HYUNDAI WELDING

Rev. 03

S-8016.B2R

COVERED ARC WELDING ELECTRODE
FOR WELDING 1.25% Cr – 0.5% Mo STEEL

2020.12

HYUNDAI WELDING CO., LTD.

S-8016.B2R

❖ Specification

AWS A5.5	E8016-B2
JIS Z 3223	E5516-1CM
ISO 3580-A	E CrMo1 B 1 2 H5

❖ Applications

Welding of 1.25% Cr-0.5% Mo heat resistant steel used for pipes of boilers for electric power plant, equipment for oil refining industries and high temperature synthetic chemical industries.

❖ Characteristics on Usage

S-8016.B2R meets specific requirements for improved temper embrittlement resistance with prolonged service at 400-550℃ Relevant trace element P, Sb, As and Sn are controlled to ensure low Bruscato X-Factor. Its usability is good with direct current applications and very low-hydrogen electrode.

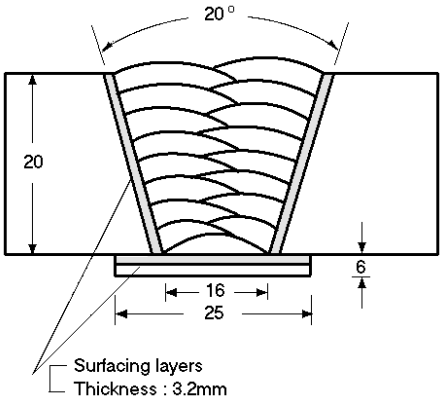
❖ Note on Usage

1. Dry the electrodes at 350~400℃(662~752°F) one hours before use.
2. Preheat at 150~300℃(302~572°F) and post-heat at 670~730℃(1238~1346°F).
3. Keep the arc as short as possible.

Mechanical Properties & Chemical Compositions of all-Weld Metal

❖ Welding Conditions

Method by AWS Rules



[Joint Preparation & Layer Details]

Diameter, : 4.0 X 400mm(5/32 X 16in)

Amp./ Volt. : 170~180 / 23~25

Interpass Temp. : 160~190℃(320~374°F)

Polarity : AC

❖ Mechanical Properties of The Weld Metal

Consumable	Tensile test			CVN Impact Test J (ft·lbs)			PWHT	
	YS MPa (lbs/in²)	TS MPa (lbs/in²)	EL (%)	0℃ (32°F)	-20℃ (-4°F)	-30℃ (-22°F)	Temp. ℃(°F)	Time
S-8016.B2R	530(76,900)	636(92,200)	32.0	175(129)	155(114)	79(58)	690(1274)	1hr
	491(71,200)	591(85,700)	28.8	225(166)	203(150)	183(135)	690(1274)	8hr
AWS A5.5	≥460(67,000)	≥550(80,000)	≥19	Not-Specified			690(1274)	1hr

❖ Chemical Analysis of The Weld Metal(wt%)

Consumable	Chemical Composition (%)										X-factor (ppm)
	C	Si	Mn	P	S	Cr	Mo	Sb	Sn	As	
S-8016.B2R	0.07	0.48	0.66	0.010	0.004	1.24	0.53	0.0010	0.0030	0.0030	12.0
AWS 5.5	0.05 ~ 0.12	0.60 max	0.90 max	0.03 max	0.03 max	1.00 ~ 1.50	0.40 ~ 0.65	-	-	-	-

❖ Bruscato Factor $X = \frac{10P + 5Sb + 4Sn + As}{100}$ (ppm) = 18 max or 15 max

Weldability& Diffusible Hydrogen Contents

❖ Weldability

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

❖ Diffusible Hydrogen Contents of Weld Metal

Consumable	Welding current	Diffusible hydrogen contents (㎖/gr. Weld metal)					Test method
		X_1	X_2	X_3	X_4	Avg.	
S-8016.B2R (4.0 x 400 mm) (5/32 x 16 in)	AC 170 Amp.	3.40	3.89	3.94	3.91	3.79	Gas Chromatograph

Average Hydrogen Content 3.79 *㎖/100g Weld Metal*

Proper Welding conditions & Approval

❖ Sizes Available and Recommended Currents

Diameter, mm(in)		2.6 (3/32)	3.2 (1/8)	4.0 (5/32)	5.0 (3/16)
Length, mm(in)		350(14)	350(14)	400(16)	400(16)
Recommended current range (AC or DC + Amp.)	Flat (1G-PA)	55 ~ 90	90 ~ 130	130 ~ 180	190 ~ 240
	3G(PF) & 4G, 5G(PE)	50 ~ 80	80 ~ 120	120 ~ 170	

❖ Authorized Approval Details

Classification	Dia. mm(in)	Welding position	Grade					
AWS			ABS	LR	BV	DNV	GL	NK
E8016-B2	2.6(3/32) ~5.0(3/16)	All	E8016-B2					