



SN100e™

PRODUCT BULLETIN

Paste - Wire - Flux Chemistries

Purity Improves Process

Qualitek's lead free solder SN100e has been developed as a lead free alternative for those now using costly SAC alloys and for those switching from lead containing Sn63/Pb37 alloys to the lead free process.

SN100e is manufactured from tin, copper, and cobalt to create solder so pure it far exceeds the most common specification requirements. SN100e lead-free solder alloy is RoHS compliant and reduces copper dissolution. This alloy provides brighter, shinier, less grainy solder joints when compared to SAC305 alloy and is much less expensive.

Qualitek's manufacturing process assures batch-to-batch consistency for predictable solder performance.

Mixing Lead Free Alloys

SN100e is compatible with all SAC and Sn/Cu alloys. SN100e performs with ENIG, immersion tin, immersion silver, OSP, and hot air leveled board finishes. SN100e provides ability to standardize on one lead-free alloy for all soldering processes (wave, SMT, selective, and re-work).

Versatile Uses

SN100e is primarily used in printed circuit board assembly operations common to the electronics market. It is an available choice lead free alloy for the following Qualitek products:

- Solder Paste
- Wire Solder
- Bar Solder
- Solder Spheres
- Solder Powder

Certified

Certificates of Conformance and Analysis are automatically provided with each shipment.

Qualitek's SN100e solders meet or exceed the rigid requirements of Specification J-STD-006.

Physical Property And Alloy Comparison

| Alloy | Composition | Melting Point °C | Density | Tensile Strength, MPa | Coefficient Of Thermal Expansion | Electrical Resistivity, (μohm - m) | Thermal Conductivity (J/-m-s-K) |
|-----------|-----------------------------|------------------|---------|-----------------------|----------------------------------|------------------------------------|---------------------------------|
| Sn100e | Sn99.5/Cu0.5/Co | 228 | 7.4 | 28 | Pure Sn = 23.5 | 0.123 | 82 |
| Sn100C | Sn/Cu/Ni | 227 | 7.4 | 32 | Pure Sn = 23.5 | 0.13 | 64 |
| SAC305 | Sn96.5/Ag3.0/Cu0.5 | 217-221 | 7.39 | 52 | Pure Sn = 23.5 | 0.15 | 64 |
| Sn63/Pb37 | Sn63/Pb37 Common Lead Alloy | 183E | 8.42 | 44 | 24.7 | 0.12 | 58 |

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Qualitek Lead Free Solder Paste

Qualitek's lead free solder paste formulations exhibit superior joint strength, excellent wettability, extraordinary print definition and tack life. The flux activity levels of these solder pastes exhibit excellent thermal stability and prevent thermal degradation when reflowed in an air atmosphere.

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.

Solder Paste

| Formulations: | DSP800LF | DSP700LF |
|-------------------------|------------------------------|-----------------------------------|
| Type | No-Clean Stencil or Dispense | Water-Soluble Stencil or Dispense |
| Flux Classification: | ROL1 | ORH1 |
| Copper Mirror | No removal | Complete Removal |
| Silver Chromate | Pass | Fail |
| Corrosion | Pass | Pass (cleaned) |
| SIR | | |
| JSTD-004 | Pass | Pass |
| Bellcore (Telecordia) | Pass | Pass |
| Electromigration | Pass | Pass |
| Metal Loading | 89% | 89% |
| Solder Ball Test | Pass | Pass |
| Stencil Life | >8 hrs | >8 hrs |
| Abandon Time | 30-60 min. | 30-60 min. |

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.

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: | ORLO | ORLO | 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 |

Flux Core Wire Solder

| Formulations: | NC600 | WS700 |
|-------------------------|----------------------|-------------------------|
| Type | No-Clean Wire Core | Water-Soluble Wire Core |
| Flux Classification: | ROLO | 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.

Recommendations made by this company and its representatives are based upon test data, experiments, and experience believed to be reliable. No guarantee of accuracy is made. All products are sold upon the condition that the buyer will make his own tests and assume the responsibility for the suitability of the product under his application and service conditions. Statements made herein will vary according to the nature of the surfaces to which the product is applied, application technique, and service condition. We in no event assume liability beyond the purchase price of our products involved and make as a condition of sale that we will replace materials proven to be defective and reported in a timely fashion, but no later than six (6) months after shipment. No representative of the manufacturer and/or seller has the authority to alter or extend these conditions.