HYUNDAI WELDING

Rev. 05

SC-71Ni2SR

FLUX CORED ARC WELDING CONSUMABLE
FOR WELDING OF LOW-TEMPERATURE
SERVICE STEEL

2024.12

HYUNDAI WELDING CO., LTD.

SC-71Ni2SR

❖ Specification

AWS A5.29	E71T1-GC
(AWS A5.29M	E491T1-GC
EN ISO 17632-A	T 42 6 2Ni P C1 1

❖ Applications

SC-71Ni2SR is a titania type flux cored wire for welding of low-temperature service steel

❖ Characteristics on Usage

SC-71Ni2SR is a titania-type flux cored wire to be used with 100%CO_2 gas shielding. It provide excellent notch toughness at low temperature, not only as-welded but also stress relieved state

❖ Note on Usage

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

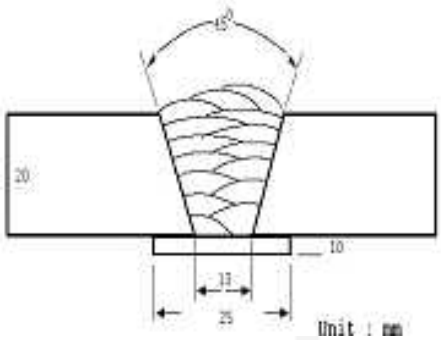
2. Use 100% CO_2 gas.

SC-71Ni2SR

Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Welding Position	: 1G(PA)
Diameter(mm)	: 1.2mm
Shielding Gas	: 100% CO_2
Flow Rate(ℓ /min.)	: 20
Amp./ Volt.	: 260~280 / 29~31
Stick-Out(mm)	: 20~25
Pre-Heat(℃)	: R.T .
Interpass Temp.(℃)	: 150±15
Polarity	: DC(+)

❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test J(ft · lbs)			Remark
	YS MPa (lbs/in²)	TS MPa (lbs/in²)	EL (%)	-60℃	-70℃	-75℃	
SC-71Ni2SR	530(77,000)	570(83,000)	30.0	110(81)	98(72)	69(51)	As welded
	510(74,000)	550(80,000)	32.0	102(75)	79(58)	-	PWHT (550℃×2hr)
AWS A5.29	≥ 400 (58,000)	490~620 (70,000~ 90,000)	≥22	-			-

❖ Chemical Analysis of all weld metal(wt%)

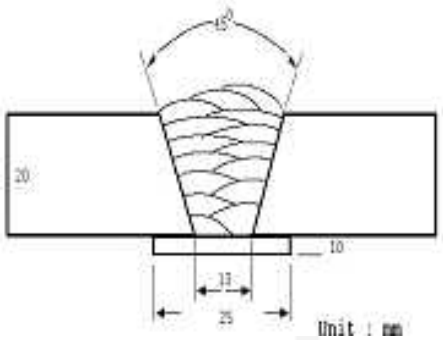
Consumable	C	Si	Mn	P	S	Ni
SC-71Ni2SR	0.04	0.28	0.9	0.012	0.011	2.0
AWS A5.29 E71T1-GC	-	≤1.0	≥0.5	≤0.03	≤0.03	≥0.5

SC-71Ni2SR

Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Welding Position	: 1G(PA)
Diameter(mm)	: 1.4mm
Shielding Gas	: 100% CO_2
Flow Rate(ℓ /min.)	: 20
Amp./ Volt.	: 290~310 / 29~32
Stick-Out(mm)	: 20~25
Pre-Heat(℃)	: R.T .
Interpass Temp.(℃)	: 150±15
Polarity	: DC(+)

❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test (Joule)			Remark
	YS MPa (lbs/in²)	TS MPa (lbs/in²)	EL (%)	-60℃	-70℃	-75℃	
SC-71Ni2SR	535(78,000)	575(83,000)	30.0	113(83)	92(68)	66(49)	As welded
	515(75,000)	555(80,000)	31.5	98(72)	80(59)	-	PWHT (550℃×2hr)
AWS A5.29	≥ 400 (58,000)	490~620 (70,000~ 90,000)	≥22	-			-

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Ni
SC-71Ni2SR	0.04	0.27	0.9	0.012	0.011	2.1
AWS A5.29 E71T1-GC	-	≤1.0	≥0.5	≤0.03	≤0.03	≥0.5

Welding Efficiency

❖ Deposition Rate & Efficiency

Consumable (size)	Welding Conditions		Deposition Efficiency(%)	Deposition Rate(kg/hr)
	Amp.(A)	Volt.(V)		
SC-71Ni2SR 1.2mm	200	26	84~86	2.4
	250	30	84~86	3.5
	300	33	85~87	4.5
SC-71Ni2SR 1.4mm	250	27	84~86	2.4
	300	31	84~86	3.3
	350	35	85~87	4.4
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(mm)	:	**1.2**	**Amps(A) / Volts(V)**	:	**230 / 24**
Shielding Gas	:	**100%CO_2**	**Stick-Out(mm)**	:	**20~25**
Flow Rate(ℓ /min.)	:	**20**	**Welding Speed**	:	**30 cpm**
Welding Position	:	**1G (PA)**	**Current Type & Polarity**	:	**DC(+)**

❖ Hydrogen Analysis Using Gas Chromatography Method

Hydrogen Evolution Time	:	**72 hrs**
Evolution Temp.	:	**45 ℃**
Barometric Pressure	:	**780 mm-Hg**

❖ Result(㎖/100g Weld Metal)

X1	X2	X3	X4
4.2	**4.4**	**4.3**	**4.3**

Average Hydrogen Content 4.3 ㎖ / *100g Weld Metal*

❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Wire Dia. (mm)
			1.2mm
SC-71Ni2SR	100% CO_2	Flat	110~280 Amp
		V-up Over head	110~240 Amp
		V-down	110~280 Amp

❖ AUTHORIZED APPROVAL DETAILS

Welding Position	Register of shipping & Size(mm)		
	LR	DNV	KR
All V-Down	4YS H5 1.2~1.4	VYMS(H5) 1.2~1.4	L3SG(C) H5 1.2~1.4

❖ F No & A No

F No	A No
6	10