process industries, chemical shipping containers. It is also used in air pollution control systems for coal fired power plants, heat exchangers and pressure vessels.

Crown ER 2209 is primarily designed to join type 2205 duplex stainless steel, however it is also used for welding UNS S31803 (F51), 2003, 2101, 2304 (35N), 44LN, UR 45N, A903, 4462, 19035C, AF22, 223, 3RE60, NKCr22, SM22Cr. **Crown ER 2209** is somewhat limited by its service temperature applications (up to 480°F and as low as -40°F). This filler alloy over matches the **2205 base metal** by 2-3% nickel in order to yield the correct balance of austenite and ferrite (duplex) in the microstructure in the as-welded condition. Because of this unique microstructure, the **Crown ER 2209** is able to produce welds that are high in strength with excellent ductility and remarkable corrosion resistance. Engineers can redesign parts to replace an austenitic (300 series) stainless with a higher strength duplex stainless thus taking advantage of thinner (lighter) stock. **Crown ER 2209** can also be used to join dissimilar welding combinations such as 25Cr and Super Duplex to 304 or 316 types of stainless steels. It can also be used to join duplex to carbon steel or low-alloy steel.

Specifications

AWS A5.9/A5.9M
ER 2209

- Tensile Strength (typical) up to 118,000 psi
- Yield Strength (typical) up to 84,000 psi
- Elongation in 2" (typical) up to 28%
- Charpy V-Notch @ -20°C 52 ft.lbs. (typical - as welded)
- Charpy V-Notch @ -60°C 37 ft.lbs. (typical - as welded)

Procedure

To obtain the best corrosion resistance, it is essential to remove oxides, tarnish, heat tint and other surface contamination by mechanical and/or chemical methods. Preheating is normally not recommended unless welding on thick sections (3/8" or thicker). Interpass temperature shall not exceed 350°F. Avoid wash passes or spot welds or any other welding process that includes extremely low heat input followed by rapid cooling. This will produce a predominantly ferritic heat-affected zone with reduced toughness and corrosion resistance. Avoid excessive dilution of the base metal into the weld as it can cause loss of ductility and toughness in the initial pass. Do not dwell in the 600°F to 1,700°F range as this can lead to brittleness.

GTAW (TIG) Welding Parameters

DC straight polarity (DCEN) – Use a 2% thoriated tungsten or a ceriated tungsten – Use Argon Shielding Gas (addition of up to 2% nitrogen may be advantageous)

Metal Thickness	Filler Rod Diameter	Tungsten Diameter	Arc Voltage (volts)	Welding Current (amperage)	Gas Flow (cfh)	Gas Cup Size
1/16" – 1/8"	1/16	1/16	12 – 18	80 – 140	15 - 20	3/8"
1/8" – 3/16"	3/32	1/16 to 3/32	15 – 20	120 – 195	15 - 20	3/8"
3/16" & up	1/8	3/32 to 1/8	15 – 20	150 – 260	20 - 30	1/2"

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

Diameter	Part Numbers	
	1# Package	10# Package
1/16 x 36"	ST2209/TL-BP	ST2209/TL
3/32 x 36"	ST2209/TN-BP	ST2209/TN
1/8 x 36"	ST2209/TO-BP	ST2209/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.

