

S-7018.1H

COVERED ARC WELDING ELECTRODE
FOR HIGHLY EFFICIENT WELDING
AND EXTRA LOW-HYDROGEN CONTENT



❖ Specification

<i>AWS A5.1</i>	E7018-1
<i>JIS Z3211</i>	E4918
<i>EN ISO 2560-A</i>	E46 4 B 3 2 H5

❖ Applications

Structures using 490MPa class high tensile steel, such as bridges, building, rolling stock and -45°C low temperature used for structures.

❖ Characteristics on Usage

S-7018.1H is an iron powder low hydrogen type electrode. Its coating contains much iron powder, which increasing working efficiency. Its usability is good with direct current applications and extra low-hydrogen electrode. ($H_{\text{DM}} \leq 5\text{ml}/100\text{g}$)

❖ Note on Usage

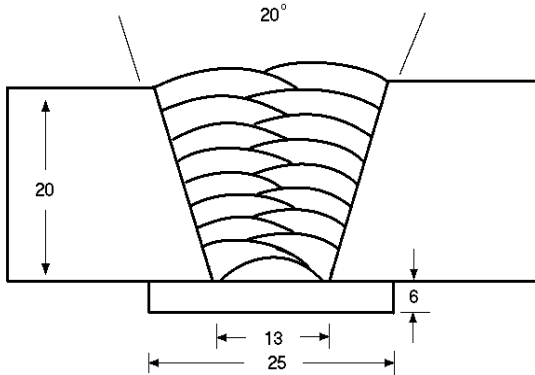
1. Dry the electrodes at $350^{\circ}\text{C} \sim 400^{\circ}\text{C}$ for 60 minutes before use.
2. Keep the arc as short as possible, and avoid large width weaving.
3. Adopt back step method or strike the arc on a small steel plate prepared for this particular purpose to prevent blow-hole at the arc starting.
4. Use the wind screen against strong wind.



Mechanical Properties & Chemical Compositions of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Diameter(mm)	: 4.0 x 400
Amp./ Volt.	: 170 / 22~24
Interpass Temp.(°C)	: 90 ~ 110
Polarity	: DC+

❖ Mechanical Property of All Weld Metal

Consumable	Tensile test			CVN Impact Test (Joule)
	YS (MPa)	TS (MPa)	EL (%)	
S-7018.1H	493	566	30.8	136
AWS Spec.	≥ 400	≥ 490	≥ 22	≥ 27 at -45°C

❖ Chemical Composition of All Weld Metal(wt%)

Consumable	Chemical Composition					
	C	Si	Mn	P	S	Ni
S-7018.1H	0.06	0.21	1.25	0.014	0.005	0.27
AWS Spec.	≤0.15	≤0.75	≤1.60	≤0.035	≤0.035	≤0.305

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.



Weldability & Welding Efficiency

❖ Weldability

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

❖ Test Conditions of Deposition Efficiency

Consumable	Base Metal		Welding conditions		
	Specification	Dimension (mm)	Amp. (A)	Welding speed (mm/min)	Position
S-7018.1H (4.0mm x 400)	ASTM A36	300 X 100 X 12	170	200	Flat

❖ Results of Deposition Efficiency Test

Consumable	Deposition efficiency(%)	
	For electrode	For core wire
S-7018.1H (4.0 mm x 400)	65 ~ 70	120 ~ 125

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Diffusible Hydrogen Content

❖ Welding Conditions

consumable	: S-7018.1H	Amp.(A) / Volts(V)	: 160Amp.
Diameter(mm)	: 4.0 x 400	Stick-Out(mm)	: 20~25
Flow Rate(ℓ /min.)	: -	Welding Speed	: -
Welding Position	: 1G	Current Type & Polarity	: DC+

❖ Hydrogen Analysis Using Gas Chromatography Method

Hydrogen Evolution Time	: 72 hrs	Analysis Temp.	: 25 °C
Evolution Temp.	: 25 °C	Exposure Condition	: 80%RH-25°C
Barometric Pressure	: 780 mm-Hg		

❖ Result (ml/100g Weld Metal)

X1	X2	X3	X4
3.70	3.80	3.93	4.20

Average Hydrogen Content **3.91 ml/100g Weld Metal**



Size Available and recommended Current & Approval

❖ Sizes Available and Recommended Current

Diameter (mm)		2.6	3.2	4.0	5.0	6.0
Length (mm)		350	400	450	450	450
Recommended current range (AC or DC+ Amp.)	Flat position	60 ~90	90 ~140	130 ~190	180 ~240	250 ~300
	Vertical & Overhead position	60 ~80	80 ~120	120 ~170	150 ~200	-

❖ Authorized Approval Details

Classification	Dia. (mm)	Welding position	Grade					
			ABS	LR	BV	DNV	GL	CWB
AWS								
E7018-1	2.6 ~5.0	All	4YH5	4YmH5	4YHHH	4YH5	4YH5	CSA W48-06 E4918-1

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