

9CRWV TIG

Low Alloy Steel · AWS ER90S-G (92)

KEY FEATURES

- B9 (P92) alloyed steel: 9Cr steel designed to weld equivalent 'type 92' steels modified with tungsten, vanadium, niobium, nitrogen, and a small addition of boron to give improved long term creep properties
- P92 steel has rupture strength up to 30% greater than that of P91 steel
- Non-copper coated TIG rod specifically designed for high integrity structural service at elevated temperature
- Weld metal chemistry is low in impurity elements allowing it to respect the X Factor (<15ppm) and J-factor (<120ppm)

WELDING POSITIONS

All

CONFORMANCES

- AWS A5.28:** ER90S-G (92)
BS EN ISO 21952-A: W ZCrMoWVNb 9 0.5 1.5

TYPICAL APPLICATIONS

- Main Steam Piping
- Oil Refineries
- Coal Liquefaction and Gasification Plants
- Power Generation Plants
- Turbine Castings

SHIELDING GAS

100% Argon

DIAMETERS / PACKAGING

Diameter mm (in)	5kg (11lb) Tube
2.0 (5/64)	T9CRWV-20
2.4 (3/32)	T9CRWV-24
3.2 (1/8)	T9CRWV-32

MECHANICAL PROPERTIES⁽¹⁾ – As Required per A5.28/A5.28M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @20°C (68°F)
Requirements - AWS ER90S-G (92)	440 (64) min	620 (90) min	16 min	-
Typical Results⁽³⁾ 2-4 hr @ 760°C (1400°F)	700 (102)	800 (116)	22	220 (162)
High Temperature - 550°C	374 (276)	455 (336)	24.5	-
600°C	282 (208)	387 (285)	20.5	-
650°C	200 (148)	312 (230)	28	-

WIRE COMPOSITION COMPOSITION – As Required per AWS A5.28/A5.28M

	%C	%Mn	%Si	%S	%P	%Cr	%Ni	%Mo
Requirements - AWS ER90S-G (92)	0.08-0.13	0.40-0.80	0.40 max	0.015 max	0.015 max	8.0-9.5	0.80 max	0.30-0.60
Typical Results⁽³⁾	0.10	0.75	0.30	0.0054	0.008	9.0	0.50	0.45
	%W	%Nb	%V	%N	%B	%Al	%Cu	
Requirements - AWS ER90S-G (92)	1.5-2.0	0.04-0.07	0.15-0.25	0.03-0.07	0.001-0.005	0.03 max	0.15 max	
Typical Results⁽³⁾	1.7	0.06	0.20	0.05	0.003	<0.01	<0.05	

TYPICAL OPERATING PROCEDURES

Polarity	Diameter mm (in)	Current (Amps)	Voltage (Volts)
DC+	2.4 (3/32)	100	12

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾CTWD (Contact Tip to Work Distance). Subtract 1/4 in (6.4 mm) to calculate Electrical Stickout. ⁽⁵⁾Procedures in these areas are procedures for short circuiting mode using 100% CO₂. When using 75% Argon, 25% CO₂ for short circuit transfer, reduce voltage by 1 to 2 volts.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of some welding products can contain significant quantities of components - such as chromium and manganese - which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

BEFORE USE, READ AND UNDERSTAND THE SAFETY DATA SHEET (SDS) FOR THIS PRODUCT AND SPECIFIC INFORMATION PRINTED ON THE PRODUCT CONTAINER.

Safety Data Sheets (SDS) and Certificates of Conformance are available on our website at www.lincolnelectric.com

FUMES AND GASES can be hazardous to your health.

- Fumes from the normal use of this product contain significant quantities of potentially hazardous compounds. See consumable product label/insert.
- Keep your head out of the fumes.
- Use enough ventilation and local exhaust to keep fumes and gases from your breathing zone and the general area.
- An approved respirator should be used unless exposure assessments are below applicable exposure limits.

TEST RESULTS

Test results for mechanical properties, deposit or electrode composition and diffusible hydrogen levels were obtained from a weld produced and tested according to prescribed standards, and should not be assumed to be the expected results in a particular application or weldment. Actual results will vary depending on many factors, including, but not limited to, weld procedure, plate chemistry and temperature, weldment design and fabrication methods. Users are cautioned to confirm by qualification testing, or other appropriate means, the suitability of any welding consumable and procedure before use in the intended application.

CUSTOMER ASSISTANCE POLICY

The Lincoln Electric Company is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or advice about their use of our products. Our employees respond to inquiries to the best of their ability based on information provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or advice. Moreover, the provision of such information or advice does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or advice, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose is specifically disclaimed.

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