HYUNDAI WELDING

Rev. 00

S-7018.1

COVERED ARC WELDING ELECTRODE
FOR HIGHLY EFFICIENT WELDING
OF 490MPa CLASS HIGH TENSILE STEEL

HYUNDAI WELDING CO., LTD.

S-7018.1

❖ Specification

AWS A5.1	***E7018-1***
JIS Z3211	***E4918***
EN ISO 2560-A	***E42 4 B 3 2***

❖ Applications

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

❖ Characteristics on Usage

S-7018.1 is an iron powder low hydrogen type electrode of high efficiency used for welding 490MPa class high tensile steel. Its usability is good with direct current applications as well as alternating current applications and easy to weld in all position.

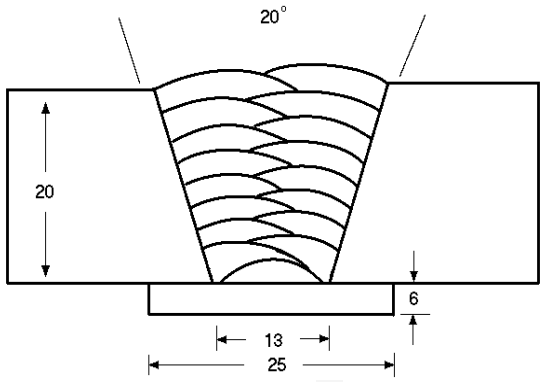
❖ Note on Usage

1. Dry the electrodes at 350℃～400℃ 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 prepar - ed 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 Spec.



[Joint Preparation & Layer Details]

Diameter(mm)	:	***4.0 x 400***
Amp./ Volt.	:	160 / 23~24
Interpass Temp.(℃)	:	80 ~ 130
Polarity	:	DC+

❖ Mechanical Property of All Weld Metal

Consumable	Tensile test			CVN Impact Test (Joule)
	YS (MPa)	TS (MPa)	EL (%)	- 45℃
S-7018.1	480	550	30.2	94
AWS Spec.	≥ 400	≥ 490	≥ 22	≥ 27 at -45℃

❖ Chemical Composition of All Weld Metal(wt%)

Consumable	Chemical Composition					
	C	Si	Mn	P	S	Ni
S-7018.1	0.06	0.25	1.25	0.017	0.012	0.25
AWS Spec.	≤0.15	≤0.75	≤1.60	≤0.035	≤0.035	≤0.305

Weldability & Welding Efficiency

❖ Weldability

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

❖ Test Conditions of Deposition Efficiency

Consumable	Base Metal		Welding conditions		
	Specification	Dimension (mm)	Amp. (A)	Welding speed (mm/min)	Position
S-7018.1 (4.0mm x 400)	ASTM A36	300 X 100 X 12	160	200	Flat

❖ Results of Deposition Efficiency Test

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

Diffusible Hydrogen Content

❖ Welding Conditions

consumable	:	**S-7018.1**	**Amp.(A) / Volts(V)**	:	160Amp.
Diameter(mm)	:	4.0 x 400	**Stick-Out(mm)**	:	20~25
Flow Rate(ℓ/min.)	:	-	**Welding Speed**	:	60 CPM
Welding Position	:	1G	**Current Type & Polarity**	:	DC+

❖ Hydrogen Analysis Using Gas Chromatography Method

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

❖ Result (㎖/100g Weld Metal)

X1	X2	X3	X4
7.5	8.5	8.1	7.4

Average Hydrogen Content ***7.9 ㎖/100g Weld Metal***

Size Available and recommended Current & Approval

❖Sizes Available and Reconnended 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				
AWS			ABS	LR	BV	DNV	GL
E7018- 1	2.6 ~ 6.0	All	3H10, 3Y	3, 3YH15	3YHH	3YH10	3YH10