



SOLDER CONNECTION

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QUALITEK® Technical Bulletin

Delta RA300 60/40 Rosin Activated Solder Wire

DESCRIPTION

RA300 60/40 contains a rosin activated core which has extremely rapid wetting action and excellent flowing properties. RA300 residues are non-corrosive and electrically non-conductive. RA300 conforms to IPC-J-STD-004B specifications

FEATURES AND BENEFITS

- Excellent wettability and solder flow
- Non-corrosive, non-conductive residues

FEATURES AND BENEFITS

| Flux Classification | Specification | Test Method |
|---|--------------------------------|----------------------------|
| Softening Point | ROM1 | J-STD-004 |
| Copper Mirror | 80 °C | |
| Corrosion | Partial removal of copper film | IPC-TM-650 2.3.32 |
| SIR | Pass | IPC-TM-650 2.6.15 |
| JSTD-004, Pattern Down | 1.62 x 10 ¹⁰ | IPC-TM-650 2.6.3.3 |
| Electromigration | Pass | Bellcore GR-78-CORE 13.1.4 |
| Post Reflow Flux Residue Acid Value (mgKOH//g) | 60% | TGA Analysis |
| Flux Residue Dryness | 140 - 160 | IPC-TM-650 2.3.13 |
| Spitting of Flux-Cored Solder | Pass | IPC-TM-650 2.4.47 |
| Solder Spread | 0.3% | IPC-TM-650 2.4.48 |
| | 100 mm ² | IPC-TM-650 2.4.46 |

WIRE DIAMETER

Delta Solder Wire RA300 60/40 is available in a variety of diameters. The chosen diameter is based on application methods, pad size, and desired solder joint volume. Generally, the diameter of the wire should be slightly larger than the width/diameter of the joint or connection to be soldered. Below is a list of standard diameters.

| | | | | | | | | | | |
|----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Diameter/Inch | 0.125 | 0.092 | 0.062 | 0.050 | 0.040 | 0.032 | 0.028 | 0.025 | 0.020 | 0.015 |
| Diameter/mm | 3.18 | 2.33 | 1.57 | 1.27 | 1.01 | 0.81 | 0.71 | 0.63 | 0.51 | 0.38 |
| Std.Wire Gauge | 11 | 13 | 16 | 18 | 19 | 21 | 22 | 23 | 25 | 28 |
| Tolerance, in. | +/-0.006 | +/-0.005 | +/-0.003 | +/-0.002 | +/-0.002 | +/-0.002 | +/-0.002 | +/-0.002 | +/-0.002 | +/-0.002 |

FLUX PERCENTAGE

Utilizes a state-of-the-art automatic wire extrusion and wire drawing machines to manufacture consistent solder. The introduction of flux core in the wire extrusion process involves continual monitoring of flux percentage to ensure minimal flux voids and irregular wire. Typical flux percentage for leaded solder is 1.1 – 3.3%.

PHYSICAL PROPERTIES

A no clean resin based core flux with alloy composition Sn60/Pb40, which is a eutectic alloy. 60/40 alloys conform to and exceed the impurity requirements of IPC-J-STD-006C.

STORAGE & SHELF LIFE

Solder wire storage should be in a 65-80 °F environment away from direct heat. We recommend using gloves when handling solder wire directly. Solder wire has an indefinite shelf life.

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TYPICAL ANALYSIS

| Typical Analysis | | | | | | | | | | | | | |
|------------------|--------------|--------------|-----|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Sn | Ag | Cu | Pb | Sb | Bi | In | As | Fe | Ni | Cd | Al | Zn | Au |
| 59.5 -60.5 | 0.100 Max | 0.080 Max | Bal | 0.200 Max | 0.100 Max | 0.100 Max | 0.030 Max | 0.020 Max | 0.010 Max | 0.002 Max | 0.005 Max | 0.003 Max | 0.050 Max |

| | Sn60/Pb40 |
|---------------------------------------|-----------|
| Melting Point, °C | 183 - 188 |
| Hardness, Brinell | 16 HB |
| Coefficient of Thermal Expansion | 23.9 |
| Tensile Strength, kgf/cm ² | 535 |
| Tensile Elongation, % | 40 |
| Density, g/cm ³ | 8.50 |
| Electrical Resistivity, (μΩ-cm) | 15.3 |
| Thermal Conductivity, W/m-K | 49 |

FLUX RESIDUES & CLEANING

RA300 is a rosin activated formulation containing non-conductive residues, so residues do not need to be removed for typical applications. However, if residue removal is desired, please contact one of our sales offices to discuss your application.

DISPOSAL

RA300 60/40 solder should be disposed of in accordance with federal, state & local authority requirements.

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