

Excalibur® 9018-G MR N

Low Alloy Steel • AWS E9018-G H4R

Key Features

- ▶ Q2 Lot® - Certificate showing actual deposit composition and actual mechanical properties available online
- ▶ “N” Designator - design modified to meet properties after 48 hours stress relief
- ▶ Premium arc performance
- ▶ Square coating burn-off
- ▶ Easy strike and re-strike
- ▶ Effortless slag removal
- ▶ Capable of exceeding AWS minimum requirement of 620 MPa (90 ksi) tensile and 540 MPa (68 ksi) yield strength after 48 hours of stress relieving at 590-620°C (1100-1150°F)
- ▶ Capable of meeting drop weight testing requirements as commonly required for nuclear applications
- ▶ Prior to using this material for ASME Boiler and Pressure Vessel Code Section III applications, please contact the Lincoln Electric Specials Department to receive a Certified Material Test Report (CMTR) which meets all requirements of NCA-3860
- ▶ Each rod is marked with AWS classification and LOT number

Typical Applications

- ▶ Nuclear power plant components
- ▶ High strength steel, such as HY-80, HY-90 and ASTM A514, A508, A533
- ▶ DC welding
- ▶ Pressure Vessels

ASME IX Qualification

ASME IX Qualification: QW432 F-No 4,
QW442 A-No 10

Conformances

AWS A5.5/A5.5M: 2006: E9018-G H4R
ASME SFA-A5.5: E9018-G H4R

Welding Positions

All, Except Vertical Down

DIAMETERS / PACKAGING

Diameter in (mm)	Length in (mm)	8 lb (3.6 kg) Easy Open Can 24 lb (10.9 kg) Master Carton	10 lb (4.5 kg) Easy Open Can 30 lb (13.6 kg) Master Carton
3/32 (2.4)	12 (300)	ED033897	
1/8 (3.2)	14 (350)		ED033898
5/32 (4.0)	14 (350)		ED033865

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(AWS E9018-G H4R)

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.1/A5.1M: 2004

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft•lbf)	
				@ -40°C (-40°F)	@ -50°C (-60°F)
Requirements AWS E9018-G H4R	620 (90) min	530 (77) min.	17 min.	Not Required	Not Required
Typical Results⁽³⁾ As-Welded	590-680 (85-98)	680-770 (99-112)	21-26	74-130 (55-96)	51-111 (38-82)
Stress Relieved 48 hrs @ 620°C (1150°F) on HY-80	540-590 (78-85)	630-670 (91-97)	25-28	33-123 (25-91)	27-98 (20-73)

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.5/A5.5M: 2006

	%C	%Mn	%Si	%P	%S	%Ni
Requirements⁽⁴⁾ AWS E9018-G H4R	Not Required	1.00 min.	0.80 min.	0.03 max.	0.03 max.	0.50 min.
Typical Results⁽³⁾	0.09 - 0.12	0.79 - 1.22	0.22 - 0.43	≤0.01	≤0.01	1.54 - 1.79
	%Cr	%Mo	%V	%Cu	Diffusible Hydrogen (mL/100g weld deposit)	
Requirements⁽⁴⁾ AWS E9018-G H4R	0.30 min.	0.20 min.	0.10 min.	0.20 min.	4.0 max.	
Typical Results⁽³⁾	≤0.03	0.29 - 0.31	≤0.02	≤0.02	1 - 3	

TYPICAL OPERATING PROCEDURES

Polarity ⁽⁴⁾	Current (Amps)		
	3/32 in (2.4 mm)	1/8 in (3.2 mm)	5/32 in (4.0 mm)
DC+	70-110	90-160	130-210
AC	80-120	100-160	140-210

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer on pg. 12. ⁽⁴⁾In order to meet the alloy requirements of the "G" designation, the undiluted weld metal shall have the minimum of at least one of the elements listed.