Qualitek Group Of Companies

QUALITEK
www.qualitek.com

RA, RMA, WS
LEAD FREE
SOLDER WIRE

CORPORATE HEADQUARTERS USA: 315 Fairbank St. Addison, IL ! 630-628-8083 or 1-800-365-3750 ! 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

Physical Properties

Solder Composition

Qualitek Sn/Ag/Cu (Tin/Silver/Cu) Alloys are designed as a lead-free alternative for Sn/Pb alloys for electronics assembly operations. The Qualitek Sn/Ag/Cu alloys conform and exceed the impurity requirements of J-Std-006 and all other relevant international standards.

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	0.050 Max	0.050 Max	0.050 Max	0.050 Max	0.010 Max	0.010 Max	0.005 Max	0.001 Max	0.001 Max	0.001 Max	0.002 Max
LF965-30	Bal	2.8-3.2	0.3-0.7	0.050 Max	0.050 Max	0.050 Max	0.050 Max	0.010 Max	0.010 Max	0.005 Max	0.001 Max	0.001 Max	0.001 Max	0.002 Max
LF217	Bal	3.8-4.2	0.3-0.7	0.050 Max	0.050 Max	0.050 Max	0.050 Max	0.010 Max	0.010 Max	0.005 Max	0.001 Max	0.001 Max	0.001 Max	0.002 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

Wire Diameter

SnAgCu alloy 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

Diamter/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 Gauge	11	13	16	18	19	21	22	23	25	28	31
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

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 constant monitoring of flux percentage to ensure minimal flux voids and irregular wire. Typical flux percentage for lead free solder is **2.0-4.0%.**

RMA 200 (Rosin Mildly Activated)

RMA 200 has been formulated for use in high reliability electronic assembly where pure rosin core does not provide fast spreading and wetting actions and activated rosin residues may be electrically less reliable. Meets J-STD-004 / J-STD-006.

RA 300 (Rosin Activated)

Rapid wetting action and fast flowing properties of RA 300 are the main characteristics of this flux-core formulation. Other important features include the non-corrosive and electrically non-conductive properties. RA 300 meets J-STD-004 / J-STD-006.

SRA 500 (Super Activated Rosin)

Qualitek SRA 500 is the supreme activated rosin flux-core wire. It is recommended for highly oxidized metals and difficult-to-solder metals. Meets J-STD-004 / J-STD-006.

WS 700 (Water-Soluble)

WS 700 core is formulated for electronic applications where rapid wetting action and ease of cleaning flux residue with water rinse or in-line cleaning is required. It is very compatible with all liquid water-soluble organic flux. It will not decompose and carbonize under prolonged heat. Meets J-STD-004 / J-STD-006.

Qualitek® is a trademark of Qualitek International, Inc.

PHYSICAL & CHEMICAL CHARACTERISTICS (FLUX EXTRACT)

	RA	RMA	SRA	WATER-SOLUBLE
Color & Appearance	Amber Solid	Amber Solid	Amber Solid	Lt. Opaque Solid
Softening Point, C°(Flux Extract)	80°	92°	92°	60°
Acid Number (mgKOH/g sample)	150-160	150-160	130-150	120-130
Silver Chromate(Qualitative Halides)	Detection	No Detection	Detection	Detection
Classification Per J-STD-004	ROM1	ROL0	ROH1	ORH1
Surface Insulation Resistance	>1.0 x 10^9	>1.0 x 10^9	>1.0 x 10^9	>1.0 x 10^9 (cleaned)
Shelf Life	Indefinite	Indefinite	Indefinite	Indefinite
Residue Removal	Not Required. May be removed with CFC replacement solvent or Qualitek 1005 Saponifier	Not Required. May be removed with CFC replacement solvent or Qualitek 1005 Saponifier	Recommended. May be removed with CFC replacement solvent or Qualitek 1005 Saponifier	Required. Use soft or DI water at 130^O – 150^OF

Storage & Shelf Life

Solder wire storage should be in a 65-80℉ environment away from direct heat. When directly handling solder wire it is recommend to use appropriate gloves. Solder wire has an indefinite shelf life.

Disposal

RA300, SRA500, RMA200 and WS700 Lead Free solder should be disposed of in accordance with state & local authority requirements.

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