HYUNDAI WELDING

Rev. 00

S-777Q X M-12K
H-14
L-8

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

HYUNDAI WELDING CO., LTD.

S-777Q

❖ Specification

Flux	JIS Z3352	EN ISO 14174	KS B ISO 14174
S-777Q	S A AR 1	S A AR 1	S A AR 1

Wire	AWS A5.17	EN ISO 14171
M-12K	F7A2-EM12K	S2Si
H-14	F7A2-EH14	S4
L-8	F6AZ-EL8	S1

❖ Applications

Butt, flat, beam welding of thin and medium thickness plates, Low current, high travel speed welding for miniature LPG tanks, thin and medium walled pipes and structure.

Combination with 1.6~2.4mm single or twin wire.

❖ Characteristics on Usage

Aluminate-basic type agglomerated flux.

Especially insensitive to oil, rust, scale, and dirt on the surface to be welded. Slag detachability in narrow groove and resistance to porosity are excellent.

Suitable for welding of thin and medium plate in high speed welding.

❖ Note on Usage

1. Dry the flux at 300~350℃(572~662°F) for 60minutes before use.
2. When the flux height is excessive, poor bead appearance may occur.
3. Remove rust, scales, oil, paint, water, dirt and slag of tack welds from the groove to obtain sound weld metal.

Welding Consumables for Test

❖ Flux

Consumable	Chemical Composition, wt%			
	Al_2O_3+MgO	MnO+TiO_2	Fe_2O_3+SiO_2	CaF_2+CaO
S-777Q	50	20	15	15

Consumable	Particle Size (Mesh)	Type of Flux	B.I	H2O(1000℃)/ CO2(%)
S-777Q	10 x 48	Agglomerated	0.6	0.01/0.08

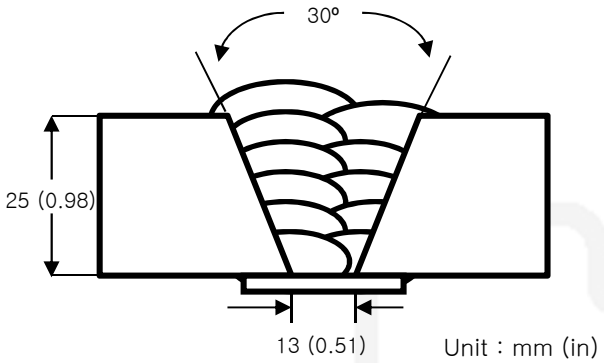
❖ Electrode

Consumables	Dia.	Chemical Composition, wt%				
	mm (in)	C	Si	Mn	P	S
M-12K	4.0(5/32)	0.09	0.20	1.02	0.016	0.006
AWS A5.17 EM12K		0.05-0.15	0.10-0.35	0.80-1.25	≤0.030	≤0.030
H-14	4.0(5/32)	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
L-8	4.0(5/32)	0.05	0.02	0.52	0.017	0.012
AWS A5.17 EL8		≤0.10	≤0.07	0.25-0.60	≤0.030	≤0.030

Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Base metal	:	SS400
Particle size	:	10 x 48
Flux type	:	Agglomerated
Amp./ Volt./cpm	:	550 / 30 / 40(15.8inch)
Stick-Out mm (in)	:	30 (1.18)
Pre-Heat ℃(℉)	:	R.T .
Interpass Temp. ℃ (℉)	:	<150 (302)
Polarity	:	AC/DC+

❖ Mechanical Properties of All weld metal

Consumables	Polarity	Tensile Test			CVN Impact Test J (ft·lbs)	
		YS MPa(ksi)	TS MPa(ksi)	EL (%)	-18℃ (0℉)	-29℃ (-20℉)
S-777Q X M-12K	AC	570 (83)	636 (92)	28	122 (90)	97 (72)
	DC+	462 (67)	552 (80)	32	62 (46)	36 (27)
AWS A5.17 F7A2-EM12K	-	≥400	490~660	≥ 22	≥27J at -29℃	

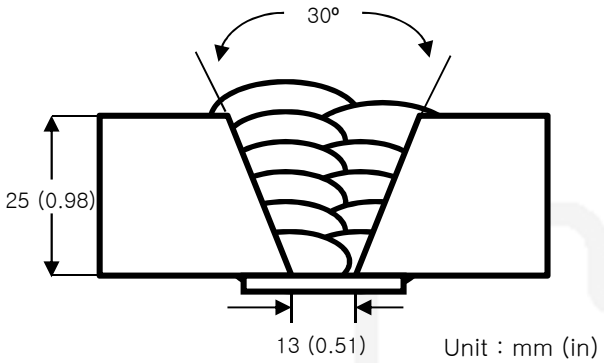
❖ Chemical Analysis of All weld metal(wt%)

Consumables	Polarity	C	Si	Mn	P	S
S-777Q X M-12K	AC	0.09	0.33	1.54	0.015	0.010
	DC+	0.06	0.43	1.01	0.015	0.011

Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



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Pre-Heat ℃(℉)	:	R.T .
Interpass Temp. ℃ (℉)	:	<150 (302)
Polarity	:	DC+

❖ Mechanical Properties of All weld metal

Consumables	Polarity	Tensile Test			CVN Impact Test J (ft·lbs)	
		YS MPa(ksi)	TS MPa(ksi)	EL (%)	-18℃ (0℉)	-29℃ (-20℉)
S-777Q X H-14	DC+	510 (74.0)	587 (85.1)	30.2	87 (64)	66 (49)
AWS A5.17 F7A2-EH14	-	≥400	490~660	≥ 22	≥27J at -29℃	

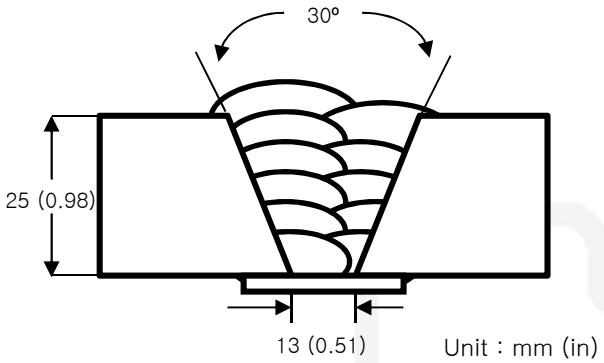
❖ Chemical Analysis of All weld metal(wt%)

Consumables	Polarity	C	Si	Mn	P	S
S-777Q X H-14	DC+	0.07	0.36	1.49	0.018	0.011

Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



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Interpass Temp. ℃ (℉)	:	<150 (302)
Polarity	:	DC+

❖ Mechanical Properties of All weld metal

Consumables	Polarity	Tensile Test			CVN Impact Test J (ft·lbs)
		YS MPa(ksi)	TS MPa(ksi)	EL (%)	0℃ (32℉)
S-777Q X L-8	DC+	434 (62.9)	508 (73.7)	33.2	82 (61)
AWS A5.17 F6AZ-EL8	-	≥330	410~550	≥ 22	-

❖ Chemical Analysis of All weld metal(wt%)

Consumables	Polarity	C	Si	Mn	P	S
S-777Q X L-8	DC+	0.05	0.28	0.68	0.018	0.014