

# **S-777MX X H-14**

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



## ❖ Specification

<b>AWS</b>	A5.17 F7A0-EH14
<b>KS</b>	ISO 14174 S A AR 1
<b>JIS</b>	Z3352 S A AR 1 / Z3351 YS-S6 / Z3183 S502-H
<b>EN</b>	ISO 14174 S A AR 1 / ISO 14171 S4

## ❖ Applications

Single and multi-layer welding of miniature LPG tanks, spiral pipes, ships, agricultural implements, machinery, boilers, bridges, and structural steels.

## ❖ Characteristics on Usage

Especially insensitive to oil, rust, scale, dirt and primers 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. As the consumption of flux is low, it is very economical. Applicable to horizontal and flat fillet welding

## ❖ Note on Usage

1. Dry the flux at 300~350 °C (572~662 °F) for 60 minutes 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.
4. 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%		
	Al <sub>2</sub> O <sub>3</sub> +TiO <sub>2</sub>	SiO <sub>2</sub> +MnO	CaO+MgO
S-777MX	55	25	20

Consumable	Particle Size (Mesh)	Type of Flux	B.I	H <sub>2</sub> O(1000℃)/CO <sub>2</sub> (%)
S-777MX	10 x 48	Agglomerated	0.5	0.01/0.05

### ❖ Electrode

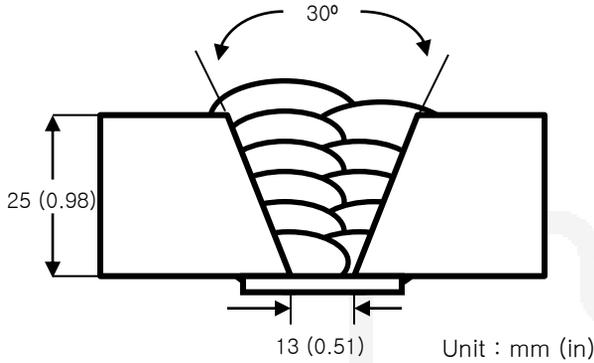
Consumable	Dia.	Chemical Composition, wt%				
	mm (in)	C	Si	Mn	P	S
H-14	4.0(5/32)	0.12	0.03	1.93	0.016	0.009
AWS A5.17 EH14		0.10-0.20	≤0.10	1.70-2.20	≤0.030	≤0.030



## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ Welding Conditions

Method by AWS Spec.



[ Joint Preparation & Layer Details ]

<b>Base metal</b>	: SS 400
<b>Particle size</b>	: 10 x 48
<b>Flux type</b>	: Agglomerated
<b>Amp./ Volt./CPM</b>	: 550 / 30 / 40
<b>Stick-Out mm (in)</b>	: 30 (1.18)
<b>Pre-Heat °C (°F)</b>	: R.T .
<b>Interpass Temp. °C (°F)</b>	: <150 (302)
<b>Polarity</b>	: AC

### ❖ Mechanical Properties of All weld metal

Consumables	PWHT Condition	Tensile Test			CVN Impact Test J (ft-lbs)	
		YS MPa(ksi)	TS MPa(ksi)	EL (%)	0°C (32°F)	-18°C (0°F)
<b>S-777MX X H-14</b>	<b>As welded</b>	560 (81.2)	620 (89.9)	27	105 (77)	48 (35)
<b>AWS A5.17 F7A0-EH14</b>	-	≥ 400	490~660	≥ 22	≥ 27J at -18°C	

### ❖ Chemical Analysis of All weld metal(wt%)

Consumables	C	Si	Mn	P	S
<b>S-777MX X H-14</b>	0.08	0.53	0.94	0.021	0.014



# Two-run Butt welding test

## ❖ Welding Conditions

Joint preparation and layer details (B.M. SM 490A)	Wire dia. (mm)	Welding conditions							
		Side	Polarity		Amp. (A)	Volt (V)	Speed (CPM)	Heat input (kJ/cm)	Inter pass temp. °C (°F)
	4.0 (5/32)	1st	L	DC+	900	30	130	21.6	<100 (212)
			T	AC	550	36			
	4.0 (5/32)	2nd	L	DC+	850	30	130	20.9	
			T	AC	550	36			
	4.0 (5/32)	1st	AC		700	36	50	30.2	
		2nd			700	40	45	37.3	
	4.8 (3/16)	1st	AC		800	36	25	69.1	
		2nd			850	37	45	41.9	

This information is provided solely for the purpose of confirming product conformance with applicable standards. The serviceability of a product or structure utilizing this type of information is and must be the sole responsibility of the builder/user. Many variables beyond the control of HYUNDAI WELDING CO., LTD. affect the results obtained in applying this type of information. These variables include, but are not limited to, welding procedure, shielding gas, plate chemistry and temperature, weldment design, fabrication methods and service requirements.



## Two-run Butt welding test

### ❖ Mechanical Properties of All weld metal

Consumables	Test Plate (mm)	Tensile Test		Bending test		Remark
		TS MPa(ksi)	Fracture	Face	Root	
S-777MX X H-14	SM 490A (16)	554 (80.3)	B.M.	Good	Good	DC+ / AC
	SM 490A (16)	547 (79.3)	B.M.	Good	Good	AC
	SM 490A (20)	545 (79.0)	B.M.	Good	Good	AC

## Diffusible Hydrogen Content

### ❖ Welding Conditions

Wire	: H-14	Amp.(A) / Volts(V)	: 625/30
Diameter(mm)	: 4.0(5/32)	Stick-Out(mm)	: 30
Flow Rate(ℓ /min.)	: -	Welding Speed	: 60 CPM
Welding Position	: 1G	Current Type & Polarity	: DC(+)

### ❖ Result (ml/100g Weld Metal)

X1	X2	X3	X4
4.3	4.4	4.2	4.4

**Average Hydrogen Content 4.3 ml / 100g Weld Metal**



## Approvals

### ❖ Authorized Approval Details

Consumables	KR	ABS	LR	BV	DNV	GL	NK
<b>S-777MX X H-14</b>	2M 2YM 1.2~6.4	2M 2YM 1.2~6.4	2M 2YM 1.2~6.4	A2M A2YM 1.2~6.4	II YM 1.2~6.4	2YM 1.2~6.4	KAW2M KAW52M 1.2~6.4
<b>S-777MX X H-14 (2 Pole)</b>		2M 2YM 1.2~6.4	2M 2YM 1.2~6.4	A2M A2YM 1.2~6.4	II YM 1.2~6.4	2YM 1.2~6.4	KAW2M KAW52M 1.2~6.4

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