

# Royal 82-10 & 82-30

Gas Tungsten Arc Welding  
(GTAW) TIG Alloy

Nickel-Chrome Alloy

Gas Metal Arc Welding  
(GMAW) MIG Wire



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

### Typical Applications

**Royal 82-10** (TIG) and **Royal 82-30** (MIG) are used for high heat and cryogenic (low temperature) applications. This alloy withstands thermal cycling even to sub-zero temperatures thus making it the perfect choice for flame hardening equipment, heat treat parts AND cryogenic vessels. **Royal 82-10** and **Royal 82-30** are also highly corrosion resistant. The aforementioned characteristics make this alloy ideal for cladding and wear facing as well as joining. **Royal 82-10** and **Royal 82-30** are used to join carbon steels and stainless steels to high nickel-base metals. They are also used to weld Inconel® alloys 600, 601, and 690 to themselves or each other; Incoloy® alloys 800, and 800HT, and Inco® alloy 330. Inconel® and Incoloy® alloys are joined to nickel, stainless steels, carbon steels, and Monel® alloys using **Royal 82-10** or **Royal 82-30**. Also, 9% nickel steel can be joined using this wire.

### Specifications

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

Tensile Strength  
Yield Strength  
Elongation in 2"

82,500 psi  
45,000 psi  
32.0%

### 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	9 – 12	30 – 60	10-15
1/16 to 1/8	1/16 to 3/32	1/16 to 3/32	9 – 12	50 – 95	15
1/8 to 1/4	3/32 to 1/8	3/32 to 1/8	10 – 14	70 – 150	15
1/4 to 3/8	3/32 to 1/8	3/32 to 1/8	10 – 15	90 – 200	20
3/8 and up	1/8 to 5/32	5/32	15 – 22	150 – 285	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 – 5/32	.035	70 – 90	17 – 20	140 – 210	20-25
1/8 – 3/4	.045	80 – 160	19 – 22	170 – 230	20-25

#### 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"	RT8210/TL-BP	RT8210/TL
3/32 x 36"	RT8210/TN-BP	RT8210/TN
1/8 x 36"	RT8210/TO-BP	RT8210/TO
5/32 x 36"	RT8210/TP-BP	RT8210/TP

MIG Diameter	Part Numbers		
	2 lb (4") Spools	8" Spools	33lb Spools
.035	RS8230/1F	RS8230/2F	RS8230/3F
.045	RS8230/1G	RS8230/2G	RS8230/3G



**!!!! 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.**

