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R2701 Lead-Free Water-Soluble PPT* Paste

(For Precision Pad Technology applications)

Preliminary Data Sheet

Product Description

Formula R2701 lead-free is an organic acid, water-soluble solderpaste formulated specifically for the precision pad technology process. R2701 is a HALIDE FREE formula that maintains its activity and printing characteristics for up to 11 hours. It will result in consistent solid solder deposits when used in the PPT process.

- Halide free chemistry
- Stencil life: 11 hours (process dependent)
- Excellent printing characteristics to 15 mil pitch with Type 3 powder
- High tack values / Long tack life
- Leaves bright/shiny solder joints after reflow
- ANSI/J-STD-005 flux designation ORH0
- Scrap is reduced due to less paste dry out
- Residues easily removed with DI water
- Can reflow in air or nitrogen
- Minimal foam in wash systems
- Elimination of CFC solvent cleaners

Physical Properties

Data given for Sn96.5Ag3.0Cu0.5, 88% metal, -325+500 mesh

- **Viscosity Range:**

Malcom: 2700 poise @ 5 RPM (typical)
Malcom viscometer at 25°C

- **Tackiness (grams-force):** 40.8 (typical)

Tested to J-STD-005, IPC-TM-650, Method 2.4.44

- **Slump Test:** Pass

Tested to J-STD-005, IPC-TM-650, Method 2.4.35

- **Solder Ball Test:** Pass

Tested to J-STD-005, IPC-TM-650, Method 2.4.43

- **Wetting Test:** Pass

Tested to J-STD-005, IPC-TM-650, Method 2.4.45

Reliability Properties

- **Copper Mirror Corrosion:** High

Tested to J-STD-004, IPC-TM-650, Method 2.3.32

- **Corrosion Test:** Low

Tested to J-STD-004, IPC-TM-650, Method 2.6.15

- **pH 5% Solution (flux extract):** 3.2 (typical)

Qualitative Halide Tests:

- **Silver Chromate:** Pass

Tested to J-STD-004, IPC-TM-650, Method 2.3.33

- **Fluorides by Spot Test:** Pass

Tested to J-STD-004, IPC-TM-650, Method 2.3.35.1

- **Typical S.I.R., IPC:** Pass

Tested to IPC-SP-819, Method 2.6.3.3, (B-25 coupon)
Blank at 24 hours: 1.4×10^{10} ohms
Blank at 96 hours: 7.8×10^{9} ohms
Blank at 168 hours: 5.3×10^{9} ohms
Cleaned at 24 hours: 1.8×10^{8} ohms
Cleaned at 96 hours: 2.1×10^{8} ohms
Cleaned at 168 hours: 2.2×10^{8} ohms

Standard Application

88% Metal – Precision Pad Technology process

*Manufactured exclusively for use in Mask Technology's PPT process, U.S. Patent No.'s 5,310574, 5,395,040, and 5,403,671 and others granted or applied for in other countries.

Application Notes

Availability:

Formula R2701lead free is commonly available in the SnAgCu (SAC) alloys. Type 3 powder mesh is recommended, but different powder particle size distributions are available for standard and fine pitch applications. For specific packaging information see Kester's Solderpaste Packaging Chart for available sizes. The appropriate combination depends on process variables and the specific application.

Printing Parameters:

- Squeegee Blade 80 to 90 durometer polyurethane or stainless steel
- Squeegee Speed 25 to 35 mm/sec typical; other speeds possible
- Stencil Material Stainless Steel, Molybdenum, Nickel Plated, Brass
- Temperature/Humidity Optimal ranges are 21-25°C (70-77°F) and 35-65% R.H.

Cleaning:

- Formula R2701 lead free residues can be easily removed using automated cleaning equipment (in-line or batch). De-ionized water is recommended. Water temperature should be approximately 140°F (60°C). Cleaning should be accomplished within 24 hours after reflow.

Available packaging:

- Cartridges 250 gram, 600 gram and 1400 gram cartridges available.
- Jars 250 gram and 500 gram jars available.

Storage, Handling, and Shelf Life:

- Storage & Handling -- should be kept at standard refrigeration temperatures and humidity conditions, 0-10°C (32-50°F) and 35-55%RH respectively.
- Shelf life -- 4 months from date of manufacture when held at 0-10°C (32-50°F).

Health & Safety:

- This product, during handling or use, may be hazardous to health or the environment.
- Read the Material Safety Data Sheet and warning label before using this product.

Attention Specification Writers:

- The technical information contained herein is consistent with the properties of this material but should not be used in the preparation of specifications as it is intended for reference only.
- For assistance in preparing specifications, please contact your local Kester Solder office for details.

For Further Information on the MaskTek PPT Process:

For further information on the PPT process, a method of forming macro-planar solid solder deposits of between .0007”-.030” thick on surface mount lands on the bare board, contact:

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