



WS700 LEAD FREE Water Soluble (OA) SOLDER WIRE

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Physical Properties

Solder Composition

Qualitek LF965-35 is designed as a lead-free alternative for Sn/Pb alloys for electronics assembly operations. The Qualitek LF965-35 alloy conforms and exceeds 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
Bal	3.3-3.7	0.050 Max	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

	SN96.5/Ag3.5	Sn63/Pb37		SN96.5/Ag3.5	Sn63/Pb37
Melting Point, ° C	221E	183 E	Yield Strength, psi	3256	3950
Hardness, Brinell	15HB	14HB	Total Elongation,%	24	48
Coefficient of Thermal Expansion	Pure Sn= 30.2	24.7	Joint Shear Strength, at 0.1mm/min 20 C	27	23
Tensile Strength, psi	3873	4442	Joint Shear Strength, at 0.1mm/min 100 C	17	14
Density, g/cc	7.5	8.42	Creep Strength, N/mm ² at 0.1mm/min 20 C	13.7	3.3
Electrical Resistivity , (μohm-cm)	12.3	14.5	Creep Strength, N/mm ² at 0.1mm/min 100 C	5	1
Electrical Conductivity, %IACS	14.0	11.9	Thermal Conductivity, W/m.K	55.3	50.9

Available Wire Diameters

Diameter/in	0.125	0.092	0.062	0.050	0.040	0.032	0.025	0.020	0.015	0.010
Diameter/mm	3.18	2.34	1.57	1.27	1.02	0.81	0.64	0.51	0.38	0.25
Std. Wire Gauge	11	13	16	18	19	21	23	25	28	31

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%**.

Flux Core

Qualitek has developed a unique flux system designed specifically for high temperature lead free alloys. It provides the fluxing activity levels that promote fast wetting action and maximum wetting spread. WS700 exhibits virtually no spattering. WS700 conforms to J-STD-004, ORH1.

Main Features

- ❑ Excellent wettability
- ❑ Flux does not carbonize or decompose under prolonged heat

Flux Classification	Specification	Test Method
	ORH1	JSTD-004
Copper Mirror	Complete removal of copper film	IPC-TM-650 2.3.32
Silver Chromate Corrosion	Fail	IPC-TM-650 2.3.33
SIR (cleaned)	Pass (cleaned coupons)	IPC-TM-650 2.6.15
JSTD-004, Pattern Down	1.49x 10 ¹⁰	IPC-TM-650 2.6.3.3
Bellcore (Telecordia)	4.12 x 10 ¹¹ ohms	Bellcore GR-78-CORE 13.1.3
Post Reflow Flux Residue	65%	TGA Analysis
Acid Value	120-130	IPC-TM-650 2.3.13
Flux Residue Dryness	Pass	IPC-TM-650 2.4.47
Spitting of Flux-Cored Solder	0.4%	IPC-TM-650 2.4.48
Solder Spread	130 mm ²	IPC-TM-650 2.4.46

CLEANING

WS700 is a water-soluble formulation therefore the residues **must** be removed for typical applications. Residue removal is easily achieved, with the use of hot 60 C (140 F) de-ionized water in either a batch or conveyORIZED cleaner. Spray pressures so be maintained at 20-30 psi and conveyor speed of 3-6ft/min.

Storage & Shelf Life

Solder wire storage should be in a 65-80°F 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

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