

S-707T X H-14

SUBMERGED ARC WELDING CONSUMABLES
FOR WELDING OF Mild & 490MPa CLASS
HIGH TENSILE STEEL



❖ *Specification*

AWS A5.17

F7A(P)6-EH14

❖ *Applications*

Single-layer welding of shipbuildings.

❖ *Characteristics
on Usage*

As the penetration is deep, It is suitable for welding of thick plate in both side single-layer welding. It is suitable for single-pass-on-both-sides welding due to wide range of applicable welding conditions.

Good bead appearance and excellent impact value of the weld metal.

As the consumption of flux is low, it is very economical

❖ *Note on Usage*

1. Dry the flux at 300~350°C (572~662°F) for 60minutes before use.
2. When the flux height is excessive, poor bead appearance may occur.
3. Use welding current and speed as low as possible at the first layer of groove to avoid cracking.



Welding Consumables for Test

❖ Flux

Consumable	Chemical Composition, wt%		
	SiO ₂ +Al ₂ O ₃	MgO+CaF ₂ +CaO	MnO+FeO
S-707T	50	45	5

Consumable	Particle Size (Mesh)	Type of Flux	B.I	H ₂ O(1000℃)/CO ₂ (%)
S-707T	12 × 60	Agglomerated	1.5	0.06/0.70

❖ Electrode

Consumable	Dia. (mm)	Chemical Composition, wt%				
		C	Si	Mn	P	S
H-14	4.0	0.12	0.03	1.93	0.016	0.009
AWS A5.17 EH14		0.10-0.20	≤0.10	1.70-2.20	≤0.030	≤0.030

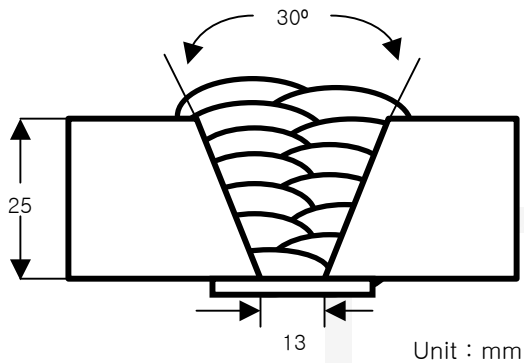
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Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Base metal	: SS 400
Particle size	: 12 X 60
Flux type	: Agglomerated
Amp./ Volt./CPM	: 550 / 30 / 40
Stick-Out(mm)	: 30
Pre-Heat(°C)	: R.T .
Interpass Temp.(°C)	: <150
Polarity	: AC, DC+

❖ Mechanical Properties of All weld metal

Consumables	Polarity	PWHT Condition	Tensile Test			CVN Impact Test (Joule)
			YS(MPa)	TS(MPa)	EI(%)	-51°C
S-707T X H-14	AC	As welded	511	592	26.2	116
		620°Cx1hr	450	558	31.2	126
	DC+	As welded	485	564	30.0	102
		620°Cx1hr	442	550	35.6	102
AWS A5.17 F7A(P)6-EH14	-	-	≥ 375	490~660	≥ 22	≥ 27J at -51°C

❖ Chemical Analysis of All weld metal(wt%)

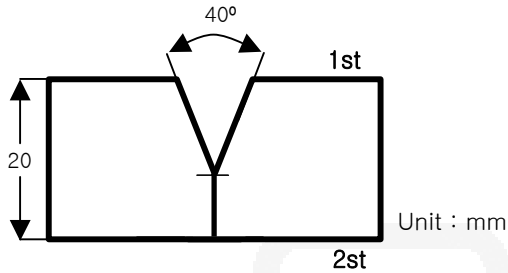
Consumables	Polarity	C	Si	Mn	P	S
S-707T X H-14	AC	0.009	0.30	1.57	0.022	0.014
	DC+	0.07	0.34	1.64	0.023	0.015

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Mechanical Properties & Chemical Composition of Butt weld test

❖ Welding Conditions



[Joint Preparation & Layer Details]

Particle size	: 12 X 60
Flux type	: Agglomerated
Pre-Heat(°C)	: R.T .
Interpass Temp.(°C)	: <150

Wire dia. (mm)	Welding Process	Pass	Polarity	Welding Condition		
				Amp.	Volt.	Cpm.
4.8	Single	1	AC	850	36	25
		2	AC	850	36	45
4.8	tandem	1	L : DC+	800	34	60
			T : AC	700	42	
		2	L : DC+	1000	36	105
			T : AC	650	42	

