

Lead Free

product brochure



QUALITEK



Qualitek International, Inc. is a leading manufacturer of soldering materials for the electronic assembly industry. For over 25 years Qualitek has provided quick turnaround and unsurpassed customer support from its manufacturing facilities located around the globe.

Qualitek has positioned itself at the forefront of technological innovation including the development of suitable lead free materials.

Qualitek Lead Free Supplier

Qualitek understands that implementation of lead free processes can be complex and will assist customers in overcoming such challenges. Qualitek offers advanced solutions for lead free applications, which include: solder bar, solder powder, no-clean and water-soluble cored wire, liquid flux, and solder paste.

Lead Free Solder Composition

Several lead free solder alloys have been specified as alternatives for Sn/Pb alloys used in electronics assembly operations. Qualitek manufactures these alloys to exceed the requirements of J-STD-006 and all other relevant international standards.

Physical Property And Alloy Comparison

Alloy	Composition	Melting Point °C	Hardness Brinell	Tensile Strength, psi	Density, g/cc	Coefficient Of Thermal Expansion	Electrical Resistivity, (μohm - cm)	Electrical Conductivity % IACS
Sn63	Sn63/Pb37 Common Lead Alloy	183E	14HB	4442	8.42	24.7	14.5	11.9
Bi58	Sn42/Bi58	139E	22HB	5400	8.72	13.8	34.5	4.5
LF88*	Sn87.1/In10.5/Ag2.0/Sb0.4	188-197	13HB	7610	7.37	24.5	16.3	14
Sn96.5	Sn96.5/Ag3.5	221E	15HB	3873	7.5	Pure Sn=23.5	12.3	14
Sn95	Sn95/Ag5	221-245	13.7HB	4780	7.39	Pure Sn=23.5	13.7	12.6
SAC305	Sn96.5/Ag3.0/Cu0.5	217-221	15HB	4312	7.39	Pure Sn=23.5	13.0	16.6
Sn99	Sn99.3/Cu0.7	227E	9HB	3190	7.31	Pure Sn=23.5	10-15	13.0
Sb5	Sn95/Sb5	232-240	15HB	5110	7.26	20.09	14.5	11.9

LF88* US Patent 5, 435, 857

The above physical properties were gathered from various technical publications; data may vary from different sources.



Flux Core Wire Solder

Formulations:	NC600	WS700
Type	No-Clean Wire Core	Water-Soluble Wire Core
Flux Classification:	ROL0	ORH1
Copper Mirror	No removal	Complete removal
Silver Chromate	Pass	Fail
Corrosion	Pass	PASS (cleaned)
SIR		
JSTD-004	Pass	PASS (cleaned)
Bellcore (Telecordia)	Pass	PASS (cleaned)
Electromigration	Pass	PASS (cleaned)
Acid Value	190-210	120-130
Solder Spread	>130 mm ²	>130 mm ²

Lead Free Cored Solder Wire

Qualitek has developed a unique flux system designed specifically for the higher melting temperatures of lead free alloys. This system promotes fast wetting action and maximizes spread. Other cored wire flux types are also available.

Lead Free Qualitek Q-Bar

Lead free Qualitek Q-Bar is packaged in easy to handle 20lb. boxes and is trapezoidal in shape providing obvious differentiation from leaded bar. High purity Q-Bar exceeds the requirements of J-STD-006.

Super Deox #1H Dross Eliminator

Formulated to convert solder oxides (known as dross) into usable solder. Use of Super Deox #1H can reclaim over 80% of dross, substantially reducing solder costs.

Lead Free Tip Tinner

Tip Tinner is a mixture of solder powder and thermally stable, oxide-reducing compounds. Tip Tinner provides better cleaning and re-tinning of highly oxidized soldering iron tips than a wet sponge or rosin-cored wire. Very effective for cleaning and re-tinning soldering iron tips.

