

SOLDER CONNECTION

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QUALITEK® Technical Bulletin

Delta RA300 SAC305 Rosin Activated Solder Wire

DESCRIPTION

RA300 SAC305 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-JSTD-004B specifications.

FEATURES AND BENEFITS

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

FEATURES AND BENEFITS

	Specification
Colour & Appearance	Amber solid
Flux Classification	ROM1
Softening Point	80° C
Silver Chromate	Detection
SIR	$>1.0 \times 10^9$
Acid Value (mgKOH/g sample)	140-160

WIRE DIAMETER

Delta Solder Wire RA300 tin/silver/copper alloys 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	0.010
Diameter/mm	3.18	2.33	1.57	1.27	1.01	0.81	0.71	0.63	0.51	0.38	0.25
Std.Wire	11	13	16	18	19	21	22	23	25	28	31
Gauge											
Tolerance, in.	+/-0.006	+/-0.005	+/-0.003	+/-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 high temperature lead-free SAC-containing alloy solder is 1.1 – 3.3%.

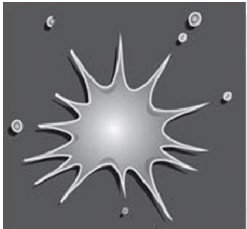
STORAGE & SHELF LIFE

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.

PHYSICAL PROPERTIES

A rosin-based core flux within tin/silver/copper (SAC) alloys. SAC 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
LF955-38	Bal	3.6-4.0	0.5-0.9	0.070 Max	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
LF958-35	Bal	3.3-3.7	0.5-0.9	0.070 Max	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
LF965-30	Bal	2.8-3.2	0.3-0.7	0.070 Max	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
LF217	Bal	3.8-4.2	0.3-0.7	0.070 Max	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

	Sn/Ag/Cu	Sn63/Pb37
Melting Point, °C	217-221	183 E
Hardness, Brinell	15HB	14HB
Coefficient of Thermal Expansion	Pure Sn= 23.5	24.7
Tensile Strength, psi	4312	4442
Density, g/cc	7.39	8.42
Electrical Resistivity , (μohm-cm)	13.0	14.5
Electrical Conductivity, %IACS	16.6	11.9

	Sn/Ag/Cu	Sn63/Pb37
Yield Strength, psi	3724	3950
Total Elongation, %	27	48
Joint Shear Strength, at 0.1mm/min 20 °C	27	23
Joint Shear Strength, at 0.1mm/min 100 °C	17	14
Creep Strength, N/mm ² at 0.1mm/min 20 °C	13.0	3.3
Creep Strength, N/mm ² at 0.1mm/min 100 °C	5	1
Thermal Conductivity, W/m.K	58.7	50.9

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

SAC alloy RA300 lead-free solder should be disposed of in accordance with federal, state & local authority requirements.

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