

# ***Supercored 110***

FLUX CORED ARC WELDING CONSUMABLES  
for WELDING of MILD & 800Mpa  
CLASS HIGH TENSILE STEEL

2010.08

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***HYUNDAI WELDING CO., LTD.***



# Supercored 110

## ❖ **Specification**

*AWS A5.29*

**E111T1- GC**

## ❖ **Applications**

Single and multi pass welding of high strength low alloy steel, such as HT- 80 and HT- 100 class steels.

## ❖ **Characteristics on Usage**

Supercored 110 is a titania type flux cored wire for all position welding with 100% CO<sub>2</sub> shielding gas

## ❖ **Note on Usage**

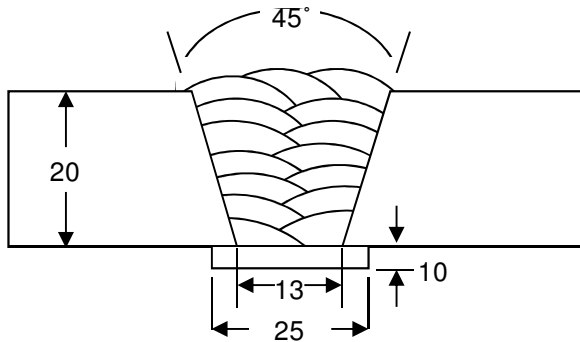
1. Proper preheating(50~ 180℃)(122~ 356°F) and inter pass temperature must be used in order to release hydrogen which may cause cracking in weld metal when electrodes are used for medium and heavy plates.
2. One- side welding defects such as hot cracking may occur with wrong welding parameter such as high welding speed.
3. Use 100% CO<sub>2</sub> gas.



## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ Welding Conditions

Method by AWS A5.29



Unit : mm

[ Joint Preparation & Layer Details ]

Diameter (mm)	: 1.2mm
Shielding Gas	: CO <sub>2</sub>
Flow Rate (ℓ / min.)	: 20
Amp. / Volt.	: 280 / 31
Stick-Out (mm)	: 20
Pre-Heating (°C)	: 80°C
Interpass Temp. (°C)	: 150 ± 15
Polarity	: DC(+)

### ❖ Mechanical Properties of the weld metal

CVN-Impact Test Results				
Temp. (°C)	Energy (J)			
	X1	X2	X3	Avg.
-40°C	62	58	60	60
-60°C	50	52	51	51
AWS A5.29 Spec. : Not Specified				

Tensile Test Results		
Y.S. (MPa)	T.S. (MPa)	EL. (%)
780	830	19.0
≥ 680	760-900	≥ 15
AWS A5.29 Spec.		

### ❖ Chemical Analysis of the weld metal (wt%)

	C	Si	Mn <sup>a</sup>	P	S	Ni <sup>a</sup>	Cr <sup>a</sup>	Mo <sup>a</sup>	V <sup>a</sup>
Supercored 110	0.06	0.35	1.55	0.016	0.007	2.20	0.02	0.50	0.01
AWS A5.29	-	≤ 1.0	≥ 0.5	≤ 0.03	≤ 0.03	≥ 0.50	≥ 0.30	≥ 0.20	≥ 0.10

\* <sup>a</sup> : The electrode shall have not less than the minimum specified for one or more

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## Diffusible Hydrogen Content

### ❖ Welding Conditions

Diameter(mm)	: 1.2	Amps(A) / Volts(V)	: 280 / 31
Shielding Gas	: CO <sub>2</sub>	Stick-Out(mm)	: 20
Flow Rate(ℓ/min.)	: 20	Welding Speed	: 30 cpm
Welding Position	: 1G	Current Type & Polarity	: DC(+)

### ❖ Hydrogen Analysis Using Gas Chromatograph 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
2.8	2.9	2.8	2.7

**Average Hydrogen Content 2.8 ml / 100g Weld Metal**

## Recommended Preheating Temp.

Thickness of plate(mm)	Preheating Temp(°C)	
	HT- 80 Steel	HT- 100steel
≤25	50- 80	50- 80
26~ 50	80- 100	100- 120
> 50	100- 150	120- 180

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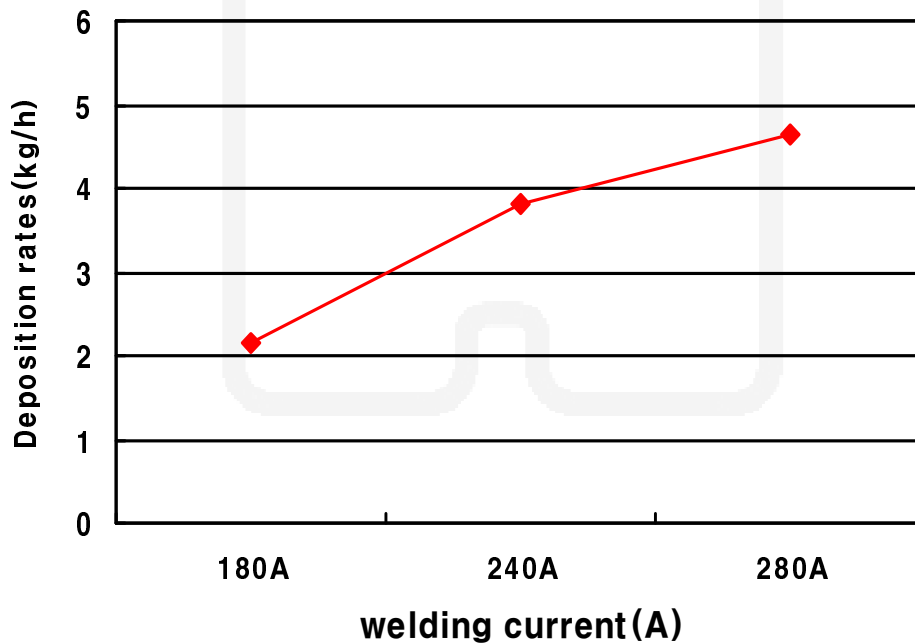


## Welding Efficiency

### ❖ Deposition Rate & Efficiency

Consumables	Welding Conditions		Deposition Efficiency(%)	Deposition Rate(kg/hr)
	Amp.(A)	Vol.(V)		
Supercored 110 1.2mm	180	23	86~88	2.15
	240	26	86~88	3.80
	280	30	87~89	4.65
Remark			Deposition efficiency =(Deposited metal weight/ Used wire weight)× 100	Deposition rate =(Deposited metal weight/ Welding time,min.)× 60

\* Shielding Gas : CO<sub>2</sub>



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## Proper Welding Condition

### ❖ Welding Conditions

Consumables	Shielding Gas	Welding Position	Amp.(A)
			1.2mm
Supercored 110	CO <sub>2</sub>	F & H-F	150~290
		V-up, OH	120~260
		V-down	180~290

## Approval

ABS
AWS A5.29 E111T1- GC -H4 (IV -40℃ ≥41J) 1.2

### 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*