HYUNDAI WELDING

Rev. 04

SC-90

FLUX CORED ARC WELDING CONSUMABLES
FOR WELDING OF 600 MPa CLASS
HIGH TENSILE STEEL

2022.01

HYUNDAI WELDING CO., LTD.

SC-90

❖ Specification

AWS A5.29	E90T1-GC
(AWS A5.29M	E620T-GC)
EN ISO 17632-A	T50 2 R C1 3
JIS Z 3313	T62 2 T 15-0 C A H10

❖ Applications

Only Flat, H-Fillet welding of building, bridge, machinery vehicle using HSB 600 steel or 600MPa class high tensile steels.

❖ Characteristics on Usage

SC-90 is a metal type flux cored wire for high speed welding application in the flat and horizontal fillet position.
Arc stability is excellent, spatter loss is low and slag covering is uniform with good removability.

❖ Note on Usage

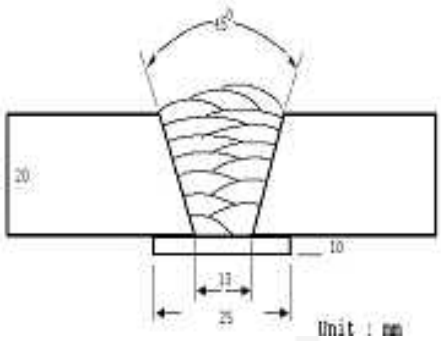
1. For preheating guidelines, please refer to your local standards and codes relative to your best practices

2. Use 100% CO_2 gas.

Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Rules



[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/in²)	TS MPa (lbs/in²)	EL (%)	0℃ (32°F)	-18℃ (0°F)
SC-90	600 (87,000)	650 (94,000)	22.5	80 (59)	60 (44)
AWS A5.29 E90T1-GC	**≥ 540 (78,000)**	**620~760 (90,000~ 11,0000)**	**≥ 17.0**	**No Specified**	

❖ Chemical Analysis of all weld metal(wt%)

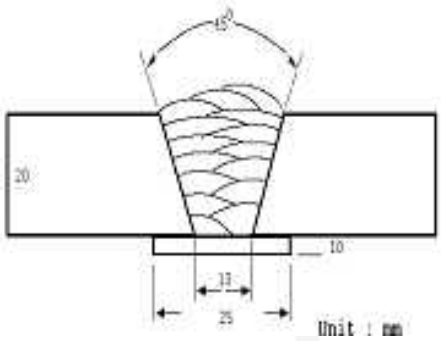
Consumable	C	Si	Mn	P	S	Ni	Mo
SC-90	0.08	0.55	1.75	0.014	0.014	0.35	0.13
AWS A5.29 E90T1-GC	-	**≤ 1.00**	**0.50***	**≤ 0.030**	**≤ 0.030**	**0.50***	**0.20***

*** AWS Specification G type, the undiluted weld metal shall have mot less than minimum specified for one or more of the following alloys : Mn, Ni, Cr, Mo or V.**

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/in²)	TS MPa (lbs/in²)	EL (%)	0℃ (32°F)	-18℃ (0°F)
SC-90	600 (87,000)	660 (96,000)	22.5	80 (59)	60 (44)
AWS A5.29 E90T1-GC	**≥ 540 (78,000)**	**620~760 (90,000~ 11,0000)**	**≥ 17.0**	**No Specified**	

❖ Chemical Analysis of all weld metal(wt%)

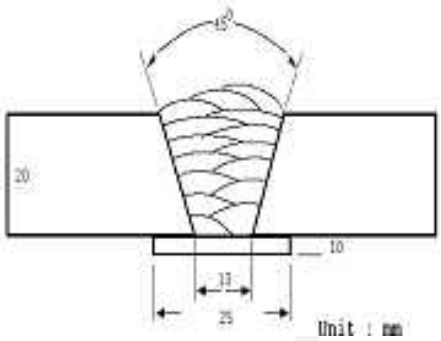
Consumable	C	Si	Mn	P	S	Ni	Mo
SC-90	0.08	0.55	1.75	0.014	0.014	0.35	0.12
AWS A5.29 E90T1-GC	-	≤ 1.00	0.50*	≤ 0.030	≤ 0.030	0.50*	0.20*

*** AWS Specification G type, the undiluted weld metal shall have mot less than minimum specified for one or more of the following alloys : Mn, Ni, Cr, Mo or V.**

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/in²)	TS MPa (lbs/in²)	EL (%)	0℃ (32°F)	-18℃ (0°F)
SC-90	600 (87,000)	665 (96,000)	22.5	80 (59)	55 (40)
AWS A5.29 E90T1-GC	**≥ 540 (78,000)**	**620~760 (90,000~ 11,0000)**	**≥ 17.0**	**No Specified**	

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Ni	Mo
SC-90	0.08	0.52	1.70	0.014	0.014	0.35	0.13
AWS A5.29 E90T1-GC	-	≤ 1.00	0.50*	≤ 0.030	≤ 0.030	0.50*	0.20*

*** AWS Specification G type, the undiluted weld metal shall have mot less than minimum specified for one or more of the following alloys : Mn, Ni, Cr, Mo or V.**

Welding Efficiency

❖ Deposition Rate & Efficiency

Consumable (Size)	Welding Conditions		Deposition Efficiency(%)	Deposition Rate kg/hr(lb/hr)
	Amp.(A)	Volt.(V)		
SC-90 1.2mm (0.045in)	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-90 1.4mm (0.052in)	300	31	90~92	5.1
	350	36	91~93	5.8
	400	35	91~93	6.5
SC-90 1.6 mm (1/16in)	300	33	87~89	4.8
	350	36	90~91	5.4
	400	38	90~91	6.2
	450	42	91~92	7.8
Remark			Deposition efficiency =(Deposited metal weight/ Wire weight used)×100	Deposition rate =(Deposited metal weight/ Welding time,min.)×60

* Shielding Gas : 100% CO_2

Proper Welding Condition

❖ Proper Current Range of 1 Pole Auto Carriage

Consumable	Shielding Gas	Welding Position	Wire Dia.		
			1.2mm (0.045in)	1.4mm (0.052in)	1.6mm (1/16in)
SC-90	100%CO_2	F & HF	250~300Amp	300~350Amp	330~400Amp

❖ F No & A No

F No	A No
6	1