

SC-55F Cored

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



❖ Specification

AWS A5.20

E80T1-GC

JIS Z3313

T 55 2 T15 0 C-A-N1 U H10

❖ 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

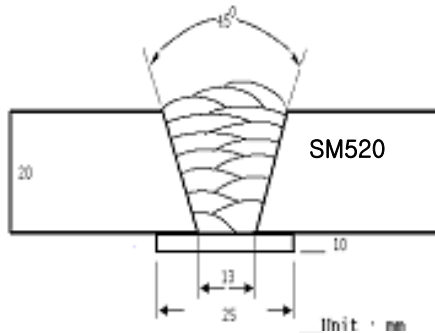
1. Proper preheating(50~150℃) and interpass temperature must be used in order to release hydrogen which may cause cracking in weld metal when electrodes are used for medium and heavy plates
2. Use 100% CO₂ gas.



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
Amp./ Volt.	: 280 / 32
Stick-Out(mm)	: 20~25
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	-20°C
SC-55F Cored	580	625	24.5	89	78
JIS Z3313 T 55 2 T15 0 C-A-N1 U H10	≥ 450	550~740	≥ 17	≥ 47J at -20°C	

❖ Chemical Analysis of all weld metal(wt%)

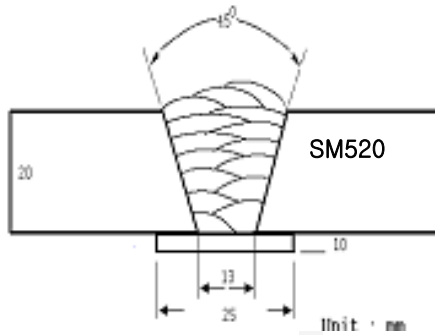
Consumable	C	Si	Mn	P	S	Ni
SC-55F Cored	0.055	0.48	1.56	0.012	0.006	0.43
JIS Z3313 T 55 2 T15 0 C-A-N1 U H10	≤ 0.12	≤ 0.80	≤ 1.75	≤ 0.03	≤ 0.03	0.30~1.00



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
Amp./ Volt.	: 300 / 32
Stick-Out(mm)	: 20~25
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	-20°C
SC-55F Cored	590	620	24.5	87	75
JIS Z3313 T 55 2 T15 0 C-A-N1 U H10	≥ 450	550~740	≥ 17	≥ 47J at -20°C	

❖ Chemical Analysis of all weld metal(wt%)

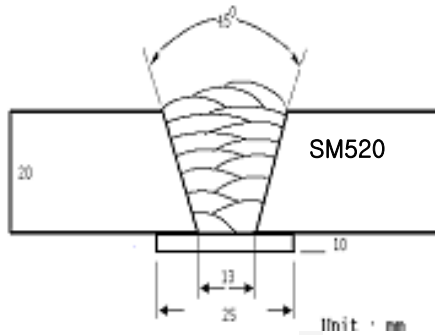
Consumable	C	Si	Mn	P	S	Ni
SC-55F Cored	0.052	0.49	1.55	0.011	0.006	0.42
JIS Z3313 T 55 2 T15 0 C-A-N1 U H10	≤ 0.12	≤ 0.80	≤ 1.75	≤ 0.03	≤ 0.03	0.30~1.00



Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Diameter(mm)	: 1.6mm
Shielding Gas	: 100% CO ₂
Flow Rate(l /min.)	: 20
Amp./ Volt.	: 330 / 32
Stick-Out(mm)	: 20~25
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	-20°C
SC-55F Cored	565	615	25.5	82	72
JIS Z3313 T 55 2 T15 0 C-A-N1 U H10	≥ 450	550~740	≥ 17	≥ 47J at -20°C	

❖ 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
JIS Z3313 T 55 2 T15 0 C-A-N1 U H10	≤ 0.12	≤ 0.80	≤ 1.75	≤ 0.03	≤ 0.03	0.30~1.00



Welding Efficiency

❖ Deposition Rate & Efficiency

Consumable (size)	Welding Conditions		Deposition Efficiency(%)	Deposition Rate(kg/hr)
	Amp.(A)	Volt.(V)		
SC-55F Cored 1.2mm	200	26	85~87	3.5
	250	30	87~89	4.7
	300	33	91~93	6.3
	350	38	91~93	7.1
SC-55F Cored 1.4mm	300	31	90~92	5.1
	350	36	91~93	5.8
	400	38	91~93	6.5
SC-55F Cored 1.6mm	300	33	87~89	4.8
	350	36	90~91	5.6
	400	38	91~93	6.5
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)	: 20~25
Flow Rate(ℓ /min.)	: 20	Welding Speed	: 30 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	5.8	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. (mm)		
			1.2mm	1.4mm	1.6mm
SC-55F Cored	100%CO ₂	F & HF	250~300Amp	300~350Amp	300~380Amp