

SAW Wire / Flux



Welding Consumables Selection

Product name	Specification	Property description
GA78×GS8	F7A2-EL8	Agglomerated type flux combined with EL8 wire, suitable for single and multipass welding, single or dual wire, high welding current performance, good bead appearance and easy slag removal.
GA78×GS12K	F7A2-EM12K	Agglomerated type flux combined with EM12K wire, suitable for single and multipass welding, single or dual wire, high welding current, good anti-crack performance and good for RT examination.
GA86×GS12K	F7A4-EM12K	Agglomerated type flux, suitable for single and multipass welding, good mechanical properties especially on Charpy impact toughness, low blow hole occurred.

Recommended welding parameters : [GA78×GS8, GA78×GS12K, GA86×GS12K]

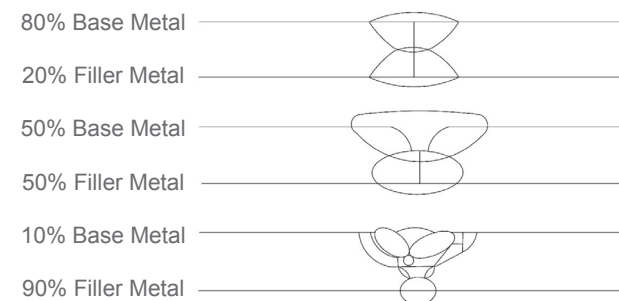
wire diameter (mm)	Wire stick out (mm)	Voltage (V)	Wire consumption rate	Current (A)											
				200	300	400	500	600	700	800	900	1000	1100	1200	
2.4	25~30	18~25	kg/hr		3.6	6.4	9.8	13.9							
2.8	25~30	20~28	kg/hr		7.5	10.8	15.1	19.9							
3.2	25~30	23~30	kg/hr		6.5	9.4	12.8	16.7	20.8						
4.0	25~30	25~32	kg/hr			8.3	11.2	14.5	17.7	21.5					
4.8	25~30	28~36	kg/hr				10.1	12.8	15.5	18.5	21.4	24.9			
5.6	25~30	30~38	kg/hr					12.6	14.9	17.5	20.6	23.4	26.4		

Welding notes

1. Joint Design

Different root gap, root face and beveled angle will affect SAW welding result extensively such as penetration problem or over heating to the weldment. correct joint design for SAW acts as a more important role than other welding processes.

The effects of different Joint Design to the dilution of filler metal and base metal



2. Flux scattered amount and re-use of unconsumed flux

Heavy flux scattered will cause poor bead appearance. The proper amount of flux scattered on welding joint is that a very slight trace of arc light can be seen during welding.

Unused and returned flux shall be mixed with new flux at least 50% for reusing.

3. Flux mesh selection

Flux mesh is another important factor to affect welding result. Incorrect selection will cause surface pits or other defects. Usually, the higher the welding current range is, the bigger the mesh shall be in correspondence with and the vise versus.

4. Welding Parameters

Welding parameters listed in WPS (Welding Procedure Specification) such as wire size, welding current range, voltage range and welding speed range etc. shall be totally followed.

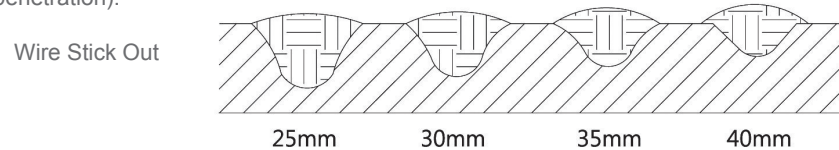
5. Flux storage and baking requirement before using

Flux shall be stored in dry and good ventilation area. For getting a good quality result, the flux shall be baked to 250 ~ 350°C x1 hr before using.

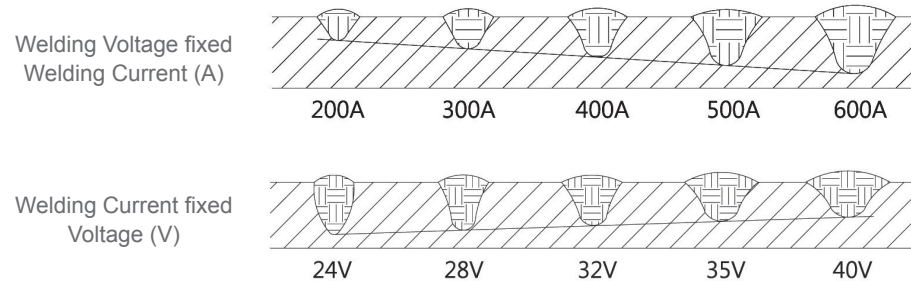
6. Wire stick out

Standard wire stick out: 25~30 mm.

The following sketch refers the relation between stick out and penetration depth. Increasing stick out can increase deposition rate but may cause incomplete fusion (lack of penetration).

**7. Welding Current and Welding Voltage**

See page A37, the recommended welding parameter table. The following 2 sketches are showing how the variation of welding current or welding voltage to change the weld profile (Wire Size for testing: 4.0 mm).

**8. Polarity illustration**

DCEP (DC+): Electrode positive or DC reverse polarity (DCRP).

DCEN (DC-): Electrode negative or DC straight polarity (DCSP).

Product Features:

- Submerged arc welding wires for mild steel and 490 N/mm² high tensile strength steel.
- Good porosity and crack resistance.
- Good bead appearance and easy slag removal.

Applications:

- Suitable for single or multiple pass(es) welding of mild and 50 Kg/mm² high tensile Strength steel structures on shipbuilding, machinery, bridges and general structures.

Typical chemical composition of all-weld metal (wt%)

C	Si	Mn	P	S
0.04	0.19	1.14	0.024	0.011

Typical mechanical properties of all-weld metal

Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation %	Impact value (-30°C) J
432	485	32	41.5

Typical practice

Base material	Thickness mm	Welding process
A572	25	Groove weld with backing single electrode multiple- pass welding

© Note: refer to page A38 SAW welding notes.

Product Features:

- Submerged arc welding wires for mild and 490 N/mm² high tensile strength steel.
- Good porosity resistance and crack resistance.
- High welding performance, easy slag removal, good bead appearance and less fume.

Applications:

- Suitable for single or multiple pass(es) welding of mild and 50 Kg/mm² high tensile Strength steel structures on shipbuilding, machinery, bridges and general structures.

Typical chemical composition of all-weld metal (wt%)

C	Si	Mn	P	S
0.05	0.58	1.71	0.023	0.015

Typical mechanical properties of all-weld metal

Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation %	Impact value (-30°C) J
497	570	28	53.8

Typical practice

Base material	Thickness mm	Welding process
A572	25	Groove weld with backing single electrode multiple- pass welding

© Note: refer to page A38 SAW welding notes.

Product Features:

- Good impact toughness and crack resistance property.
- High welding performance, easy slag removal.

Applications:

- Suitable for single or multiple pass(es) welding of 490 N/mm² high tensile Strength steel structures on oil rig, shipbuilding, pressure vessels and general structures.

Typical chemical composition of all-weld metal (wt%)

C	Si	Mn	P	S
0.07	0.57	1.55	0.025	0.023

Typical mechanical properties of all-weld metal

Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation %	Impact value (-40°C) J
472	539	30	34

Typical practice

Base material	Plate thickness	Welding Process
A572	25	Groove weld with backing single electrode multiple- pass welding

© Note: refer to page A38 SAW welding notes.