Qualitek Lead Free Solder Paste

Flux activity levels promote thermal stability and prevent thermal degradation when reflowing in an air atmosphere. Since use of nitrogen is not required, Qualitek's lead free solder pastes provide excellent cost savings. Formulations exhibit superior joint strength, excellent wettability, and extraordinary print definition and tack life. No-clean post solder residues are non-conductive, non-corrosive and highly insulated. Qualitek's patent pending LF Green Solder Pastes are formulated to help avoid cross contamination between leaded and lead free solder pastes in a mixed production environment. Visit our website for complete details and an evaluation sample.



Lead Free Solder Paste Formulations For Stencil Printing And Syringe Dispensing

Formulations:	DSP862	DSP865A	DSP618D	DSP798LF	DSP787LF	DSP718D
Type	No-Clean Stencil Printing	No-Clean Stencil Printing	No-Clean Syringe Dispensing	Water-Soluble Stencil Printing	Water-Soluble Stencil Printing	Water-Soluble Syringe Dispensing
Flux Classification:	ROL0	ROL0	ROL0	ORH1	ORM0	ORH1
Copper Mirror	No removal	No removal	No removal	Complete removal	Partial removal	Complete removal
Silver Chromate	Pass	Pass	Pass	Fail	Pass	Fail
Corrosion	Pass	Pass	Pass	PASS (cleaned)	PASS (cleaned)	PASS (cleaned)
SIR						
JSTD-004	Pass	Pass	Pass	Pass	Pass	Pass
Bellcore (Telecordia)	Pass	Pass	Pass	Pass	Pass	Pass
Electromigration	Pass	Pass	Pass	Pass	Pass	Pass
Metal Loading	88%	88%	86%	89%	89%	86%
Solder Ball Test	Pass	Pass	Pass	Pass	Pass	Pass
Stencil Life	>8 hrs	>8 hrs	Dispensing	4-6 hrs	4 hrs	Dispensing
Abandon Time	30-60 min	30-60 min	Dispensing	30 min	60 min	Dispensing

Liquid Flux For Lead Free Soldering

Qualitek fluxes eliminate skips and shorts often experienced in wave solder assembly. Formulations are available for automated wave soldering of both bare copper and plated circuit boards. Spraying or wave fluxing may be utilized to apply Qualitek fluxes.

Liquid Fluxes For Lead Free Applications

Formulations:	355-35	392-35	737N	737NVF
Type	No-Clean VOC Free Flux	No-Clean Flux	Water-Soluble Flux	Water-Soluble VOC Free Flux
Flux Classification:	ORL0	ORL0	ORH1	ORH1
Copper Mirror	No removal	No removal	Complete removal	Complete removal
Silver Chromate	Pass	Pass	Fail	Fail
Corrosion	Pass	Pass	PASS (cleaned)	PASS (cleaned)
SIR				
JSTD-004	Pass	Pass	Pass	Pass
Bellcore (Telecordia)	Pass	Pass	Pass	Pass
Electromigration	Pass	Pass	Pass	Pass
Acid Value	41.0+/-2.0	45.0+/-1.0	----	----
Specific Gravity	1.007+/-0.010	0.810+/-0.005	0.846+/-0.006	1.010+/-0.010
Solid Content	4.0-5.0	4.0-5.0	16.0-18.0	12.0-15.0
pH (as is)	----	----	6.8-7.8	6.8-7.8

Paste Flux

Qualitek paste flux is a combination of tackifier and a fluxing agent specially formulated for touch-up soldering, BGA packages and flip chip applications. Paste flux may be applied by screen or stencil printing, pin-transfer and syringe dispensing.

Paste Flux For Lead Free Assembly

Formulations:	PF608	PF708
Type	No-Clean	Water-Soluble
Flux Classification:	ROL0	ORH1
Copper Mirror	No removal	Complete removal
Silver Chromate	Pass	Fail
Corrosion	Pass	PASS (cleaned)
SIR	Pass	Pass
Post Reflow Flux Residue	45%	60%
Acid Value	113	55

QUALITEK

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