



RA300 (Sn63/Pb37)
R.A. DELTA[®]
SOLDER WIRE

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Description

Flux Core

Delta Solder Wire RA300 contains a rosin activated core that is available with both lead-containing alloys and lead-free alloys. RA300 cored solder wire 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.

Main Features

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

Technical Data (Flux Extract)

Flux Classification	Specification	Test Method
	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		
J-STD-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	60%	TGA Analysis
Acid Value (mgKOH/g)	140 - 160	IPC-TM-650 2.3.13
Flux Residue Dryness	Pass	IPC-TM-650 2.4.47
Spitting of Flux-Cored Solder	0.3%	IPC-TM-650 2.4.48
Solder Spread	100 mm ²	IPC-TM-650 2.4.46

Wire Diameter

Sn63/Pb37 RA300 Delta Solder Wire 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.

Standard wire 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

Qualitek 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

Solder Composition

Qualitek has developed a rosin activated based core flux with alloy composition, Sn63/Pb37, which is a eutectic alloy. Qualitek Sn63/Pb37 alloy conforms to and exceeds the impurity requirements of IPC-J-STD-006C.

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		Sn63/Pb37
Melting Point, °C	183 E	Yield Strength, psi	3950
Hardness, Brinell	14 HB	Total Elongation,%	48
Coefficient of Thermal Expansion	24.7	Joint Shear Strength, at 0.1mm/min 20 °C	23
Tensile Strength, psi	4442	Joint Shear Strength, at 0.1mm/min 100 °C	14
Density, g/cm ³	8.42	Creep Strength, N/mm ² at 0.1mm/min 20 °C	3.3
Electrical Resistivity, (μΩ-cm)	14.5	Creep Strength, N/mm ² at 0.1mm/min 100 °C	1
Electrical Conductivity, 10 ⁴ /ohm-cm	6.9	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, the use of Everkleen 1005 Buffered Saponifier with a 5-15% concentration in hot 60 °C (140 °F) de-ionized water will aid in residue removal.

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.

Packaging

Qualitek flux-core wire and solid wire are packed in

12.5lb -box of ½ lb spools

25 lb -box of 1 lb spools

12.5kg -box of ½ kg spools

8 kg -box of 1kg spools

40 lb -box of 5 lb spools

20 lb -box of 20 lb spools

Disposal

Sn63/Pb37 RA300 leaded solder should be disposed of in accordance with federal, state & local authority requirements.