HYUNDAI WELDING

Rev. 02

SC-55Cored

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

HYUNDAI WELDING CO., LTD.

SC-55Cored

❖ Specification

AWS A5.36	E81T1-C1A0-G
(AWS A5.36M	E551T1-C1A2-G)
(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 CO_2. 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℃, 122~302°F) 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.

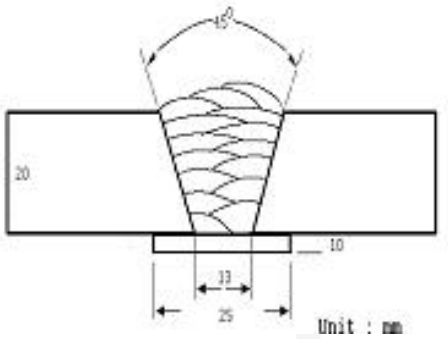
2. One-side welding defects such as hot cracking may occur with wrong welding parameter such as high welding speed.

3. Use 100% CO_2 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%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 all weld metal

Consumable	Tensile Test			CVN Impact Test J(ft · lbs)
SC-55 Cored	YS Mpa (Ksi)	TS Mpa (Ksi)	EL (%)	-20℃ (-4°F)
	590 (86)	640 (93)	27.0	100 (74)
AWS A5.36 E81T1-C1A0-G	≥ 470 (68)	550~690 (80~100)	≥ 22.0	≥27J at -20℃ (≥20ft · lbs at -4°F)

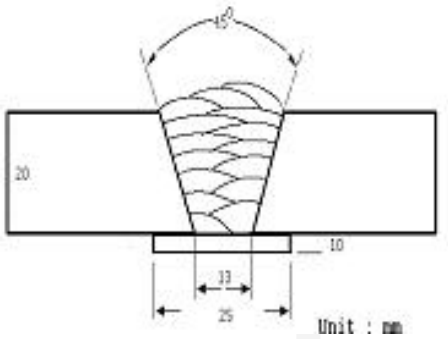
❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
SC-55Cored	0.05	0.45	1.40	0.014	0.012
AWS A5.36 E81T1-C1A0-G	-	≤ 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]

Welding Position	:	1G(PA)
Diameter	:	1.4mm (0.052in)
Shielding Gas	:	100%CO_2
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℃ (302±59°F)
Polarity	:	DC(+)

❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test J(ft · lbs)
SC-55 Cored	YS Mpa (Ksi)	TS Mpa (Ksi)	EL (%)	-20℃ (-4°F)
	580 (84)	635 (92)	28.0	105 (77)
AWS A5.36 E81T1-C1A0-G	≥ 470 (68)	550~690 (80~100)	≥ 22.0	≥27J at -20℃ (≥20ft · lbs at -4°F)

❖ 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 A5.36 E81T1-C1A0-G	-	≤ 1.0	≥ 0.5	≤ 0.03	≤ 0.03

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%CO_2

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

❖ Hydrogen Analysis Using Gas Chromatography Method

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

❖ Result(㎖/100g Weld Metal)

X1	X2	X3	X4
5.8	**5.4**	**5.9**	**6.1**

Average Hydrogen Content 5.8 ㎖ / *100g Weld Metal*

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