

WW525 Rosin Liquid Flux

Introduction

WW525 Rosin Flux is an activated, non-corrosive, RA type rosin flux that displays excellent activity and superior mobility for wave soldering through-hole, mixed and surface mount assemblies. Use of WW525 will result in faster throughput, reduced solder build-up, fewer defects, and less residue than conventional high solids type RA fluxes. WW525 is formulated to work with FCT Solder SN100C Bar Solder and standard Sn/Pb Alloys. WW525 eliminates solder balls while providing excellent solderability.

Attributes

- RA type rosin flux with excellent activity and superior mobility.
- Fewer defects and less residue than conventional RA type fluxes.
- Works well for Sn63/Pb37, SAC305 and SN100C alloys.
- Eliminates solder balls while providing excellent solderability.

Compatible Products

FT-100 Flux Thinner.
TK-100 Titration Kit.
NC601 No Clean Cored Solder Wire.
NC32 No Clean Gel Flux.

Storage and Handling

- Keep the flux sealed in the original container to limit evaporation of solvent and minimize the risk of contamination.
- When storing used flux, do not mix it into the container with the new (fresh) flux.

Process Parameters

The process parameters shown below are simply guidelines. The optimal parameters may be different based upon your equipment, circuit boards, components, and process.

| Flux Parameters | Guideline |
|--------------------------|--|
| Specific gravity (SG) | 0.85 to 0.95 g/cc |
| Acid number | 48 - 55 mg KOH / gram flux |
| Amount of flux (Foaming) | 800 - 1500 μg / in^2 of dried flux 2.7 - 5.1 mg / in^2 of wet flux |
| Amount of flux (Spray) | 500 - 1500 μg / in^2 of dried flux 1.7 - 5.1 mg / in^2 of wet flux |

Coverage of flux should be uniform over the entire fluxed area. Penetration of flux through the circuit board holes can be checked using paper or cardboard on top of the circuit board run through the fluxer. Inspect the paper or cardboard for uniform wetness at each hole. Adjust the flux system if necessary.

| Wave Solder Parameters | Sn63/Pb37 | SN100C or SAC305 |
|---------------------------------|--------------------------------------|--------------------------------------|
| Immersion depth in wave | ½ to ⅔ of the board thickness | ½ to ⅔ of the board thickness |
| Top side preheat temperature | 80 to 100 °C | 90 to 120 °C |
| Bottom side preheat temperature | 25 to 35 °C higher than the top side | 25 to 35 °C higher than the top side |
| Preheat ramp rate maximum | 2 °C / second maximum | 2 °C / second maximum |
| Conveyor speed | 4 to 6 ft/min (1.2 - 1.8 m/min) | 3 to 6 ft/min (0.9 - 1.8 m/min) |
| Contact time in wave | 2 to 4 seconds | 3 to 6 seconds |
| Solder pot temperature | 230 to 260 °C | 250 to 275 °C |

| Selective Solder Parameters | Sn63/Pb37 | SN100C or SAC305 |
|---------------------------------|--------------------------------------|--------------------------------------|
| Top side preheat temperature | 80 to 100 °C | 90 to 120 °C |
| Bottom side preheat temperature | 25 to 35 °C higher than the top side | 25 to 35 °C higher than the top side |
| Preheat ramp rate maximum | 2 °C / second maximum | 2 °C / second maximum |
| Movement rate while soldering | 5 to 15 in/min | 5 to 15 in/min |
| Contact time | 1 to 3 seconds | 1 to 4 seconds |
| Solder pot temperature | 280 to 310 °C | 290 to 320 °C |

Flux Control

Solvents will evaporate out of the flux over time and the solvents should be replaced through analysis and additions of FT-100 Flux Thinner. WW525 flux is best controlled through an acid number titration using the procedure below. The flux should be tested and thinned approximately once every 2 to 4 hours of operation (foaming systems), or once every 20 to 24 hours of operation (spray systems).

