

SC-55Cored

FLUX CORED ARC WELDING CONSUMABLE
FOR WELDING OF 520MPa CLASS
HIGH TENSILE STEEL

2022.02

HYUNDAI WELDING CO., LTD.



❖ Specification

<i>AWS A5.29</i>	E81T1-GC
<i>(AWS A5.29M)</i>	E551T1-GC
<i>JIS Z 3313</i>	T55 2 T1-1 C A-U
<i>KS D 7104</i>	YFW-C55DR

❖ Applications

Butt and fillet welding of steel structures using 520MPa class high tensile Steel such as construction machinery, buildings and bridges.

❖ Characteristics on Usage

SC-55Cored is a titania type flux cored wire for all position welding with CO₂. Compared with solid wire, spatter loss is low, bead appearance is a beautiful and arc is soft with good stability. Slag covering is uniform with good removal.

❖ Note on Usage

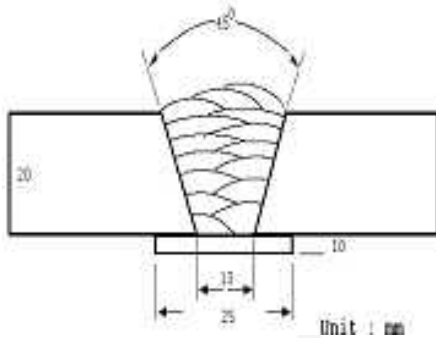
1. For preheating guidelines, please refer to your local standards and codes relative to your best practices.
2. One-side welding defects such as hot cracking may occur with wrong welding parameter such as high welding speed.
3. Use 100% CO₂ gas.



Mechanical Properties & Chemical Composition of All Weld Metal

❖ **Welding Conditions**

Method by AWS Spec.



[Joint Preparation & Layer Details]

- Welding Position** : 1G(PA)
- Diameter** : 1.2mm (0.045in)
- Shielding Gas** : 100%CO₂
- 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°C (302±59°F)
- Polarity** : DC(+)

❖ **Mechanical Properties of all weld metal**

Consumable	Tensile Test			CVN Impact Test J(ft · lbs)
	YS MPa (lbs/in ²)	TS MPa (lbs/in ²)	EL (%)	-18℃ (0°F)
SC-55 Cored	560 (81,000)	610 (88,000)	27.0	80 (59)
AWS A5.29 E81T1-GC	≥ 470 (68,000)	550~690 (80,000~ 100,000)	≥ 22.0	No Specified

❖ **Chemical Analysis of all weld metal(wt%)**

Consumable	C	Si	Mn	P	S
SC-55Cored	0.05	0.45	1.40	0.014	0.012
AWS A5.29 E81T1-GC	-	≤ 1.0	≥ 0.5	≤ 0.03	≤ 0.03

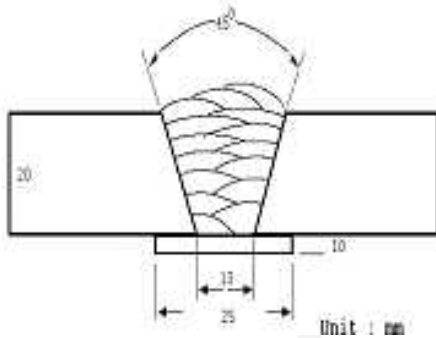
This information is provided solely for the purpose of confirming product conformance with applicable standards. The serviceability of a product or structure utilizing this type of information is and must be the sole responsibility of the builder/user. Many variables beyond the control of HYUNDAI WELDING 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.



Mechanical Properties & Chemical Composition of All Weld Metal

❖ **Welding Conditions**

Method by AWS Spec.



[Joint Preparation & Layer Details]

- Welding Position** : 1G(PA)
- Diameter** : 1.4mm (0.052in)
- Shielding Gas** : 100%CO₂
- Flow Rate** : 20 ℓ /min
- Amp./ Volt.** : 300A / 32V
- Stick-Out** : 20~25mm (0.79~0.98in)
- Pre-Heat** : R.T .
- Interpass Temp.** : 150±15°C (302±59°F)
- Polarity** : DC(+)

❖ **Mechanical Properties of all weld metal**

Consumable	Tensile Test			CVN Impact Test J(ft · lbs)
	YS MPa (lbs/in ²)	TS MPa (lbs/in ²)	EL (%)	-18°C (0°F)
SC-55 Cored	565 (82,000)	620 (90,000)	27.0	75 (55)
AWS A5.29 E81T1-GC	≥ 470 (68,000)	550~690 (80,000~ 100,000)	≥ 22.0	No Specified

❖ **Chemical Analysis of all weld metal(wt%)**

Consumable	C	Si	Mn	P	S
SC-55Cored	0.05	0.47	1.42	0.014	0.012
AWS A5.29 E81T1-GC	-	≤ 1.0	≥ 0.5	≤ 0.03	≤ 0.03

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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)			
SC-55 Cored 1.2mm (0.045in)	200	26	10.2 (400)	84~87	3.4 (7.5)
	250	28	11.5 (450)	85~88	4.5 (9.9)
	300	33	15.3 (600)	86~88	5.2 (11.4)
SC-55 Cored 1.4mm (0.052in)	250	28	7.6 (300)	85~87	3.9 (8.6)
	300	32	10.2 (400)	85~88	4.8 (10.6)
	330	36	12.8 (500)	86~89	5.8 (12.8)
Remark				Deposition efficiency =(Deposited metal weight/ Wire weight used)×100	Deposition rate =(Deposited metal weight/ Welding time,min.)×60

* Shielding Gas : 100%CO₂

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Diffusible Hydrogen Content

❖ Welding Conditions

Diameter	: 1.4mm (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 Speed	: 30 cm/min (12 in/min)
Welding Position	: 1G (PA)	Current Type & Polarity	: DC(+)

❖ Hydrogen Analysis Using Gas Chromatography Method

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

❖ Result(ml/100g Weld Metal)

X1	X2	X3	X4
5.8	5.4	5.9	6.1

Average Hydrogen Content 5.8 ml / 100g Weld Metal

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Proper Welding Condition

❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Wire Dia.		
			1.2mm (0.045in)	1.4mm (0.052in)	1.6mm (1/16in)
SC-55 Cored	100%CO ₂	F & HF	120~300Amp	200~350Amp	200~400Amp
		V-Up & OH	120~260Amp	180~280Amp	180~280mp
		V-Down	200~300Amp	220~320Amp	250~320Amp

❖ F No & A No

F No	A No
6	1

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