

## L1 Cored Solder Wire

Lead-Free Cored Solder Wire for Manual or Automated Soldering



### DESCRIPTION

R-TECH L1 Solder Wire is formulated for no clean, lead free, automated and hand soldering operations requiring fast wetting and defect free soldering of even the most difficult to solder components and board PCB finishes. L1 leaves a minimal, clear, no clean residue. Tested to Industry standards including J-STD 004B and Bellcore GR78 Core (ECM), L1 residues can be considered safe to remain on an assembly when no-clean technology is appropriate to the assembly end-use. Available in all SAC, Sn Ag, Sn Cu alloys and R-TECH SC100e a cobalt doped, strong, shiny, low-cost SAC alternative. L1 offers excellent soldering performance and represents the next generation in lead free soldering.

### DISTINCTIVE FEATURES

- No Clean flux type ROL1
- Minimal, Clear, Non-Tacky Residues
- Powerful Wetting, High Speed Soldering
- RoHS & REACH Compliant (Lead Free Alloys)
- Suitable for Fast 'Drag Soldering', High Speed Automated Induction Soldering and Manual Soldering Operations
- Low Odour, Non-Offensive Fumes
- Excellent for Copper, Brass, Nickel and Zinc

**ROL1**

**No Clean**

**SC 100e**

**SAC 305**





## GENERAL SPECIFICATION

### High Purity Solder Alloy

Standardization is important to reduce variety and to promote the quality of products by defining features and characteristics governing their fitness for purpose. The standards promote clear unambiguous communication between purchasers and suppliers for quotation ordering and supply purposes.

In 1994 a single European standard, EN 29453 (ISO 9453), superseded all other European national standards including: BS 219, DIN 1707, NFC 90-550. Other equivalent international standards include J-STD-006, ASTM B32 and JIS-Z-3382.

R-TECH High Purity Solder Alloys are manufactured using only the 'Highest Purity Virgin Materials' this being part of R-TECH's simple philosophy that the best raw materials lead to the best finished products.

Below shows a typical batch analysis of the High Purity Tin used in manufacturing R-TECH's High Purity Alloys.

#### Typical batch analysis: Tin

| Sn    | Sb    | Pb    | Cu     | Zn     | Fe    | As    | Ag     | Bi     | In     |
|-------|-------|-------|--------|--------|-------|-------|--------|--------|--------|
| 99.95 | 0.009 | 0.002 | 0.0002 | 0.0001 | 0.002 | 0.002 | 0.0001 | 0.0001 | 0.0003 |

These consistent high standards apply not only to all of R-TECH's high purity solder alloys, but to its entire range of products, inclusive of flux cored and solid solders, liquid fluxes, cleaners and solder paste.

### Lead Free Solder Alloys

In accordance with REACH legislation and increasing environmental awareness R-TECH offer a complete range of 'lead free' alloys to suit all applications.

R-TECH's range of lead free solder alloys includes:

| Alloy Name  | Alloy Breakdown        | Melting Temperature °C |
|-------------|------------------------|------------------------|
| 99C         | Sn99.3/Cu0.7           | 227                    |
| SC100e      | Cu0.5-0.7/Sn Remainder | 227                    |
| SAC0307     | Sn99/Ag0.3/Cu0.7       | 217-227                |
| SAC305      | Sn96.5/Ag3/Cu0.5       | 217-220                |
| Alloy 403+  | SnCu0.7Ni0.05Ge        | 227                    |
| Alloy 403p+ | SnCu0.7Ni0.05GeP       | 227                    |

Ag-Silver (improves solderability, improves solder joints), Cu-Copper, Ge-Germanium (dross inhibitor, improves wetting), Ni-Nickel (improves solderability, corrosion resistance, shiny joints), P-Phosphorus (anti-oxidant, dross inhibitor), Sn-Tin

Other alloys available, please note that not all alloys are available ex-stock and minimum order quantities may apply.

### Wire gauge (Diameter)

The wire gauge (diameter) for R-TECH solid and flux cored solder wires is represented as SWG (Standard Wire Gauge). The equivalent imperial and metric values are shown in the table.

Other wire diameters available

Not all wire diameters available in all stocking units.

The information supplied in this technical data sheet is designed only as guidance for the safe use and handling of the product. This information is correct to the best of our knowledge and belief at the date of publication however no guarantee is made to its accuracy. This information related only to the specific material designated and may not be valid for such material used in combination with any other materials or in any other process.

