HYUNDAI WELDING

Rev. 00

Supercored 70SB

BASIC TYPE FLUX CORED ARC WELDING
CONSUMABLES FOR WELDING OF
490MPa CLASS HIGH TENSILE STEEL

HYUNDAI WELDING CO., LTD.

Supercored 70SB

❖ Specification

AWS A5.20	E71T-5C
EN ISO 17632-A	T42 3 B C 2

❖ Applications

Supercored 70SB can be used on multipass welding of medium to heavy section carbon-manganese steel and it`s suited for welding of mild and 490MPa high tensile strength steels for ship-building, machinery structures, bridge construction and heavy plant.

❖ Characteristics on Usage

Supercored 70SB is a basic flux cored wire with excellent characteristics and is suitable for steel with a tensile strength up to 600MPa.

It`s flux cored wire which deposits very low hydrogen weld metal, So deposited metal shows superior crack resistance, excellent toughness at low temperature at -20℃~-30℃

❖ 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.

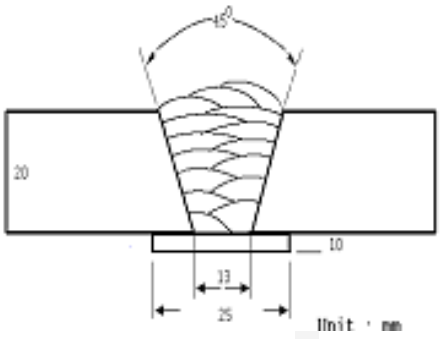
2. One-side welding defects such as hot cracking may occur with wrong welding parameter such as high welding speed.

3. Use 100% CO_2 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	:	100% CO_2
Flow Rate(ℓ /min.)	:	20~22
Amp./ Volt.	:	280 / 31
Stick-Out(mm)	:	20
Pre-Heat(℃)	:	R.T .
Interpass Temp.(℃)	:	150±15
Polarity	:	DC(±)

❖ Mechanical Properties of all weld metal

Consumable	Polarity	Tensile Test			CVN Impact Test (Joule)	
Supercored 70SB	-	YS(MPa)	TS(MPa)	EL(%)	-20℃	-30℃
	DC-	570	620	26	112	70
	DC+	500	565	31	125	80
AWS A5.20 E71T-5C	-	≥ 390	490~670	≥ 22	≥27J at -30℃	

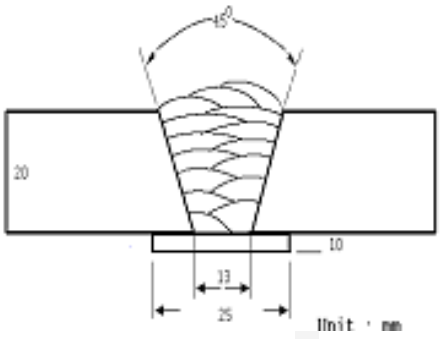
❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
Supercored 70SB	0.06	0.39	1.42	0.013	0.008
AWS A5.20 E71T-5C	≤ 0.12	≤ 0.9	≤ 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)	:	1.4mm
Shielding Gas	:	100% CO_2
Flow Rate(ℓ /min.)	:	20~22
Amp./ Volt.	:	300 / 32
Stick-Out(mm)	:	20
Pre-Heat(℃)	:	R.T .
Interpass Temp.(℃)	:	150±15
Polarity	:	DC(±)

❖ Mechanical Properties of all weld metal

Consumable	Polarity	Tensile Test			CVN Impact Test (Joule)	
Supercored 70SB	-	YS(MPa)	TS(MPa)	EL(%)	-20℃	-30℃
	DC-	565	615	27	105	65
	DC+	515	580	29	115	84
AWS A5.20 E71T-5C	-	≥ 390	490~670	≥ 22	≥27J at -30℃	

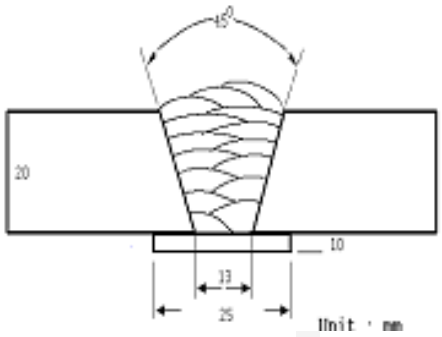
❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
Supercored 70SB	0.06	0.41	1.37	0.013	0.009
AWS A5.20 E71T-5C	≤ 0.12	≤ 0.9	≤ 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)	:	1.6mm
Shielding Gas	:	100% CO_2
Flow Rate(ℓ /min.)	:	20~22
Amp./ Volt.	:	330 / 33
Stick-Out(mm)	:	20
Pre-Heat(℃)	:	R.T .
Interpass Temp.(℃)	:	150±15
Polarity	:	DC(±)

