

## SF60

*No Clean Halogen Free Liquid Flux  
For Solar Photovoltaic Application*



### Product Description

SF60 is an excellent flux to apply on solar (PV) cell bus strips prior to soldering tab ribbons in place. SF60 solder flux facilitates solder wetting by dissolving the oxides present on the surface of the tabbing ribbon as well as the silver metallization bonding stripes on the top and bottom of the solar cell. The flux flows smoothly and evenly for consistently secure and uniform solder connections with no mess. It speeds up assembly time and makes nice-looking panels. This flux remains no residue after soldering process due to its rosin free formulation and requires no washing.

### Application

SF60 is formulated for the solar photovoltaic process both in SnPb and Lead Free applications. It can be applied by soaking, dipping and spraying.

Fluxing Method:

#### a) Soaking

It is recommended to soak the tab ribbon in the flux for about 4 - 8 minutes and dry it naturally in air or bake it directly in the oven until it is semi-dry.

#### b) Dipping

SF60 can also be applied by dipping the tab ribbon in the flux tank, which is carried by a conveyor.

#### c) Spraying

Ensure flux is only applied to those areas being soldered. Care should be taken to avoid overspray. Clean the nozzle head every 4 hours to prevent clogging. Due to low efficiency, brushing method is not recommended.

Soldering Method:

#### a) Manual Soldering

After soaking the tab ribbon and dry it until semi-dry, manual solder at 320 - 380°C.

#### b) Auto-soldering

Preheat the tab ribbon that is dipped or sprayed at 50 - 130°C. The tab ribbon is then soldered by laser beam, infra-red, electromagnetic or hot air auto-heating method. Recommended soldering temperature is 180 - 300°C.

### Specification

Item	Result
State	Liquid
Colour	Colourless
Specific Gravity @ 25°C	0.792 +/- 0.005
<small>JIS Z 3197 8.2.2</small>	
Non-volatile Solid Content (110°C, 1hr)	1.40 +/- 0.2 wt%
<small>IPC-TM-650 2.3.34</small>	
<small>JIS Z 3197 8.1.3</small>	
Halide Content	Not detected
<small>JIS Z 3197 8.1.4.2.1</small>	
Halogen Content	Not detected
<small>BS EN 14582</small>	
Acid Value Test	14.0 +/- 2 mg KOH/g flux
<small>IPC-TM-650 2.3.13</small>	
<small>JIS Z 3197 8.1.4.1</small>	
Water Extract Resistivity	> 1 x 10 <sup>4</sup> Ω-cm
<small>JIS Z 3197 8.1.1</small>	
Surface Insulation Resistance (85°C, 85%RH, 168hrs)	> 1 x 10 <sup>8</sup> Ω, Pass
<small>IPC-TM-650 2.6.3.3</small>	
Electromigration (85°C, 88.5%RH, 596hrs)	Pass
<small>IPC-TM-650 2.6.14.1</small>	
Copper Corrosion Test	Pass
Copper Mirror Test	Classified as "L", Pass
<small>IPC-TM-650 2.3.32</small>	
<small>JIS Z 3197 8.4.2</small>	
Spread Factor	> 85% (SnPb)
<small>JIS Z 3197 8.3.1.1</small>	
Flux Activity Classification	ORLO
<small>IPC J-STD-004</small>	

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### Residue Removal

Since the residues are minimal and non-corrosive, removal is usually not required. If cleaning is required, the flux residue could be removed by any solvent or aqueous flux cleaner available in the market.

### Recommended Solvent

Asahi's complementary Solvent #2000. Solvent can be stored for about 2 years under normal storage conditions of 25°C.

### Health and Safety

Observe standard precautions for handling and use, such as well-ventilated areas and avoidance of prolonged or repeated contact with the skin. For more information, please refer to the Material Safety Data Sheet.

### Storage

Under proper storage condition, SF60 can be stored for up to 6 months. SF60 is flammable. Keep away from all sources of heat, sparks, flame and sunlight.

### Packaging

Available in 18kg/carboy.

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