

## LIQUID FLUX X33-12i

No-clean, resin-free, halide-free, sustained activity flux

### DESCRIPTION

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Stannol X33-12i is a no clean, resin free, halide free liquid flux for surfaces with poor solderability from the pioneers of "no clean" technology.

### CHARACTERISTICS

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Stannol liquid flux X33-12i offers the following advantages:

- **Maximum process window and sustained activity - without resin**
- **Foam, spray or wave application**
- **Minimal residues to interfere with ATE probes without cleaning**
- **Good through hole penetration**
- **Compatible with rosin and OSP based surface preservatives**
- **No cleaning - reduces costs**
- **High speed soldering on conventional leaded and SMD components**
- **No bridges or icicles**

### APPLICATION

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Stannol X33-12i is recommended for consumer electronics and general electrical soldering applications, particularly where high throughput is desirable. This is a robust product. It should be favoured when there is additional demand for high performance/reliability.

### RECOMMENDED OPERATING CONDITIONS

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**The Printed Circuit Board:** Stannol X33-12i is recommended for use on clean copper or tin-lead coated PCBs. It will solder satisfactorily over most surface preservatives. It is recommended that these are applied no longer than 3 months before soldering, since the period of protection is limited dependent on storage conditions. Stannol X33-12i has been formulated to work over a wide range of solder resists. The solvent system in Stannol X33-12i has been designed for optimum wetting of surfaces but prolonged contact with polystyrene, PVC or polycarbonate is not recommended.

**Machine Preparation:** When switching to Stannol X33-12i from any other flux, ensure all fingers, pallets and conveyors are thoroughly cleaned. It is recommended that Stannol Flux-Ex 500 solvent cleaner be used in the finger cleaners.

**Fluxing:** Stannol X33-12i has been formulated for use in foam, spray or wave fluxers in the same way as ordinary fluxes on standard wave soldering machines. Observing the following instructions will help ensure optimum foaming:

1. Use dry air.
2. Keep the flux tank full at all times.
3. The top of the foaming stone should be no more than 2cm below the surface of the liquid flux. A fine foaming stone is preferred and if necessary, raise the level of the stone.
4. The preferred width of the slot (opening) of the foam fluxer is 10mm. If it is wider and problems are encountered, add a strip of stainless steel across it to narrow the opening to 10mm. It is preferable to have a chimney for the foam which tapers towards the top.

5. Do not use hot fixtures or pallets as these cause the foam to deteriorate and increase losses by evaporation.
6. Do not use fixtures that have the potential to entrap flux.

It is important to remove excess flux from the circuit boards using the standard air knife or brushes supplied on the wave soldering machine. An air pressure of about 5 - 7psi is recommended and the nozzle should be about 25mm below the board and angled back at a few degrees to the perpendicular to the plane of the board. This will ensure effective removal of excess flux without transferring droplets to the top of the following board.

**Flux Control:** Evaporation of solvent can change the composition. Evaporation causes an increase of the solid content and therefore the density increases. This can be checked with the Stannol Mini-Titration-Kit.

**Preheating:** The optimum preheat temperature and time for a PCB depends on its design and the thermal mass of the components. The cycle should be sufficient to ensure that the flux coating is not visibly wet when it contacts the wave. Conditions will vary from one machine to another but the following settings were found to give good results on a number of systems:

<b>Conveyor Speed:</b>	m min <sup>-1</sup>	0.91	1.22	1.52
<b>Topside Preheat</b>	°C	80-85	85-90	95-100

It is advantageous to fit a topside canopy over the preheaters to produce more effective drying and activation. This will allow the use of faster conveyor speeds and improve soldering. At a speed of 1.5m min<sup>-1</sup>, a contact length of 38 - 50mm between the wave and the PCB is recommended. At lower speeds, this contact length should be reduced. Very slow speeds through the solder wave may produce dull solder joints. It is particularly useful when setting up a machine to measure the preheat using the Stannol Thermologger 5000. It's important that flux solvent has been removed by during the preheat and that the PCB is not wet when it reaches the solder wave.

**Cleaning:** Special applications may have regulations insisting on board cleaning and in such cases Stannol Flux-Ex500 Solvent Cleaner should be used. This is an economic cleaner which is free from CFC compounds and may be used to remove any small accumulation of flux solids that might develop on parts of the soldering machine after prolonged use. Machine contamination will in any case be much less than with conventional rosin fluxes. Unlike water soluble fluxes, Stannol X33-12i flux is not corrosive towards PCB handling equipment.

## PHYSICAL PROPERTIES AND DATA

GENERAL PROPERTIES	X33-12i
<b>Colour:</b>	colourless
<b>Smell:</b>	alcoholic
<b>Solids content:</b>	3.20% ± 0.25 w/w
<b>Halide content:</b>	Zero
<b>Acid value (on liquid):</b>	22.5 ± 1.5 mg KOH/g
<b>Specific gravity at 25°C:</b>	0.810 ± 0.002
<b>Flash point (Abel):</b>	12°C
<b>J-STD-004 Classification:</b>	OR M0
<b>EN 29454 Classification:</b>	2.2.3
<b>Copper Mirror Test:</b>	passed (IPC-TM-650)
<b>Surface Insulation Resistance:</b>	passed (J-STD-004)
<b>Electromigration Test:</b>	passed (Bellcore GR-78-CORE)
<b>Thinner:</b>	Stannol VD-500

## **SHELF LIFE**

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2 years after date of delivery (provided proper storage in originally sealed container).

## **HEALTH AND SAFETY**

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Before using please read the material safety data sheet carefully and observe the safety precautions described.

## **NOTICE**

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The above values are typical and represent no form of specification. The Data Sheet serves for information purposes. Any verbal or written advise is not binding for the company, whether such information originates from the company offices or from a sales representative. This is also in respect of any protection rights of third parties, and does not release the customer from the responsibility of verifying the products of the company for suitability of use for the intended process or purpose. Should any liability on the part of the company arise, the company will only indemnify for loss or damage to the same extent as for defects in quality.