

SC-55F Cored

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

2022.01

HYUNDAI WELDING CO., LTD.



SC-55F Cored

❖ **Specification**

AWS A5.29

E80T1-GC

(AWS A5.29M

E550T1-GC)

JIS Z 3313

T55 2 T1-0 C A -N1-U

KS D 7104

YFW-C55DM

❖ **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-55F Cored is a metal type flux cored wire which produces smooth arc characteristics and minimum spatter levels and excellent slag remove.

❖ **Note on Usage**

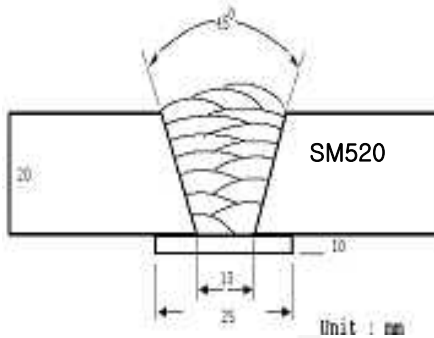
1. For preheating guidelines, please refer to your local standards and codes relative to your best practices
2. Use 100% CO₂ gas.



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%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)	
	YS MPa (lbs/in ²)	TS MPa (lbs/in ²)	EL (%)	0℃ (32°F)	-18℃ (0°F)
SC-55F Cored	580 (84,000)	625 (90,000)	24.5	89 (66)	78 (58)
AWS A5.29 E80T1-GC	≥ 450 (65,000)	550~740 (80,000~ 107,000)	≥ 17	No Specified	

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Ni
SC-55F Cored	0.055	0.48	1.56	0.012	0.006	0.43
AWS A5.29 E80T1-GC	≤ 0.12	≤ 0.80	≤ 1.75	≤ 0.03	≤ 0.03	0.30~1.00

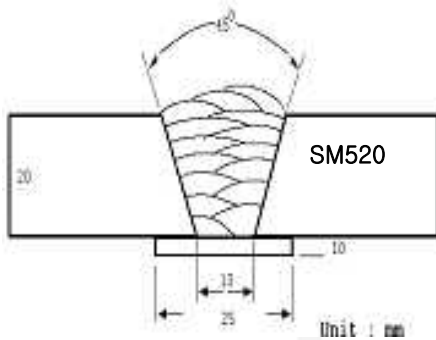
This information is provided solely for the purpose of confirming product conformance with applicable standards. The serviceability of a product or structure utilizing this type of information is and must be the sole responsibility of the builder/user. Many variables beyond the control of HYUNDAI WELDING 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%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)	
	YS MPa (lbs/in ²)	TS MPa (lbs/in ²)	EL (%)	0℃ (32°F)	-18℃ (0°F)
SC-55F Cored	590 (85,000)	620 (90,000)	24.5	87 (64)	75 (55)
AWS A5.29 E80T1-GC	≥ 450 (65,000)	550~740 (80,000~ 107,000)	≥ 17	No Specified	

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Ni
SC-55F Cored	0.052	0.49	1.55	0.011	0.006	0.42
AWS A5.29 E80T1-GC	≤ 0.12	≤ 0.80	≤ 1.75	≤ 0.03	≤ 0.03	0.30~1.00

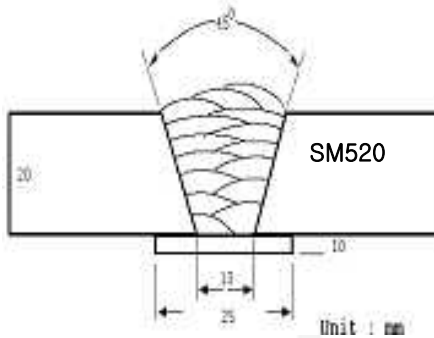
This information is provided solely for the purpose of confirming product conformance with applicable standards. The serviceability of a product or structure utilizing this type of information is and must be the sole responsibility of the builder/user. Many variables beyond the control of HYUNDAI WELDING 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	: 1.6mm (1/16in)
Shielding Gas	: 100%CO ₂
Flow Rate	: 20 ℓ /min
Amp./ Volt.	: 330A / 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)	
	YS MPa (lbs/in ²)	TS MPa (lbs/in ²)	EL (%)	0℃ (32°F)	-18℃ (0°F)
SC-55F Cored	565 (82,000)	615 (90,000)	25.5	82 (61)	72 (53)
AWS A5.29 E80T1-GC	≥ 450 (65,000)	550~740 (80,000~ 107,000)	≥ 17	No Specified	

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Ni
SC-55F Cored	0.053	0.46	1.52	0.012	0.007	0.42
AWS A5.29 E80T1-GC	≤ 0.12	≤ 0.80	≤ 1.75	≤ 0.03	≤ 0.03	0.30~1.00

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		Wire Feed Speed m/min (in/min)	Deposition Efficiency(%)	Deposition Rate kg/hr(lb/hr)
	Amp.(A)	Volt.(V)			
SC-55F Cored 1.2mm (0.045in)	200	26	5.0 (200)	85~87	2.0(4.4)
	250	30	6.3 (250)	87~89	2.9(6.4)
	300	32	7.7 (300)	91~93	3.6(7.9)
	350	33	9.0(350)	91~93	4.1(9.0)
SC-55F Cored 1.4 mm (0.052in)	300	31	7.6 (300)	90~92	5.1(11.2)
	350	36	10.2 (400)	91~93	5.8(12.8)
	380	36	12.8 (500)	91~93	6.5(14.3)
SC-55F Cored 1.6 mm (1/16in)	300	33	6.4 (250)	87~89	4.8(10.6)
	350	36	8.7 (300)	90~91	5.4(11.9)
	400	38	8.1 (320)	90~91	6.2(13.6)
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(0.052in)	Amps(A) / Volts(V)	: 300A / 32V
Shielding Gas	: 100%CO ₂	Stick-Out(mm)	: 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
Barometric Pressure	: 780 mm-Hg

❖ Result(ml/100g Weld Metal)

X1	X2	X3	X4
5.8	5.8	5.9	6.0

Average Hydrogen Content **5.9 ml / 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-55F Cored	100%CO ₂	F & HF	250~300Amp	300~350Amp	300~380Amp

❖ F No & A No

F No	A No
6	1