

S-Ni2 X SA-08

SUBMERGED ARC WELDING CONSUMABLES
FOR WELDING OF INCONELL & Special Alloy

2024.04

HYUNDAI WELDING CO., LTD.



❖ Specification

Flux	JIS Z3333	
S-Ni2	FS9Ni-H	
Wire	AWS A5.14	JIS Z3333
SA-08	ERNiMo-8	YS9Ni

❖ Applications

Horizontal and flat-position welding of 9%Ni steel used cryogenic Applications such as ultra-low temperature storage tanks of LNG, Ethylene, Liquid nitrogen etc.

❖ Characteristics on Usage

S-Ni2 is the agglomerated flux for welding 9%Ni steel in combination With hastelloy type electrode SA-08

❖ Note on Usage

1. Dry the flux at 300~350°C (572~662°F) for 120 minutes before use.
2. When the flux height is excessive, poor bead appearance may occur.
3. Remove rust, scales, oil, paint, water, dirt and slag of tack welds from the groove to obtain sound weld metal.



Welding Consumables for Test

❖ Flux

Consumable	Chemical Composition, wt%			
	SiO ₂ +TiO ₂	CaO+MgO	Al ₂ O ₃ +MnO	CaF ₂
S-Ni2	5	10	35	55

Consumable	Particle Size (Mesh)	Type of Flux	B.I	H ₂ O(1000℃)/CO ₂ (%)
S-Ni2	10 X 48	Agglomerated	3.5	0.05/0.60

❖ Electrode

Consumable	Dia.	Chemical Composition, wt%										
	mm(in)	C	Si	Mn	P	S	Ni	Cr	Mo	Fe	W	Cu
SA-08	2.4(3/32)	0.01	0.22	0.01	0.004	0.001	68.21	2.09	18.74	5.6	3.09	0.10
AWS A5.14 ERNiCr-3		≤0.10	≤0.50	≤0.10	≤ 0.015	≤ 0.015	≥ 60.0	0.5 - 3.5	18.0 - 21.0	≤10.0	2.0 - 4.0	≤ 0.50

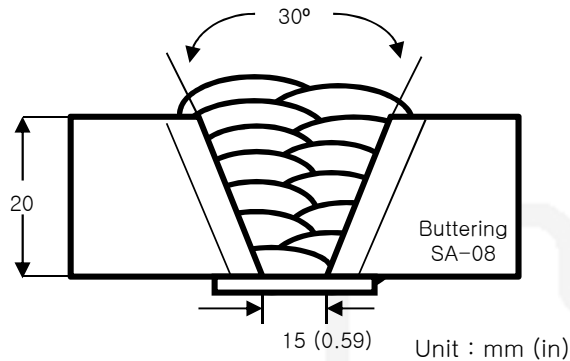
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Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Base metal	: A 36(Buttering SA-08)
Particle size	: 10 X 48
Flux type	: Agglomerated
Amp./ Volt./CPM	: 380 / 30 / 50
Stick-out mm (in)	: 30 (1.18)
Pre-Heat(℃)	: R.T .
Interpass Temp.(℃)	: <165
Polarity	: DC+

❖ Mechanical Properties of All weld metal

Consumables	Polarity	PWHT Condition	Tensile Test			CVN Impact Test J (ft·lbs)
			YS (lbs/in ²)	TS (lbs/in ²)	EI (%)	-196℃ (-321°F)
S-Ni2 X SA-08	DC+	As welded	505(73,000)	729(106,000)	38.2	70(51)
JIS Z3333 FS9Ni-H/YS9Ni	-	-	≥365(53,000)	≥660(96,000)	≥ 25	≥34J at -196℃ (-321°F)

❖ Chemical Analysis of All weld metal(wt%)

Consumables	Polarity	C	Si	Mn	P	S	Ni	Cr	Mo	Fe	W
S-Ni2 X SA-08	DC+	0.03	0.34	0.32	0.010	0.010	68.8	2.13	17.1	8.3	2.3
JIS Z3333 FS9Ni-H/YS9Ni	≤0.10	≤ 0.10	≤ 1.5	≤ 3.5	≤ 0.020	≤ 0.015	≥ 55.0	-	10.0 - 25.0	≤ 20.0	-

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