

# S-8016.G

COVERED ARC WELDING ELECTRODE  
FOR 550MPa CLASS HIGH TENSILE STEEL

2011. 02



## ❖ Specification

<b>AWS A5.5</b>	E8016-G
<b>JIS Z3211</b>	E5516
<b>EN ISO 2560-A</b>	E46 3 1Ni B 1 2

## ❖ Applications

Structures using 550MPa class high tensile steel, such as bridges, building, rolling stock and machines.

## ❖ Characteristics on Usage

S-8016.G is a low hydrogen type electrode for welding 550MPa 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

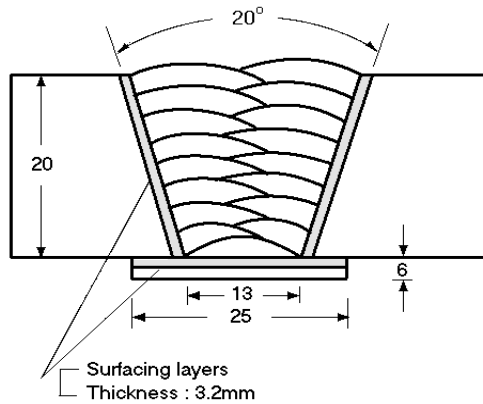
1. Dry the electrodes at 350°C ~ 400°C for 60 minutes before use
2. Keep the arc as short as possible, and avoid large width weaving.
3. Adopt back step method or strike the arc on a small steel plate prepared for this particular purpose to prevent blowholes at the arc starting.
4. Use the wind screen against strong wind.



## Mechanical Properties & Chemical Compositions of all-Weld Metal

### ❖ Welding Conditions

Method by AWS Rules



<b>Diameter(mm)</b>	: 4.0 x 400
<b>Amp./ Volt.</b>	: 170 / 23~24
<b>Pre-Heat(°C)</b>	: 95 ~110
<b>Interpass Temp.(°C)</b>	: 95 ~110
<b>Polarity</b>	: AC

### [ Joint Preparation & Layer Details ]

### ❖ Mechanical Property of All Weld Metal

Consumable	Tensile test			CVN Impact Test (Joule)	
	YS (MPa)	TS (MPa)	EL (%)	-20°C	-30°C
<b>S-8016.G</b>	519	613	28.8	160	141
<b>AWS Spec.</b>	≥ 460	≥ 550	≥ 19	NS	

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

Consumable	Chemical Composition					
	C	Si	Mn	P	S	Ni
<b>S-8016.G</b>	0.08	0.34	1.44	0.011	0.009	0.94
<b>AWS Spec.</b>	NS	≥0.80	≥1.00	≤0.03	≤0.03	≥0.50

In order to meet the alloy requirements of the "G" group, the undiluted weld metal shall have the minimum of at least one of the elements listed in this table.



## Weldability & Welding Efficiency Test

### ❖ Weldability

Item	Division	Flat position	Vertical position
	<b>Arc stability</b>	Excellent	Excellent
	<b>Melting rate</b>	Excellent	Excellent
	<b>Deposition rate</b>	Good	Excellent
	<b>Resistance of spatter occurrence</b>	Good	Good
	<b>Bead appearance</b>	Excellent	Good
	<b>Slag detachability</b>	Excellent	Excellent
	<b>The others</b>	Good	Good

### ❖ Test Conditions of Deposition Efficiency

Consumable	Base Metal		Welding conditions		
	Specification	Dimension (mm)	Amp. (A)	Welding speed (mm/min)	Position
<b>S-8016.G (4.0mm x 400)</b>	ASTM A36	300 X 100 X12	180	200	Flat

### ❖ Results of Deposition Efficiency Test

Consumable	Deposition efficiency(%)	
	For electrode	For core wire
<b>S-8016.G (4.0 mm x 400)</b>	63 ~ 66	97 ~ 100



## Diffusible Hydrogen Content

### ❖ Welding Conditions

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<b>consumable</b>	: S-8016.G	<b>Amp.(A) / Volts(V)</b>	: 170 / 23~24
<b>Diameter(mm)</b>	: 4.0 x 400	<b>Stick-Out(mm)</b>	: 20~25
<b>Flow Rate(ℓ /min.)</b>	: -	<b>Welding Speed</b>	: 60 CPM
<b>Welding Position</b>	: 1G	<b>Current Type &amp; Polarity</b>	: AC

### ❖ Hydrogen Analysis Using Gas Chromatography Method

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

### ❖ Result (ml/100g Weld Metal)

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X1	X2	X3	X4
7.0	6.7	6.8	6.7

**Average Hydrogen Content** 6.8 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	350	400	400	450
Recommended current range ( AC or DC+ Amp.)	Flat position	55 ~90	90 ~130	130 ~190	190 ~250	250 ~310
	Vertical & Overhead position	50 ~80	80 ~120	110 ~170	150 ~200	-

### ❖ Authorized Approval Details

Classification	Dia. (mm)	Welding position	Grade						
			KR	ABS	LR	BV	DNV	GL	NK
AWS A5.5									
E8016-G	2.6 ~5.0	All		○					
	6.0	Flat							