

# Royal 625-10 & 625-30

Gas Tungsten Arc Welding  
(GTAW) TIG Alloy

Gas Metal Arc Welding  
(GMAW) MIG Wire

Nickel-Chrome-Moly Alloy



"The Royal Line"

**CROWN** ALLOYS COMPANY

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## Premium Nickel-Chromium-Molybdenum TIG & MIG Alloy

### Typical Applications

**Royal 625-10** (TIG) and **Royal 625-30** (MIG) provide high strength welds over a broad temperature range and have exceptional corrosion resistance, including resistance to localized attack such as pitting and crevice corrosion. The aforementioned characteristics make this an ideal alloy for surfacing or cladding of steel as well as joining. This alloy is used extensively in chemical and food processing equipment, aerospace and marine engineering, pollution control equipment such as scrubbers, petroleum refining equipment & petro-chemical equipment. **Royal 625-10 & Royal 625-30** are used to join Inconel® alloys 625, 601, and 690, and Incoloy® alloys 800HT, 800, and 825. Also used to weld 9% nickel steel and Inco® alloy G & G-3. It will also join alloys 317LM, 254SMO, AL-6XN, 20 Mo-6, 904L and heat & corrosion resisting castings like HK40, HT and HY. **Royal 625-10** and **Royal 625-30** are useful for many dissimilar joints involving Inconel® and Incoloy® alloys, carbon steels, low-alloy steels and stainless steels.

### Specifications

AWS A5.14/A5.14M  
ER NiCrMo-3

Tensile Strength (typical) 110,000 psi  
Yield Strength (typical) 85,000 psi  
Elongation in 2" (typical) 30.0%

### Procedure

Base metal must be clean. Nickel alloys become brittle if any sulfur or lead is absorbed into the weld deposit. These impurities are often found in lubricants, dirt, grease, oil, paint, and other processing residues. Use about 25% more opening than conventional joint openings to allow for the low penetrating and sluggish nature of the molten nickel. Prevent agitation and excessive heat from the weld puddle so as to avoid burning out the deoxidizing elements.

### GTAW (TIG) Welding Parameters

DC straight polarity (DCEN) – Use a 2% thoriated tungsten (Th-2) Red Band – Maintain a short arc length - Use Argon Shielding Gas

Joint Thickness (inches)	Tungsten Diameter	Filler Rod Diameter	Arc Voltage (volts)	Welding Current (amperage)	Gas Flow (cfh)
.030 to 1/16	1/16	1/16	10 – 16	30 – 70	10-15
1/16 to 1/8	1/16 to 3/32	1/16 to 3/32	10 – 17	50 – 105	20
1/8 to ¼	3/32 to 1/8	3/32 to 1/8	10 – 18	70 – 160	20
¼ and up	3/32 to 1/8	3/32 to 1/8	10 – 18	90 – 210	20 – 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.

### GMAW (MIG) Welding Parameters

#### Short Circuit Transfer Welding

DC reverse polarity (DCEP) - Maintain a medium arc length - Use [90% Helium - 7½% Argon - 2½% CO<sub>2</sub>] or [75% Ar – 25% Helium] shielding gas.

Joint Thickness (inches)	Wire Diameter (inches)	Welding Current (amperage)	Arc Voltage (volts)	Wire Feed Speed (ipm)	Gas Flow (cfh)
.050 – 3/16	.035	70 – 90	17 – 20	140 – 210	20 – 30
1/8 – 3/4	.045	80 – 160	19 – 22	170 – 230	20 – 30

#### Spray Transfer Welding

DC reverse polarity (DCEP) – Maintain a medium arc length - Use 100% Argon shielding gas.

1/8 – 5/8	.035	175 – 250	26 – 32	400 – 520	30 – 35
3/8 and UP	.045	190 – 290	28 – 33	250 – 350	30 – 35

### Sizes and Part Numbers

TIG Diameter	Part Numbers	
	1# Package	5# Package
1/16 x 36"	RT625/TL-BP	RT625/TL
3/32 x 36"	RT625/TN-BP	RT625/TN
1/8 x 36"	RT625/TO-BP	RT625/TO
5/32 x 36"	RT625/TP-BP	RT625/TP

MIG Diameter	Part Numbers		
	2 lb (4") Spools	8" Spools	30lb Spools
.035	RS625/1F	RS625/2F	RS625/3F
.045	RS625/1G	RS625/2G	RS625/3G

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**!!!! 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.**