❖ Mechanical Properties of All weld metal

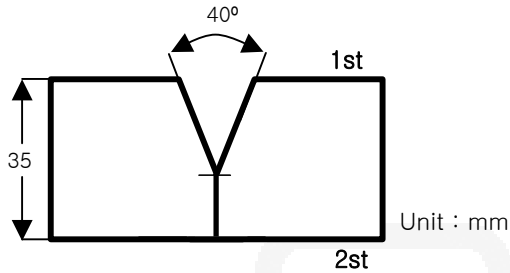
Consumables	Welding Process	Base Metal	CVN Impact Test (Joule)
			-20°C
S-707T X H-14	Single	A36	149
		EH36	55
	tandem	A36	127
		EH36	54
3YT			≥34

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Mechanical Properties & Chemical Composition of Butt weld test

❖ Welding Conditions



[Joint Preparation & Layer Details]

Particle size	: 12 X 60
Flux type	: Agglomerated
Pre-Heat(°C)	: R.T .
Interpass Temp.(°C)	: <150

Wire dia. (mm)	Welding Process	Pass	Polarity	Welding Condition		
				Amp.	Volt.	Cpm.
4.8	Single	1	AC	950	36	25
		2	AC	950	36	28
4.8	tandem	1	L : DC+	950	34	59
			T : AC	750	42	
		2	L : DC+	1000	34	50
			T : AC	750	42	

❖ Mechanical Properties of All weld metal

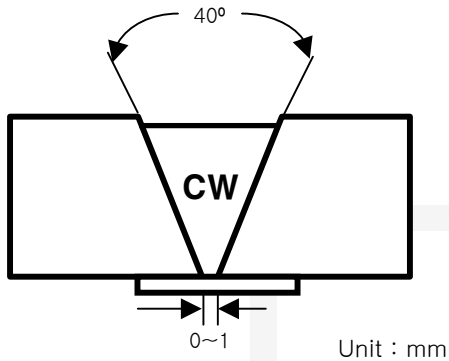
Consumables	Welding Process	Base Metal	Tensile Test			CVN Impact Test (Joule)
			YS(MPa)	TS(MPa)	EI(%)	-20°C
S-707T X H-14	Single	A36	380	495	28.2	144
		EH36	564	655	22.0	69
	tandem	A36	396	500	34.4	129
		EH36	570	660	22.0	57
3YT	-	-	≥375	490~660	≥22	≥34

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Mechanical Properties & Chemical Composition of One side weld test

❖ Welding Conditions



[Joint Preparation & Layer Details]

Cut wire	: A3
Backing	: CBM-G22
Particle size	: 12 X 60
Flux type	: Agglomerated
Stick-Out(mm)	: 30
Pre-Heat(°C)	: R.T .
Interpass Temp.(°C)	: <150
Polarity	: DC+

Wire dia. (mm)	Welding Process	thickness (mm)	Welding Condition		
			Amp.	Volt.	Cpm.
4.8	S-707T/CW/H-14/ CBM-G22	15	830	33	22
4.8	S-707T/CW/H-14/ CBM-G22	27	1150	36	20



S-707T X H-14

❖ Mechanical Properties of All weld metal

Consumables	thickness (mm)	Base Metal	Tensile Test			CVN Impact Test (Joule)		
			YS(MPa)	TS(MPa)	EI(%)	Location	0 °C	-20 °C
S-707T X H-14	15	A36	350	473	31.2	F	129	36
						R	154	48
		EH36	428	570	22.6	F	83	52
						R	94	51
	27	A36	387	519	25.2	F	91	79
						C	86	67
						R	107	135
		EH36	444	592	23.6	F	68	57
						C	78	59
						R	82	80

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Approvals

❖ Authorized Approval Details

Consumables	KR	ABS	LR	BV	DNV	GL	NK
S-707T X H-14 (1Pole, 2Pole)	3T, 3YT, 4YM 1.2~6.4	4YT, 3T, 3YT 1.2~6.4	4YT, 3T, 3YT 1.2~6.4	A4YT, A3T, A3YT 1.2~6.4	IVYM, IIIYT 1.2~6.4	4YM, 3YT 1.2~6.4	KAW53T, KAW54M 1.2~6.4
S-707T X H-14 CW/CBM-G22	3YSR Max.Th. 28mm 2.0~6.4	3Y Max.Th. 28mm 2.0~6.4	3Y Max.Th. 28mm 2.0~6.4	A3YU 2.0~6.4	IIIYM t≤28mm 2.0~6.4	3YM 2.0~6.4	-

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