HYUNDAI WELDING

Rev. 00

S-11018.M

COVERED ARC WELDING ELECTRODE
FOR 800MPa CLASS HIGH TENSILE STEEL

HYUNDAI WELDING CO., LTD.

S-11018.M

❖ Specification

AWS A5.5	***E11018-M***
JIS	**-**
EN 757	***E62 4 B 4 2***

❖ Applications

S-11018.M electrodes are recommended for applications requiring stress relieved weld-ments that meet AWS E11018M high strength tensile and relatively low (2.8 kgf-m at -51℃) Charpy V-notch impact requirements. In fact impact tests are not required to meet AWS quality conformance inspection unless they are specifically requested by the customer.
S-11018.M electrodes can be used to join armor plate and high strength steel such as Hy-80, Hy-90, and Hy-100 where high X-ray quality welds are required.

❖ Characteristics on Usage

S-11018.M is heavy coated low alloy, low hydrogen iron power type electrode displaying fast, efficient metal transfer. The deposited metal has good x-ray performance and excellent tensile and impact properties. Deposition rates obtained are higher than with E11016.G electrode types. Extremely good crack resistibility is obtained owing to very low hydrogen content of the weld metal.

❖ Note on Usage

1. Dry the electrodes at 350～400℃ for about one hour before use and store the electrodes at 100～150℃ after drying them with attention to keep away from moisture.

2. Adopt back step method or strike the arc on a small steel plate prepared for this particular purpose, because arc striking on base metal is in danger of initiation cracking.

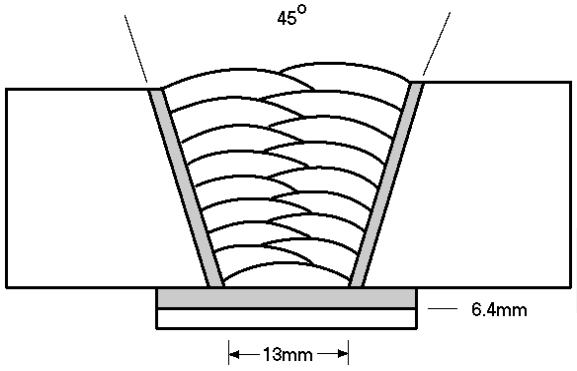
3. Keep the arc as short as possible and avoid large with weaving.

4. Preheat at 200 ～300℃.
   The temperature to be applied varies in accordance with plate thickness and kind of steel to be welded.

Mechanical Properties & Chemical Compositions of all-Weld Metal

❖ Welding Conditions

Method by AWS Rules



[Joint Preparation & Layer Details]

Diameter(mm)	:	***2.6, 3.2, 4.0, 5.0, 6.0***
Amp./ Volt.	:	170 ~ 175 / 25 ~ 26
Stick-Out(mm)	:	
Pre-Heat(℃)	:	
Interpass Temp.(℃)	:	93 ~ 121
Polarity	:	AC or DC +

❖ Mechanical Properties of The Weld Metal

consumable	Tensile test			Impact Value (Joule)				
	Y.S (MPa)	T.S (MPa)	EL (%)	Test Temp	X_1	X_2	X_3	Avg.
S-11018.M	740	810	21.6	-51℃	63	60	60	61
AWS 11018.M	69 ~ 77	≥77	≥20		≥28			

❖ Chemical Analysis of The Weld Metal(wt%)

Consumable	Chemical Composition (%)							
	C	Si	Mn	P	S	Ni	Cr	Mo
S-11018.M	0.07	0.48	1.62	0.023	0.012	2.04	0.21	0.35
AWS 11018.M	≤0.10	0.60	1.30 ~ 1.80	≤0.030	≤0.030	1.25 ~ 2.50	≤ 0.40	0.25 ~ 0.50

Welding Efficiency & Bending Test

❖ Test Conditions of Deposition Efficiency

Consumable	Base Metal		Welding conditions		
	Specification	Dimension (mm)	Amp. (A)	Welding speed (mm/min)	Position
S-11018.M (4.0mm x 400)					

❖ Results of Deposition Efficiency Test

Consumable	Deposition efficiency (%)	
	For electrode	For core wire
S-11018.M (4.0 mm x 400)		

❖ Results of Bending Test

Consumable	Face	Root	Side
S-11018.M (4.0mm x 400)			

Weldability & Diffusible Hydrogen Contents & Proper Welding conditions

❖ Weldability

Item \ Division	Flat position	Vertical up position
Arc stability	Good	Good
Melting rate	Excellent	Excellent
Deposition rate	Good	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 (㎖/gr. Weld metal)					Remark
		X_1	X_2	X_3	X_4	Avg.	
S-11018.M							

❖ Sizes Available and Recommended Currents

Diameter (mm)		2.6	3.2	4.0	5.0	6.0
Length (mm)		350	350	400	400	450
Recommended current range (AC or DC + Amp.)	Flat position	55 ~ 90	90 ~ 130	130 ~ 180	190 ~ 240	250 ~ 310
	Vertical & Overhead position	50 ~ 80	80 ~ 110	110 ~ 170	-	-

Approval

❖ Authorized Approval Details

Classification		Dia. (mm)	Welding position	Grade						
KS	AWS			KR	ABS	LR	BV	DNV	GL	NK

Notice

This test report is made for giving general information, and it's not meaning guarantee.
Test results are changeable by several welding
- parameter including base materials