HYUNDAI WELDING

Rev. 08

Supercored 110

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

2022.02

HYUNDAI WELDING CO., LTD.

Supercored 110

❖ Specification

AWS A5.29	E111T1-GC H4
(AWS A5.29M	E761T1-GC)
EN ISO 18276-A	T69 4 ZMn2.5NiMo P C1 1

❖ Applications

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

❖ Characteristics on Usage

Supercored 110 is a titania type flux cored wire for all position welding with 100% CO_2. shielding gas

❖ Note on Usage

1. For preheating guidelines, please refer to your local standards and codes relative to your best practices.

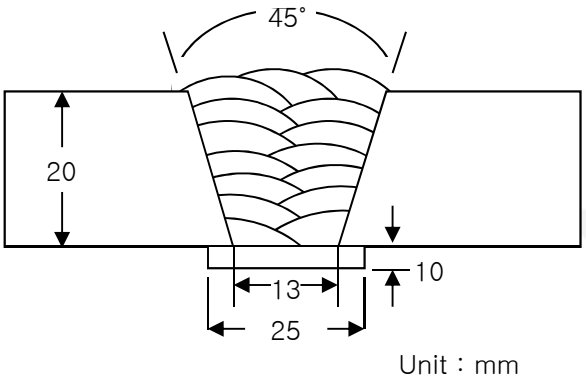
2. One-side welding defects such as hot cracking may occur with wrong welding parameter such as high welding speed.

3. Use 100% CO_2 gas.

Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS A5.29



Unit : mm

[Joint Preparation & Layer Details]

Welding Position	:	1G(PA)
Diameter	:	1.2mm (0.045in)
Shielding Gas	:	100%CO_2
Flow Rate	:	20 ℓ /min
Amp./ Volt.	:	280A / 32V
Stick-Out	:	20~25mm (0.79~0.98in)
Pre-Heat	:	R.T .
Interpass Temp.	:	150±15℃ (302±59°F)
Polarity	:	DC(+)

❖ Mechanical Properties of the weld metal

Consumable	**Tensile Test**			**CVN Impact Test J(ft · lbs)**
Supercored 110	**YS MPa (lbs/in²)**	**TS MPa (lbs/in²)**	**EL (%)**	**-40℃ (-40°F)**
	780 (113,000)	830 (120,000)	19.9	60 (44)
AWS A5.29 E111T1-GC H4	**≥ 680 (98,000)**	**760~900 (110,000~ 130,000)**	**≥ 15**	**No Specified**

❖ Chemical Analysis of the weld metal(wt%)

	C	Si	Mn[a]	P	S	Ni[a]	Cr[a]	Mo[a]	V[a]
Supercored 110	0.06	0.35	1.55	0.016	0.007	2.20	0.02	0.50	0.01
AWS A5.29 E111T1-GC H4	As agreed upon between supplier and purcahser								

Diffusible Hydrogen Content

❖ Welding Conditions

Diameter	:	1.2mm (0.052in)	**Amps(A) / Volts(V)**	:	240A / 27V
Shielding Gas	:	100%CO_2	**Stick-Out**	:	20~25mm (0.79~0.98in)
Flow Rate	:	20 ℓ /min			
Welding Position	:	1G (PA)	**Welding Speed**	:	30 cm/min (12 in/min)
			Current Type & Polarity	:	DC(+)

❖ Hydrogen Analysis Using Gas Chromatograph Method

Hydrogen Evolution Time	:	72 hrs
Evolution Temp.	:	45 ℃ (113°F)
Barometric Pressure	:	780 mm-Hg

❖ Result(㎖/100g Weld Metal)

X1	X2	X3	X4
2.8	2.9	2.8	2.7

Average Hydrogen Content 2.8 ㎖ / 100g Weld Metal

Recommended Preheating & Inter pass Temp

Thickness of plate (mm, in)	Preheating Temp(℃, °F)
< 10 (0.39)	> 20 (68)
> 10~20 (0.39~0.79)	> 65 (149)
> 20~40 (0.79~1.57)	> 110 (230)
> 40 (1.57)	> 150 (302)

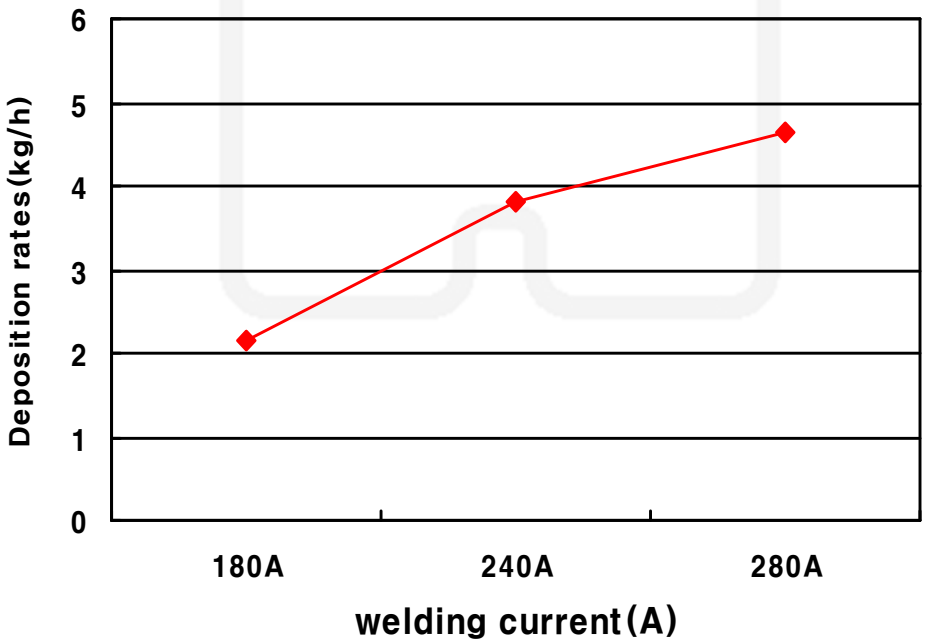
❖ The purpose of this guide is to avoid cold cracking (by AWS D 1.1/D1.1M:2010, ANNEX I)

Welding Efficiency

❖ Deposition Rate & Efficiency

Consumable (size)	Welding Conditions		Wire Feed Speed m/min (in/min)	Deposition Efficiency %	Deposition Rate kg/hr(lb/hr)
	Amp.(A)	Volt.(V)			
Supercored 110 1.2mm (0.045in)	180	23	9.2 (360)	84~87	2.2 (4.8)
	240	26	11.0 (430)	85~88	3.8 (8.4)
	300	33	14.3 (560)	86~88	4.7 (10.3)
Remark				Deposition efficiency =(Deposited metal weight/ Wire weight used)×100	Deposition rate =(Deposited metal weight/ Welding time,min.)×60

* Shielding Gas : CO_2



Proper Welding Condition

❖ Welding Conditions

Consumables	Shielding Gas	Welding Position	Amp.(A)
			1.2mm (0.045in)
Supercored 110	100% CO_2	F & H-F	120~280
		V-up, OH	120~260
		V-down	200~280

Approval

ABS	KR
AWS A5.29 E111T1-GC H4 (IV -40℃ ≥41J) 1.2mm (0.045in)	3Y69S(C) H5 1.2mm (0.045in)

❖ F No & A No

F No	A No
6	10

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