



SOLDER CONNECTION

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QUALITEK® Technical Bulletin

Delta RA300 63/37 Rosin Activated Solder Wire

DESCRIPTION

RA300 63/37 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

	Specification	Test Method
Flux Classification	ROM1	J-STD-004
Softening Point	80 °C	
Copper Mirror	Partial removal of copper film	IPC-TM-650 2.3.32
Corrosion	Pass	IPC-TM-650 2.6.15
SIR		
JSTD-004, Pattern Down	1.85 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 63/37 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	11	13	16	18	19	21	22	23	25	28
Gauge										
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 Sn63/Pb37, which is a eutectic alloy. 63/37 alloys conform to and exceed the impurity requirements of IPC-J-STD-006C.

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TYPICAL ANALYSIS

Typical Analysis													
Sn	Ag	Cu	Pb	Sb	Bi	In	As	Fe	Ni	Cd	Al	Zn	Au
62.5 -63.5	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

	Sn63/Pb37
Melting Point, °C	183 E
Hardness, Brinell	14 HB
Coefficient of Thermal Expansion	24.7
Tensile Strength, psi	4442
Density, g/cm ³	8.42
Electrical Resistivity, (μΩ-cm)	14.5
Electrical Conductivity, 10 ⁴ /ohm-cm	6.9

	Sn63/Pb37
Yield Strength, psi	3950
Total Elongation, %	48
Joint Shear Strength, at 0.1mm/min 20 °C	23
Joint Shear Strength, at 0.1mm/min 100 °C	14
Creep Strength, N/mm ² at 0.1mm/min 20 °C	3.3
Creep Strength, N/mm ² at 0.1mm/min 100 °C	1
Joint Fatigue Cycle, 15N/mm ² 20 °C	1100
10N/mm ² 100 °C	900

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.

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.

DISPOSAL

RA300 63/37 solder should be disposed of in accordance with federal, state & local authority requirements.

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