

S-4301.I

COVERED ARC WELDING ELECTRODE
FOR WELDING HEAVY DUTIED STRUCTURES
AND HIGH PRESSURE BOILERS



❖ Specification

AWS A5.1	E6019
JIS Z3211	E4319
EN ISO 2560-A	E35 2 RA 1 2

❖ Applications

Welding of such parts, where the highest reliability is required, such as for strength members of ship hulls, high pressure boilers and building

❖ Characteristics on Usage

S-4301.I is a representative ilmenite type electrode for mild steel. It is suitable for the welding from thin to thick plate (1.6~20mm) in butt and fillet welding in all position. Its usability in the vertical and overhead welding is most excellent among ilmenite type electrodes. As its crack resistibility, pitting resistibility and X-Ray performance are excellent.

❖ Note on Usage

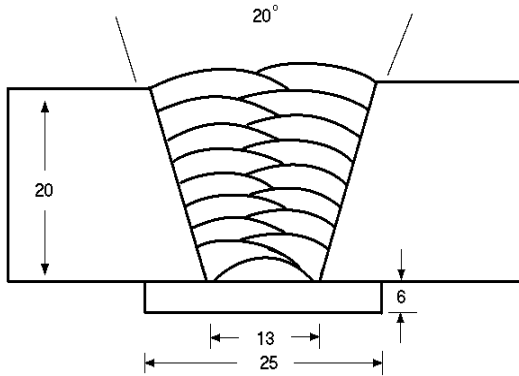
1. Pay attention not to exceed the range of proper current. Welding with excessive current not only lowers X-ray performance, but also causes increase of spatter, undercut and insufficient slag covering.
2. Dry the electrodes at 70~100°C (158~212°F) for 30~60 minutes before use.
Excessive moisture absorption lowers usability and may result in some porosity.
3. Excessive drying before use causes decrease in penetration and deterioration of usability.



Mechanical Properties & Chemical Compositions of All Weld Metal

❖ **Welding Conditions**

Method by AWS Spec.



- Diameter, mm(in) : 4.0 X 400(5/32 X 16)
- Amp./ Volt. : 170 / 23~24
- Interpass Temp. °C(°F) : 80~130 (176~266)
- Polarity : AC

[Joint Preparation & Layer Details]

❖ **Mechanical Property of All Weld Metal**

consumable	Tensile test			CVN Impact Value J (ft.lbs)
	YS MPa (ksi)	TS MPa (ksi)	EL (%)	-20°C (-4°F)
S-4301.I	382 (55)	440 (64)	31.2	56 (41)
AWS Spec.	≥ 330 (48)	≥ 430 (62)	≥ 22	≥ 27 (20)

❖ **Chemical Composition of All Weld Metal(wt%)**

Consumable	Chemical Composition (%)				
	C	Si	Mn	P	S
S-4301.I	0.055	0.10	0.37	0.021	0.014
AWS Spec.	≤0.20	≤1.00	≤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.

**Weldability
& Welding Efficiency Test****❖ Weldability**

Items		Division	Flat position	Vertical position
		Arc	Start & Rearc	Good
Stability	Good		Good	
Concentricity	Excellent		Excellent	
Slag	Fluidity	Excellent	Excellent	
	Removability	Excellent	Excellent	
Bead appearance		Excellent	Excellent	
Deposition rate		Excellent	Excellent	
Pitting resistibility		Good	Good	
Spattering resistibility		Good	Good	
The others		Good	Good	

❖ Test Conditions of Deposition Efficiency

Consumable	Base Metal		Welding conditions		
	Specification	Dimension, mm(in)	Amp. (A)	Welding speed (mm/min)	Position
S-4301.I (4.0 x 400 mm) (5/32 x 16 in)	ASTM A36	300 X 100 X12 (12 X 3.9 X 0.5)	AC 170	280	Flat

❖ Results of Deposition Efficiency Test

Consumable	Deposition efficiency(%)	
	For electrode	For core wire
S-4301.I 4.0mm(5/32in)	65 ~ 70	96 ~ 100

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Size Available and recommended Current & 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)	6.0 (15/64)
Length mm(in)		350 (14)	350 (14) 400 (16)	400 (16) 450 (18)	400 (16) 450 (18)	450 (18)
Recommended current range (AC or DC+ Amp.)	Flat position	50 ~85	80 ~130	120 ~180	170 ~250	240 ~310
	Vertical & Overhead position	45 ~70	60 ~110	110 ~150	130 ~200	-

❖ Authorized Approval Details

Classification		Dia. mm(in)	Welding position	Grade					
JIS	AWS			KR	ABS	LR	BV	DNV GL	NK
E6019	E6019	2.6(3/32) ~ 5.0(3/16)	All	RMW3	3	3	3	3	KMW3
		6.0(15/64)	Flat						

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