

Supercored 70NS

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

2022.02

HYUNDAI WELDING CO., LTD.



Supercored 70NS

❖ Specification

AWS A5.18	E70C-6M
(AWS A5.18M)	E48C-6M)
EN ISO 17632-A	T42 3 M M21 3 H5
JIS Z 3313	T49 3 T15-0 M A
AWS D1.8	

Wire Dia. mm(in)		
1.2(0.045)	1.4(0.052)	1.6(1/16)

* AWS D1.8 is available upon request

❖ 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

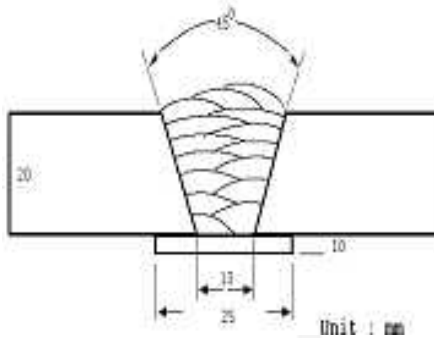
1. For preheating guidelines, please refer to your local standards and codes relative to your best practices
2. One-side welding defects such as hot cracking in may occur with wrong welding parameter such as high welding speed.
3. Use Ar + 20-25% CO₂ gas.



Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Welding Position	: 1G(PA)
Diameter	: 1.2mm (0.045in)
Shielding Gas	: 80%Ar + 20%CO ₂
Flow Rate	: 20 ℓ /min
Amp./ Volt.	: 280A / 30V
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/in ²)	TS MPa (lbs/in ²)	EL (%)	-18℃ (0°F)	-29℃ (-20°F)
Supercored 70NS	480 (70,000)	550 (80,000)	25.0	75 (55)	50 (37)
AWS A5.18 E70C-6M	≥ 400 (58,000)	≥ 480 (70,000)	≥ 22	≥ 27J at -29℃ (≥ 20ft · lbs at -20°F)	

❖ 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

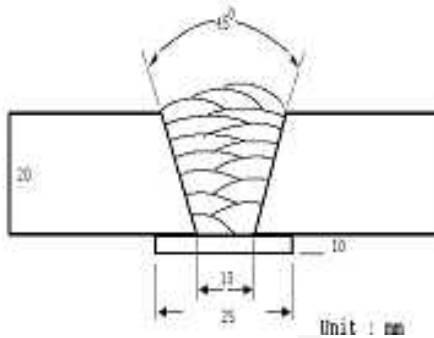
This information is provided solely for the purpose of confirming product conformance with applicable standards. The serviceability of a product or structure utilizing this type of information is and must be the sole responsibility of the builder/user. Many variables beyond the control of HYUNDAI WELDING CO., LTD. affect the results obtained in applying this type of information. These variables include, but are not limited to, welding procedure, shielding gas, plate chemistry and temperature, weldment design, fabrication methods and service requirements.



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	: 80%Ar + 20%CO ₂
Flow Rate	: 20 ℓ /min
Amp./ Volt.	: 280A / 30V
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/in ²)	TS MPa (lbs/in ²)	EL (%)	-18℃ (0°F)	-29℃ (-20°F)
Supercored 70NS	470 (68,000)	535 (77,000)	25.0	70 (52)	50 (37)
AWS A5.18 E70C-6M	≥ 400 (58,000)	≥ 480 (70,000)	≥ 22	≥ 27J at -29℃ (≥ 20ft · lbs at -20°F)	

❖ 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

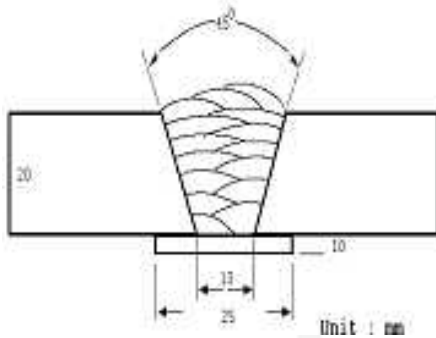
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Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Welding Position	: 1G(PA)
Diameter	: 1.6mm (1/16in)
Shielding Gas	: 80%Ar + 20%CO ₂
Flow Rate	: 20 ℓ /min
Amp./ Volt.	: 330A / 31V
Stick-Out	: 20~25mm (0.79~0.98in)
Pre-Heat	: R.T .
Interpass Temp.	: 150±15°C (302±59°F)
Polarity	: DC(+)

❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test J(ft · lbs)	
	YS MPa (lbs/in ²)	TS MPa (lbs/in ²)	EL (%)	-18°C (0°F)	-29°C (-20°F)
Supercored 70NS	475 (69,000)	540 (78,000)	25.5	72 (53)	52 (38)
AWS A5.18 E70C-6M	≥ 400 (58,000)	≥ 480 (70,000)	≥ 22	≥ 27J at -29°C (≥ 20ft · lbs at -20°F)	

❖ 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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Diffusible Hydrogen Content

❖ Welding Conditions

Diameter	: 1.4 mm (0.052in)	Amps / Volts	: 300A / 30V
Shielding Gas	: 80%Ar + 20%CO ₂	Stick-Out	: 20~25mm (0.79~0.98in)
Flow Rate	: 20 ℓ /min	Welding Speed	: 30 cm/min (12 in/min)
Welding Position	: 1G (PA)	Current Type & Polarity	: DC(+)

❖ Hydrogen Analysis Using Gas Chromatography Method

Hydrogen Evolution Time	: 72 hrs
Evolution Temp.	: 45 °C (113°F)
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



Welding Efficiency

❖ Deposition Rate & Efficiency

Wire Size	Welding Conditions		Wire Feed Speed m/min (in/min)	Deposition Efficiency(%)	Deposition Rate(kg/hr)
	Amp.(A)	Volt.(V)			
1.2mm (0.045in)	200	24	6.7(260)	90~92	2.7(5.9)
	250	28	9.8(390)	93~95	4.0(8.8)
	300	30	12.7(500)	95~96	5.4(11.9)
1.6mm (1/16in)	230	27	3.8(150)	91~93	2.9(6.4)
	280	29	5.1(200)	92~94	4.2(9.2)
	340	30	6.2(244)	94~97	5.2(11.4)
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



Proper Welding Condition

❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Wire Dia.		
			1.2mm (0.045in)	1.4mm (0.052in)	1.6mm (1/16in)
Supercored 70NS	80%Ar+ 20%CO ₂	F & HF	200~300Amp	260~320Amp	290~340Amp

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Approvals

❖ Shipping Approvals

Welding Position	Register of shipping & Size Mm(in)				
	KR	ABS	LR	BV	DNV
F, HF V-up	3YSG(M2)H5 0.9~1.6 (0.035~1/16)	3SAH5, 3YSA 0.9~1.6 (0.035~1/16)	3S, 3YSH5 0.9~1.6 (0.035~1/16)	SA3M, SA3YMHHH 0.9~1.6 (0.035~1/16)	IIIIYMS(H5) 0.9~1.6 (0.035~1/16)

❖ F No & A No

F No	A No
6	1