



RA300 (Sn60/Pb40)
R.A. DELTA[®]
SOLDER WIRE

CORPORATE HEADQUARTERS USA: 315 Fairbank St. Addison, IL † 630-628-8083 FAX 630-628-6543

EUROPE UK: Unit 9 Apex Ct. Bassendale Rd. Bromborough, Wirral CH62 3RE † 44 151 334 0888 † FAX 44 151 346 1408

ASIA-PACIFIC HEADQUARTERS SINGAPORE: 6 Tuas South St. 5 Singapore 637790 † 65 6795 7757 † FAX 65 6795 7767

PHILIPPINES: Phase 1 Qualitek Ave. Mariveles, Bataan Philippines C-2106 † 6347 935 4163 † FAX 63475613717

CHINA: 3B/F, YiPa Print Bldg. 351 # JiHua Rd., Buji Shenzhen, China 518112 † 86 755 28522814 † FAX 86 755 28522787

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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)

	Specification	Test Method
Color & Appearance	Amber solid	Visual
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		
J-STD-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	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

Sn60/Pb40 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, Sn60/Pb40. Qualitek Sn60/Pb40 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
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, 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

Sn60/Pb40 RA300 leaded solder should be disposed of in accordance with federal, state & local authority requirements.