❖ Mechanical Properties of all weld metal

Consumable	Polarity	Tensile Test			CVN Impact Test (Joule)	
Supercored 70SB	-	YS(MPa)	TS(MPa)	EL(%)	-20℃	-30℃
	DC-	575	630	26	102	65
	DC+	505	575	30	118	76
AWS A5.20 E71T-5C	-	≥ 390	490~670	≥ 22	≥27J at -30℃	

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
Supercored 70SB	0.06	0.40	1.38	0.014	0.007
AWS A5.20 E71T-5C	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03

Welding Efficiency

❖ Deposition Rate & Efficiency

Consumable (size)	Welding Conditions		Deposition Efficiency(%)	Deposition Rate(kg/hr)
	Amp.(A)	Volt.(V)		
Supercored 70SB 1.2mm	150	24	84~86	2.1
	200	26	85~87	3.2
	250	28	85~88	4.2
	300	33	85~88	5.1
Supercored 70SB 1.4mm	250	28	85~87	3.8
	300	32	86~88	4.7
	350	36	87~89	6.1
Supercored 70SB 1.6mm	280	31	86~88	4.1
	330	33	86~89	4.7
	350	34	87~89	5.2
	400	38	88~90	6.0
Remark			Deposition efficiency =(Deposited metal weight/ Wire weight used)×100	Deposition rate =(Deposited metal weight/ Welding time,min.)×60

* Shielding Gas : 100%CO_2

Diffusible Hydrogen Content

❖ Welding Conditions

Diameter(mm)	:	**1.2**	**Amps(A) / Volts(V)**	:	280 / 31
Shielding Gas	:	100% CO_2	**Stick-Out(mm)**	:	20
Flow Rate(ℓ /min.)	:	20	**Welding Speed**	:	45 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)

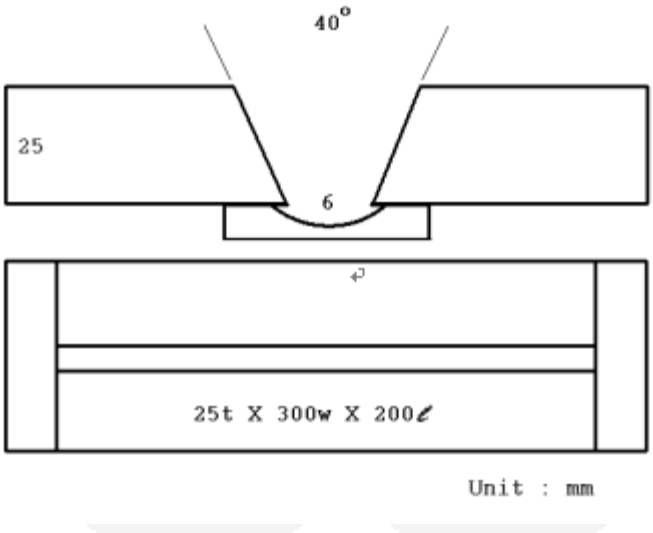
X1	X2	X3	X4
1.9	**2.4**	**1.9**	**2.1**

Average Hydrogen Content 2.1 ㎖ / *100g Weld Metal*

Hot crack resistance of all weld metal

❖ Welding Conditions

Diameter(mm)	:	**1.2**	**Amps(A) / Volts(V)**	:	250 / 31
Shielding Gas	:	100% CO_2	**Stick-Out(mm)**	:	20
Flow Rate(ℓ /min.)	:	20	**Welding Speed**	:	15-20 cpm
Welding Position	:	1G	**Current Type & Polarity**	:	DC(+)



❖ Result(㎖/100g Weld Metal)

Consumable	Crack Point (EA)	Crack Length(mm)
Supercored 70SB	**0**	**0**

Proper Welding Condition

❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Wire Dia. (mm)		
			1.2mm	1.4mm	1.6mm
Supercored 70SB	100%CO_2	F & HF	170~320Amp	200~350Amp	200~350Amp
		V-Up	80~150Amp	90~180Amp	90~180mp

Approvals

❖ AUTHORIZED APPROVAL DETAILS

Welding Position	Register of shipping & Size(mm)						
	KR	ABS	LR	BV	DNV	GL	NK
All V-Down	3YSG(C)H5 1.2~1.6	3YSAH5 1.2~1.6	3YSH5 1.2~1.6	SA3YM HHH 1.2~1.6	IIIYMS H5 1.2~1.6	3YH5S 1.2~1.6	KSW53G (C)H5 1.2~1.6