

SC-55Cored

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



❖ Specification

AWS A5.29 E81T1C-GC

JIS Z3313 T55 2 T1-1 C A-U

❖ 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

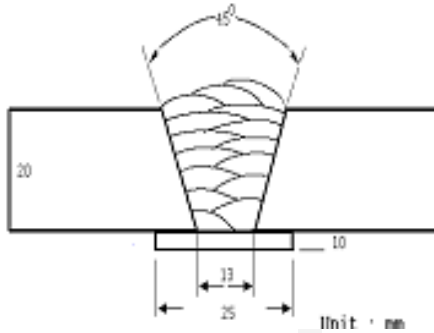
1. Proper preheating(50~150℃) and interpass temperature must be used in order to release hydrogen which may cause cracking in weld metal when electrodes are used for medium and heavy plates.
2. One-side welding defects such as hot cracking may occur with wrong welding parameter such as high welding speed.
3. Use 100% CO₂ gas.



Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Diameter(mm)	: 1.2mm
Shielding Gas	: 100% CO ₂
Flow Rate(l /min.)	: 20~22
Amp./ Volt.	: 280 / 31
Stick-Out(mm)	: 20
Pre-Heat(°C)	: R.T.
Interpass Temp.(°C)	: 150±15
Polarity	: DC(+)

❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test (Joule)
	YS(MPa)	TS(MPa)	EL(%)	-20°C
SC-55Cored	590	640	27	100
AWS A5.29 E81T-1C/-GC	≥ 470	550~690	≥ 19	-

❖ Chemical Analysis of all weld metal(wt%)

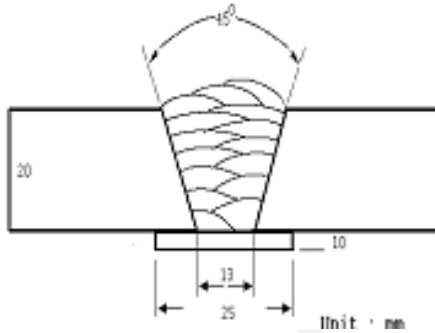
Consumable	C	Si	Mn	P	S
SC-55Cored	0.05	0.45	1.40	0.014	0.012
AWS A5.29 E81T-1C/-GC	-	≤ 1.0	≥ 0.5	≤ 0.03	≤ 0.03



Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Diameter(mm)	: 1.4mm
Shielding Gas	: 100% CO ₂
Flow Rate(ℓ /min.)	: 20~22
Amp./ Volt.	: 300 / 32
Stick-Out(mm)	: 20
Pre-Heat(°C)	: R.T .
Interpass Temp.(°C)	: 150±15
Polarity	: DC(+)

❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test (Joule)
	YS(MPa)	TS(MPa)	EL(%)	0°C
SC-55Cored	580	635	28	105
AWS A5.29 E81T-1C/-GC	≥ 470	550~690	≥ 19	-

❖ 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 E81T-1C/-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.



Welding Efficiency

❖ Deposition Rate & Efficiency

Consumable (size)	Welding Conditions		Deposition Efficiency(%)	Deposition Rate(kg/hr)
	Amp.(A)	Volt.(V)		
SC-55Cored 1.2mm	150	24	85~87	2.1
	200	26	85~87	3.2
	250	28	85~88	4.2
	300	33	85~88	5.1
SC-55Cored 1.4mm	250	28	85~87	3.8
	300	32	86~88	4.7
	350	36	87~89	6.1
Remark			Deposition efficiency =(Deposited metal weight/ Wire weight used)×100	Deposition rate =(Deposited metal weight/ Welding time,min.)×60

* Shielding Gas : 100%CO₂



Diffusible Hydrogen Content

❖ Welding Conditions

Diameter(mm)	: 1.4	Amps(A) / Volts(V)	: 300 / 32
Shielding Gas	: 100% CO ₂	Stick-Out(mm)	: 20
Flow Rate(ℓ /min.)	: 20	Welding Speed	: 45 cpm
Welding Position	: 1G	Current Type & Polarity	: DC(+)

❖ Hydrogen Analysis Using Gas Chromatography 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
5.8	5.4	5.9	6.1

Average Hydrogen Content 5.8 ml / 100g Weld Metal



Proper Welding Condition

❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Wire Dia. (mm)		
			1.2mm	1.4mm	1.6mm
SC-55Cored	100%CO ₂	F & HF	120~300Amp	150~350Amp	180~380Amp
		V-Up & OH	120~260Amp	150~270Amp	180~280mp
		V-Down	200~300Amp	220~320Amp	250~320Amp