

S-9016.B3

COVERED ARC WELDING ELECTRODE
FOR WELDING 2.25% Cr – 1% Mo STEEL

2020.12

HYUNDAI WELDING CO., LTD.



❖ Specification

<i>AWS A5.5</i>	E9016-B3
<i>JIS Z 3223</i>	E6216-2C1M
<i>ISO 3580-A</i>	E CrMo2 B 1 2

❖ Applications

Welding of 2.25% Cr – 1% Mo steel used for main steam pipes of boilers for electric power plant and marine use, equipment for oil refining industries and high temperature synthetic industries.

❖ Characteristics on Usage

S-9016.B3 is low hydrogen type electrode suitable for all position welding.

❖ Note on Usage

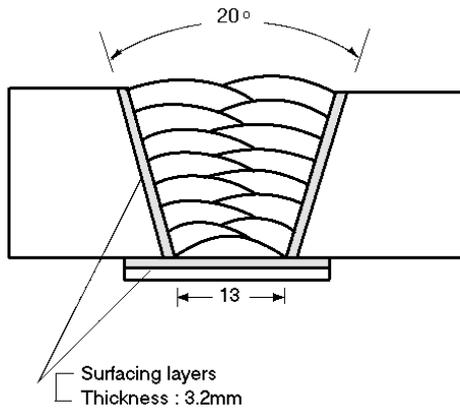
1. Dry the electrodes at 350°C ~ 400°C (662~752°F) for 60 minutes before use
2. Keep the arc as short as possible, and avoid large width weaving.
3. Adopt back step method or strike the arc on a small steel plate prepared for this particular purpose to prevent blowholes at the arc starting.
4. Use the wind screen against strong wind.



Mechanical Properties & Chemical Compositions of all-Weld Metal

❖ **Welding Conditions**

Method by AWS Rules



Diameter, : 4.0 X 400mm(5/32 X 16in)
 Amp./ Volt. : 170 / 23~25
 Interpass Temp. : 160~190℃(320~374°F)
 Polarity : AC

[Joint Preparation & Layer Details]

❖ **Mechanical Properties of The Weld Metal**

consumable	Tensile test			PWHT	
	YS MPa (lbs/in ²)	TS MPa (lbs/in ²)	EL (%)	Temp. ℃(°F)	Time
S-9016.B3	554(80,500)	663(96,300)	25.6	690(1274)	1hr
AWS Spec.	≥530(77,000)	≥620(90,000)	≥17	690(1274)	1hr

❖ **Chemical Analysis of The Weld Metal(wt%)**

Consumable	Chemical Composition (%)						
	C	Si	Mn	P	S	Cr	Mo
S-9016.B3	0.07	0.57	0.82	0.022	0.012	2.32	1.07
AWS Spec.	0.05 ~ 0.12	0.80 max	0.90 max	0.03 max	0.03 max	2.00 ~ 2.50	0.90 ~ 1.20

This information is provided solely for the purpose of confirming product conformance with applicable standards. The serviceability of a product or structure utilizing this type of information is and must be the sole responsibility of the builder/user. Many variables beyond the control of HYUNDAI WELDING CO., LTD. affect the results obtained in applying this type of information. These variables include, but are not limited to, welding procedure, shielding gas, plate chemistry and temperature, weldment design, fabrication methods and service requirements.



Welding Efficiency & Bending Test

❖ Test Conditions of Deposition Efficiency

Consumable	Base Metal		Welding conditions		
	Specification	Dimension, mm(in)	Amp. (A)	Welding speed (mm/min)	Position
S-9016.B3 (4.0 x 400 mm) (5/32 x 16 in)	ASTM A36	300 X 100 X12 (12 X 3.9 X 0.5)	180	200	Flat

❖ Results of Deposition Efficiency Test

Consumable	Deposition efficiency (%)	
	For electrode	For core wire
S-9016.B3 (4.0 x 400 mm) (5/32 x 16 in)	65 ~ 70	110 ~ 120

❖ Results of Bending Test

Consumable	Face	Root	Side
S-9016.B3 (4.0 x 400 mm) (5/32 x 16 in)	Good	Good	Good

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**Weldability
& Diffusible Hydrogen Contents & Proper Welding conditions**

❖ **Weldability**

Item \ Division	Flat position	Vertical position
Arc stability	Good	Good
Melting rate	Excellent	Excellent
Deposition rate	Excellent	Excellent
Resistance of spatter occurrence	Good	Good
Bead appearance	Good	Good
Slag detachability	Excellent	Excellent
The others	Good	Good

❖ **Diffusible Hydrogen Contents of Weld Metal**

Consumable	Welding current	Diffusible hydrogen contents (ml/gr. Weld metal)					Test method
		X ₁	X ₂	X ₃	X ₄	Avg.	
S-9016.B3 (4.0 x 400 mm) (5/32 x 16 in)	AC 180 Amp.	4.2	5.1	6.4	5.3	5.3	Gas Chromatograph

❖ **Sizes Available and Recommended Currents**

Diameter, mm(in)		2.6 (3/32)	3.2 (1/8)	4.0 (5/32)	5.0 (3/16)	6.0 (15/64)
Length, mm(in)		350(14)	350(14)	400(16)	400(16)	450(18)
Recommended current range (AC or DC + Amp.)	Flat (1G-PA)	50 ~ 90	90 ~ 130	130 ~ 190	190 ~ 250	250 ~ 300
	3G (PF) & 4G,5G (PE)	50 ~ 80	80 ~ 120	120 ~ 170	-	-

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