

Supercored 70NS

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

2018.02

HYUNDAI WELDING CO., LTD.

Specification	AWS A5.36	E70T15-M21A2-CS1
	(AWS A5.36M	E490T15-M21A3-CS1)
	(AWS A5.18	E70C-6M)
	EN ISO 17632-A	T 42 3 M M21 3 H5
* Applications	Supercored 70NS is u Construction, structur	used for welding in shipbuilding, machinery, bridge al fabrication, automated of robotic welding
Characteristics on Usage	Supercored 70Ns is a deposition rate of Fe provides exceptional minimal slag coverage	a metal-cored wire which combines the high CW with the high efficiencies of solid wire, ly smooth and stable arc, low spatter and e.
Note on Usage	 Proper preheating(5) be used in order to in weld metal when plates One-side welding do with wrong welding Use Ar + 20-25% C 	0~150°C) and interpass temperature must release hydrogen which may cause cracking electrodes are used for medium and heavy efects such as hot cracking in may occur parameter such as high welding speed. CO ₂ gas.

Mechanical Properties & Chemical Composition of All Weld Metal

Welding Conditions



[Joint Preparation & Layer Details]

Method by AWS Spec.
: 1G(PA)
: 1.2mm (0.045in)
: 80%Ar + 20%CO ₂
: 20 ℓ /min
: 280A / 30V
: 20~25mm (0.79~0.98in)
: R.T.
: 150±15℃ (302±59°F)
: DC(+)

Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Imp J(ft	act Test Ibs)
Supercored 70NS	YS	TS	EL	−20 ℃	−30 ℃
	Mpa(ksi)	Mpa(ksi)	(%)	(−4°F)	(−22°F)
Supercored 7005	480(70)	550(80)	25.0	75(55)	50(37)
AWS A5.36	≥ 400	490~660	≥ 22	≥27J at –30℃	
E70T15-M21A2-CS1	(58)	(70~95)		(≥20ft · Ibs at −22°F)	

Chemical Analysis of all weld metal(wt%)

Consumable	С	Si	Mn	Р	S
Supercored 70NS	0.05	0.55	1.45	0.011	0.010
AWS A5.36 E70T15-M21A2-CS1	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03

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Method by AWS Spec.

Mechanical Properties & Chemical Composition of All Weld Metal

*** Welding Conditions**



[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 Imp J(ft	act Test Ibs)	
Supercored 70NS	YS	TS	EL	−20 ℃	−30 ℃
	Mpa(ksi)	Mpa(ksi)	(%)	(−4°F)	(−22°F)
Supercored 70NS	470(68)	535(78)	25.0	70(52)	50(37)
AWS A5.36	≥ 400	490~660	≥ 22	≥27J at -30℃	
E70T15-M21A2-CS1	(58)	(70~95)		(≥20ft · lbs at -22°F)	

Chemical Analysis of all weld metal(wt%)

Consumable	С	Si	Mn	Р	S
Supercored 70NS	0.05	0.54	1.40	0.011	0.010
AWS A5.36 E70T15-M21A2-CS1	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03

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Supercored 70NS

Method by AWS Spec.

Mechanical Properties & Chemical Composition of All Weld Metal

Welding Conditions

[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℃(302±59°F)
Polarity	: DC(+)

Mechanical Properties of all weld metal

Consumable		Tensile Test	CVN Imp J(ft	oact Test Ibs)	
Supercored 70NS	YS Mpa(ksi)	TS Mpa(ksi)	EL (%)	−20 ℃ (−4°F)	-30℃ (-22°F)
	475(69)	540(78)	25.5	72(53)	52(38)
AWS A5.36 E70T15-M21A2-CS1	≥ 400 (58)	490~660 (70~95)	≥ 22	≥27J at –30℃ (≥20ft · lbs at −22°F)	

Chemical Analysis of all weld metal(wt%)

Consumable	С	Si	Mn	Р	S
Supercored 70NS	0.05	0.55	1.50	0.012	0.010
AWS A5.36 E70T15-M21A2-CS1	≤ 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	:	Ar + 20%CO ₂	Stick-Out	:	20~25mm
Flow Rate	:	20 ℓ /min			(0.79~0.98in)
Welding Position	:	1G (PA)	Welding Speed	:	30 cm/min (12 in/min)
			Current Type & Polarity	:	DC(+)

Hydrogen Analysis Using Gas Chromatography Method

Hydrogen Evolution Time	:	72 hrs
Evolution Temp.	:	45 ℃ (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

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Welding Efficiency

Deposition Rate & Efficiency

Wire Size	Welding Conditions		Wire Feed	Deposition	Deposition	
	Amp.(A)	Volt.(V)	m/min (in/min)	Efficiency(%)	Hate(kg/hr)	
	200	24	6.7(260)	90~92	2.7(5.9)	
1.2mm (0.045in)	250	28	9.8(390)	93~95	4.0(8.8)	
	300	30	12.7(500)	95~96	5.4(11.9)	
	350	33	15.7(620)	95~96	7.2(15.8)	
	350	32	8.1(320)	93~95	6.0(13.2)	
1.6mm (1/16in)	400	34	9.8(390)	94~96	7.0(15.4)	
	450	36	11.0(430)	95~96	8.1(17.8)	
R	emark			Deposition efficiency =(Deposited metal weight/ Wire weight used)×100	Deposition rate =(Deposited metal weight/ Welding time,min.)×60	

* Shielding Gas : 80%Ar+20%CO2

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Proper Welding Condition

Proper Current Range

		Welding Position	Wire Dia.		
Consumable	Shielding Gas		1.2mm (0.045in)	1.4mm (0.052in)	1.6mm (1/16in)
Supercored 70NS	Ar+20%CO ₂	F & HF	230~300Amp	260~340Amp	290~360Amp

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Approvals

♦ Shipping Approvals

Welding	Register of shipping & Size(mm)							
Position	KR	ABS	LR	BV	DNV	GL	NK	
F,HF		3SAH5, 3YSA	3S, 3YSH5	SA3M, SA3YMHHH	IIIYMSH5	3YH5S		
V-up	0.9~1.6 (0.035~1	0.9~1.6 (0.035~1/16)	0.9~1.6 (0.035~1/16)	0.9~1.6 (0.035~1/16)	0.9~1.6 (0.035~1/16)	0.9~1.6 (0.035~1/16)	_	

F No & A No

F No	A No		
6	1		

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