1. Pipette 5.0 mL of flux into a titration flask.
2. Add 80 - 100 mL of IPA and mix.
3. Add 2 - 3 drops of phenolphthalein indicator solution and mix.
4. Titrate to the faint pink endpoint using 0.1 N sodium hydroxide or 0.1 N potassium hydroxide solution.
5. Calculation for acid number:

$$\text{Acid number (mg KOH/g flux)} = (\text{mLs of 0.1N NaOH or KOH used}) \times 1.22$$

Maintain the acid number between 48 and 55 mg KOH / g flux. An addition of 4% by volume FT-100 will reduce the acid number by 1.0. For example, if the flux sump contains 20 gallons of flux, then an addition of 0.8 gallons of FT-100 Flux Thinner will reduce the acid number by 1.0. Contact FCT Assembly for details on our TK-100 Titration Kit which can be used to perform acid number titrations.

In recirculating flux equipment, the flux will accumulate contaminants and debris over time. Spent flux should be replaced after approximately 40 hours of use. The equipment, foam stone and sump should be cleaned with FT-100 Flux Thinner before adding new (fresh) flux.

During extended shut down periods such as nights and weekends, the flux should be removed from the machine and stored in a sealed container. The air stone should be immersed in FT-100 Flux Thinner during the shut-down period. Pumps and tubing should be flushed with flux thinner during the shut-down period.

Cleaning

Raw flux can be removed from circuit boards and equipment using FT-100 Flux Thinner. After heating, no-clean flux residues are designed to be “safe” and do not need to be removed from the circuit board. If removal of the flux residues is desired, then a commercial cleaning agent should be used. Several commercial cleaning agents have been tested and found to be effective. Please contact your cleaning chemical supplier for details.

Safety

Wear chemically resistant gloves and safety glasses when handling liquid flux. Avoid breathing fumes, especially during heating of the flux. WW525 contains a flammable solvent with a flashpoint of 118 °F (48 °C). Keep the flux away from open flames and other ignition sources. Follow the guidelines in the Safety Data Sheet (SDS).

Technical Data

| J-STD-004C Flux Standard | Test Method | Result |
|--|------------------------|-----------------------------|
| J-STD-004C classification | J-STD-004C methods | ROL1 |
| Visual appearance | Visual | Dark amber |
| Solids content | IPC 2.3.34 | 28 to 31 % wt |
| Acid value | IPC 2.3.13 | 48 to 55 mg KOH / gram flux |
| Specific gravity | ASTM D-1298 | 0.85 to 0.95 g/cc |
| Halide ion content (Br, Cl, F, I) | IPC 2.3.28.1 | 0.35 to 0.40 % wt |
| Halogen content (Br and Cl) | EN 14582, IPC 2.3.28.1 | 1.0-1.5 % wt of Solids |
| Halide by silver chromate | IPC 2.3.33 | Halides detected |
| Fluoride by spot test | IPC 2.3.35.1 | None detected |
| Copper mirror | IPC 2.3.32 | Low activity |
| Copper corrosion | IPC 2.6.15 | No corrosion |
| Surface Insulation Resistance (SIR) Comb-up | IPC 2.6.3.7 | Pass > 1.00E+8 ohms |
| Surface Insulation Resistance (SIR) Comb-down | IPC 2.6.3.7 | Pass > 1.00E+8 ohms |
| Electro Chemical Migration (ECM) | IPC 2.6.14.1 | Pass |

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All information, statements, technical data, and recommendations contained in this Technical Data Sheet are based on testing we believe to be reliable. However, the accuracy or completeness thereof is not guaranteed. It is impossible for our lab to account for all manufacturing conditions and variables. Products are warranted to be free from defects at the time sold. To the full extent consistent with applicable law, the exclusive remedy of the user or buyer is to receive replacement product for any product defective at the time sold. FCT Assembly, Inc. makes NO WARRANTIES OF MERCHANTABILITY OR



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