HYUNDAI WELDING

Rev. 00

Supercored 70B

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

HYUNDAI WELDING CO., LTD.

Supercored 70B

❖ Specification

AWS A5.20	E71T-5M-J
EN ISO 17632-A	T 42 4 B M 3

❖ 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

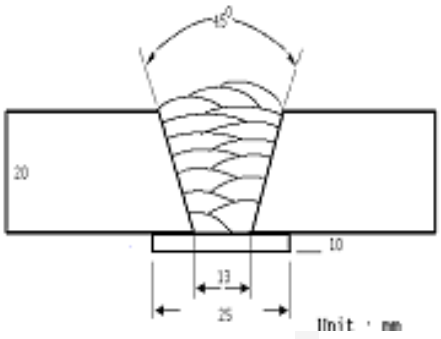
1. Proper preheating(50~150℃) and interpass temperature must be used in order to release hydrogen which may cause cracking in weld metal when electrodes are used for medium and heavy plates

2. 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]

Diameter(mm)	:	1.2mm
Shielding Gas	:	Ar+20% CO_2
Flow Rate(ℓ /min.)	:	20
Amp./ Volt.	:	270 / 28
Stick-Out(mm)	:	20~25
Pre-Heat(℃)	:	R.T .
Interpass Temp.(℃)	:	150±15
Polarity	:	DC(-)

❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test (Joule)	
Supercored 70B	YS(MPa)	TS(MPa)	EL(%)	-20℃	-40℃
	450	520	32	110	78
AWS A5.20 E71T-5MJ	≥ 390	490~670	≥ 22	≥27J at -40℃	

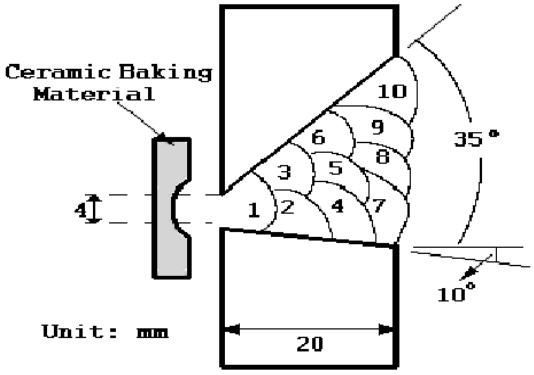
❖ Chemical Analysis of all weld metal(wt%)

Brand Name	C	Si	Mn	P	S
Supercored 70B	0.06	0.43	1.33	0.011	0.013
AWS A5.20 E71T-5MJ	≤ 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]

Diameter(mm)	:	1.2mm
Shielding Gas	:	Ar+20% CO_2
Flow Rate(ℓ /min.)	:	20
Welding Position	:	Horizontal, 2G(PC)
Stick-Out(mm)	:	20~25
Pre-Heat(℃)	:	R.T .
Interpass Temp.(℃)	:	150±15
Polarity	:	DC(-)

❖ Welding parameters

Consumable	Pass	Current (A)	Voltage (V)	Speed (cm/min)	Heat Input (kJ/cm)	Interpass Temp.(℃)
Supercored 70B	1	150	23	7.0	29.6	18
	2	170	24	15.5	15.8	126
	3	190	25	19.8	14.4	119
	4	190	25	16.7	17.1	113
	5	190	25	14.4	19.8	102
	6	190	25	26.1	10.8	94
	7	190	25	16.8	16.9	105
	8	190	25	20.0	14.3	96
	9	190	25	20.9	13.6	84
	10	190	25	34.0	8.4	102

Mechanical Properties & Chemical Composition of All Weld Metal

❖ Mechanical Properties of all weld metal

Consumable	Size(mm)	CVN Impact Test (Joule)		
Supercored 70B	1.2	-20℃	-30℃	-40℃
		123	98	85

❖ 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

Consumable (Size)	Welding Conditions		Deposition Efficiency(%)	Deposition Rate(kg/hr)
	Amp.(A)	Volt.(V)		
Supercored 70B 1.2mm	130	20	82~83	2.0
	180	22	83~84	2.9
	250	25	86~87	4.7
	300	28	87~88	6.5
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(mm)	:	**1.2**	**Amps(A) / Volts(V)**	:	280 / 28
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 ℃
Evolution Temp.	:	25 ℃	**Exposure Condition**	:	80%RH−25℃
Barometric Pressure	:	780 mm−Hg			

❖ Result(㎖/100g Weld Metal)

X1	X2	X3	X4
2.2	**2.7**	**2.7**	**2.4**

Average Hydrogen Content 2.5 ㎖ / *100g Weld Metal*

Proper Welding Condition

❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Wire Dia. (mm)			
			1.0mm	1.2mm	1.4mm	1.6mm
Supercored 70B	Ar + 20%CO_2	F & HF	150 ~280Amp	170 ~320Amp	200 ~350Amp	200 ~400Amp
		V-up, OH	70 ~130Amp	80 ~150Amp	90 ~180Amp	90 ~200Amp

Approvals

❖ Shipping Approvals

Welding Position	Resister of shipping & Size(mm)						
	KR	ABS	LR	BV	DNV	GL	NK
F, V	-	3YSA H5 1.0~2.0	3Y, 3YS H5 1.0~2.0	SA3YM HHH 1.0~2.0	IIIYMS H5 1.0~2.0	3YH5S 1.0~2.0	-