HYUNDAI WELDING

Rev. 09

Supercored 70B

BASIC TYPE FLUX CORED ARC WELDING CONSUMABLE
FOR MILD & 490MPa CLASS HIGH TENSILE STEEL

2024.12

HYUNDAI WELDING CO., LTD.

Supercored 70B

❖ Specification

AWS A5.20	E71T-5M-J
(AWS A5.20M	E491T-5M-J)
EN ISO 17632-A	T42 4 B M21 3 H5
JIS Z3313	T49 4 T5-1 M A-U

❖ Applications

Mild and 490MPa class high tensile steels for shipbuilding, machinery Structures, bridge and heavy plant facilities.

❖ Characteristics on Usage

Supercored 70B is a basic type flux cored wire with excellent characteristics and is suitable for steel with tensile strength up to 600MPa. Deposited metal show superior crack resistance, excellent toughness at low temperature of –20~–50℃(–4~–58˚F)

❖ Note on Usage

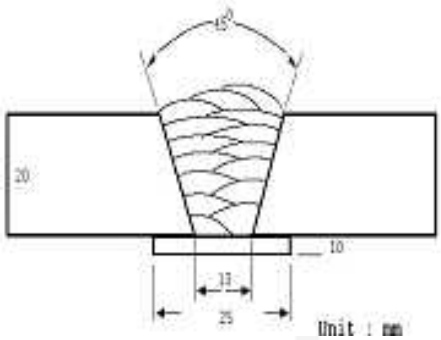
1. For preheating guidelines, please refer to your local standards and codes relative to your best practices.

2. Use Ar + 20~25 CO_2 gas for welding.

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 (0.045in)
Shielding Gas	:	Ar+20% CO_2
Flow Rate	:	20 ℓ /min
Amp./ Volt.	:	270A / 28V
Stick-Out(mm)	:	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/in²)	TS MPa (lbs/in²)	EL (%)	-18℃ (0°F)	-40℃ (0°F)
Supercored 70B	450 (65,000)	520 (75,000)	32.0	110 (81)	78 (58)
AWS A5.20 E71T-5M-J	≥ 390 (57,000)	490~670 (71,000~ 97,000)	≥ 22.0	≥27J at -40℃ (≥20ft · lbs at -40°F)	

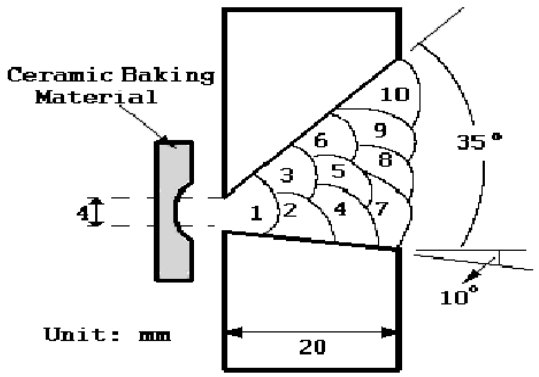
❖ Chemical Analysis of all weld metal(wt%)

Brand Name	C	Si	Mn	P	S
Supercored 70B	0.06	0.43	1.33	0.011	0.013
AWS A5.20 E71T-5M-J	≤ 0.12	≤ 0.90	≤ 1.75	≤ 0.03	≤ 0.03

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 (0.045in)
Shielding Gas	:	Ar+20% CO_2
Flow Rate(ℓ /min.)	:	20 ℓ /min
Welding Position	:	Horizontal, 2G(PC)
Stick-Out(mm)	:	20~25 (0.79~0.98in)
Pre-Heat(℃)	:	R.T .
Interpass Temp.(℃)	:	150±15 (302±59°F)
Polarity	:	DC(-)

❖ Welding parameters

Consumable	Pass	Current (A)	Voltage (V)	Speed cm/min (in/min)	Heat Input kJ/cm (ft-lb/in)	Interpass Temp. ℃ (°F)
Supercored 70B	1	150	23	7.0 (2.7)	29.6 (55.4)	18 (64)
	2	170	24	15.5 (6.1)	15.8 (29.6)	126 (259)
	3	190	25	19.8 (7.8)	14.4 (27.0)	119 (246)
	4	190	25	16.7 (6.6)	17.1 (32.0)	113 (235)
	5	190	25	14.4 (5.7)	19.8 (37.1)	102 (216)
	6	190	25	26.1 (10.3)	10.8 (20.2)	94 (201)
	7	190	25	16.8 (6.6)	16.9 (31.7)	105 (221)
	8	190	25	20.0 (7.9)	14.3 (26.8)	96 (205)
	9	190	25	20.9 (8.2)	13.6 (25.5)	84 (183)
	10	190	25	34.0 (13.4)	8.4 (15.7)	102 (216)

Mechanical Properties & Chemical Composition of All Weld Metal

❖ Mechanical Properties of all weld metal

Consumable	Size Mm (in)	CVN Impact Test J(ft · lbs)		
Supercored 70B	1.2 (0.045)	-18℃(0°F)	-29℃(-20°F)	-40℃(-40°F)
		123 (91)	98 (72)	85 (63)

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
Supercored 70B	0.06	0.45	1.38	0.013	0.011

Welding Efficiency

❖ Deposition Rate & Efficiency

Wire Size	Welding Conditions		Deposition Efficiency %	Deposition Rate kg/hr (lb/hr)
	Amp.(A)	Volt.(V)		
1.2mm (0.045in)	130	20	82~83	2.0 (4.4)
	180	22	83~84	2.9 (6.4)
	250	25	86~87	4.7 (10.4)
	300	28	87~88	6.5 (14.3)
Remark			Deposition efficiency =(Deposited metal weight/ Wire weight used)×100	Deposition rate =(Deposited metal weight/ Welding time,min.)×60

* Shielding Gas : Ar + 20% CO_2 , Polarity : DC(-)

Diffusible Hydrogen Content

❖ Welding Conditions

Diameter	:	**1.2mm (0.045in)**	**Amps / Volts**	:	**230A / 24V**
Shielding Gas	:	**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 ℃ (113°F)**
Barometric Pressure	:	**760 mm-Hg**

❖ Result(㎖/100g Weld Metal)

X1	X2	X3	X4
4.2	**4.7**	**4.7**	**4.4**

Average Hydrogen Content **4.5 ㎖ / *100g Weld Metal***

Proper Welding Condition

❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Wire Dia.			
			1.0mm (0.039in)	1.2mm (0.045in)	1.4mm (0.052in)	1.6mm (1/16in)
Supercored 70B	Ar + 20%CO_2	F & HF	110 ~280Amp	110 ~280Amp	110 ~280Amp	120 ~300Amp
		V-up, OH	70 ~130Amp	80 ~150Amp	90 ~180Amp	90 ~200Amp

Approvals

❖ Shipping Approvals

Welding Position	Register of shipping & Size mm (in)						
	KR	ABS	LR	BV	DNV	GL	NK
F, V	–	3YSA H5 1.0~2.0 (0.039~5/64)	3Y, 3YS H5 1.0~2.0 (0.039~5/64)	SA3YM HHH 1.0~2.0 (0.039~5/64)	IIIYMS H5 1.0~2.0 (0.039~5/64)	3YH5S 1.0~2.0 (0.039~5/64)	–

❖ F No & A No

F No	A No
6	1