



HYUNDAI
W E L D I N G

Rev. 00

Supercored 70NS

METAL CORED ARC WELDING CONSUMABLE
FOR WELDING OF MILD & 490MPa CLASS
HIGH TENSILE STEEL

HYUNDAI WELDING CO., LTD.



Supercored 70NS

❖ **Specification**

AWS A5.18

E70C-6M

EN ISO 17632-A

T 42 2 M M 3 H5

❖ **Applications**

Supercored 70NS is used for welding in shipbuilding, machinery, bridge Construction, structural fabrication, automated of robotic welding

❖ **Characteristics on Usage**

Supercored 70Ns is a metal- cored wire which combines the high deposition rate of FCW with the high efficiencies of solid wire, provides exceptionally smooth and stable arc, low spatter and minimal slag coverage.

❖ **Note on Usage**

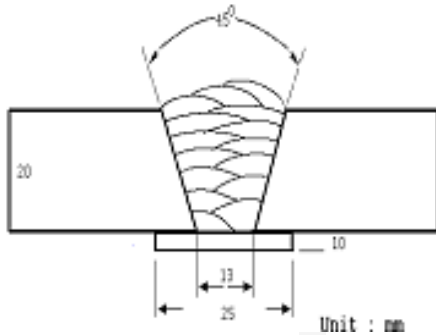
1. Proper preheating(50~ 150℃) and interpass temperature must be used in order to release hydrogen which may cause cracking in weld metal when electrodes are used for medium and heavy plates
2. One- side welding defects such as hot cracking in may occur with wrong welding parameter such as high welding speed.
3. Use Ar + 20- 25% 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	: Ar + 20%CO ₂
Flow Rate (ℓ / min.)	: 20
Amp. / Volt.	: 280 / 29
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(%)	-20 °C	-30 °C
Supercored 70NS	480	550	25.0	75	50
AWS A5.18 E70C-6M	≥ 400	≥ 490	≥ 22	≥ 27J at -30 °C	

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
Supercored 70NS	0.05	0.55	1.45	0.011	0.010
AWS A5.18 E70C-6M	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03

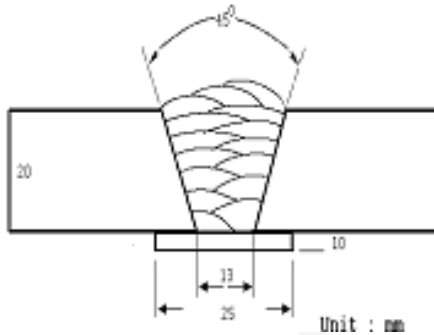
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Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Diameter (mm)	: 1.4mm
Shielding Gas	: Ar + 20%CO ₂
Flow Rate (ℓ / min.)	: 20
Amp. / Volt.	: 300 / 30
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(%)	-20 °C	-30 °C
Supercored 70NS	470	535	25.5	70	50
AWS A5.18 E70C-6M	≥ 400	≥ 490	≥ 22	≥ 27J at -30 °C	

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
Supercored 70NS	0.05	0.54	1.40	0.011	0.010
AWS A5.18 E70C-6M	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03

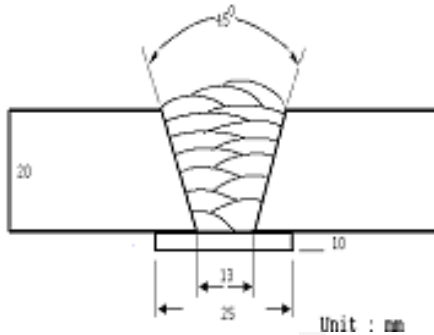
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Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Diameter (mm)	: 1.6mm
Shielding Gas	: Ar + 20%CO ₂
Flow Rate (ℓ / min.)	: 20
Amp. / Volt.	: 330 / 30
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(%)	-20 °C	-30 °C
Supercored 70NS	475	540	25.5	72	52
AWS A5.18 E70C-6M	≥ 400	≥ 490	≥ 22	≥ 27J at -30 °C	

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
Supercored 70NS	0.05	0.55	1.50	0.012	0.010
AWS A5.18 E70C-6M	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03

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Welding Efficiency

❖ Deposition Rate & Efficiency

Consumable (size)	Welding Conditions		Deposition Efficiency(%)	Deposition Rate(kg/hr)
	Amp.(A)	Volt.(V)		
Supercored 70NS 1.2mm	200	24	90~92	2.7
	250	28	93~95	4.0
	300	30	95~96	5.4
	350	33	95~96	7.2
Supercored 70NS 1.6mm	350	32	93~95	6.0
	400	34	94~96	7.0
	450	36	95~96	8.1
Remark			Deposition efficiency =(Deposited metal weight/ Wire weight used)×100	Deposition rate =(Deposited metal weight/ Welding time,min.)×60

* Shielding Gas : 80%Ar+20%CO₂



Diffusible Hydrogen Content

❖ Welding Conditions

Diameter(mm)	: 1.4	Amps(A) / Volts(V)	: 300 / 30
Shielding Gas	: Ar + 20%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
4.2	3.8	4.0	4.1

Average Hydrogen Content 4.0 ml / 100g Weld Metal



Proper Welding Condition

❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Wire Dia. (mm)		
			1.2mm	1.4mm	1.6mm
Supercored 70NS	Ar+20%CO ₂	F & HF	230~300Amp	260~340Amp	290~360Amp

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Approvals

❖ Shipping Approvals

Welding Position	Register of shipping & Size(mm)						
	KR	ABS	LR	BV	DNV	GL	NK
F, HF V-up	-	3SAH5, 3YSA 0.9~1.6	3S, 3YSH5 0.9~1.6	SA3M, SA3YMHHH 0.9~1.6	IIIYMSH5 0.9~1.6	3YH5S 0.9~1.6	-

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