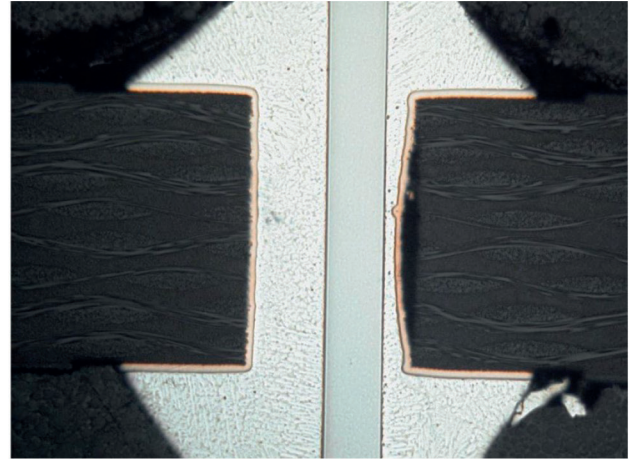
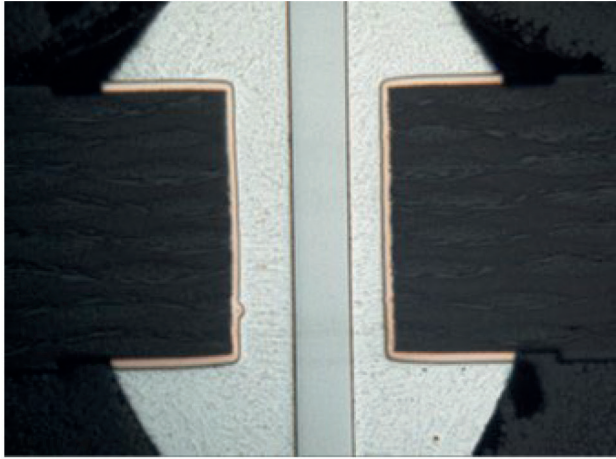
| SWG | mm    | Inch  |
|-----|-------|-------|
| 10  | 3.25  | 0.128 |
| 11  | 2.95  | 0.116 |
| 12  | 2.64  | 0.104 |
| 13  | 2.34  | 0.092 |
| 14  | 2.03  | 0.080 |
| 16  | 1.63  | 0.064 |
| 18  | 1.22  | 0.048 |
| 20  | 0.914 | 0.036 |
| 21  | 0.813 | 0.032 |

| SWG | mm    | Inch  |
|-----|-------|-------|
| 22  | 0.711 | 0.028 |
| 24  | 0.599 | 0.022 |
| 26  | 0.457 | 0.018 |
| 28  | 0.375 | 0.014 |
| 30  | 0.315 | 0.012 |
| 32  | 0.274 | 0.010 |
| 34  | 0.234 | 0.009 |
| 36  | 0.193 | 0.008 |



## ENVIRONMENTAL/OPERATING SPECIFICATION

R-TECH L1 is suitable for hand and robotic soldering applications. Solder wire diameter and soldering iron tip size should be selected to suit the parts/components to be soldered. Soldering irons should provide enough heat for the solder alloy selected. A typical solder tip temperature should be between 120°C and 160°C above the liquidus temperature of the alloy. The ideal temperature will be dependent on the individual assembly. Take care not to overheat the solder as this causes an increase in the depth of inter-metallic layer, which weakens the joint.



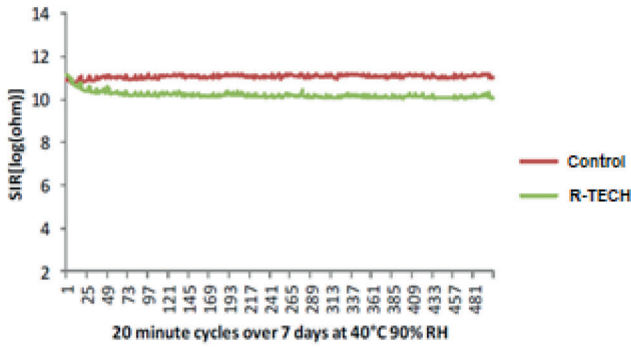
Microsection of R-TECH SAC alloy, showing a good even fill and even with poor pin placement.

### Commitment to Care

Lead free soldering represents a clear commitment to care for the long-term health of our planet and its inhabitants, by eliminating the use of toxic materials which can leech into the water supply. The R-TECH flux and activation system does not include any known carcinogens or additives which may be damaging to the reproductive health of operators. Unfortunately, some manufacturers and distributors do not share our considerate approach and insist on using such additives. Often these additives are only used in a low level, typically ~1-3% within the flux formulation, so ~0.1% within the solder wire, these activators are then not reported in SDS documentation even though used in considerable volume within the flux. We offer a commitment to care for users of R-TECH by never using such additives, whilst still offering an improvement in performance and reliability. R-TECH Solder Wire and our insistence on ethical product development allows you to fulfill your commitment to the environment and manufacturing performance whilst offering you peace of mind.

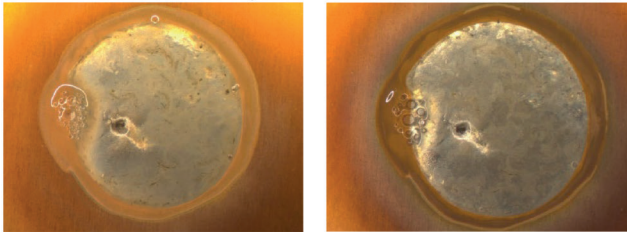
## Test Data

### L1 Median Surface Insulation Resistance J-STD-004B



7 day continuous Surface Insulation Resistance test, testing cycles every 20 minutes at 5V. Showing no dendrite formation and far exceeding J-STD-004B requirements of greater than 100 MΩ.

J-STD-004B 10 day corrosion test. 40°C 93% RH

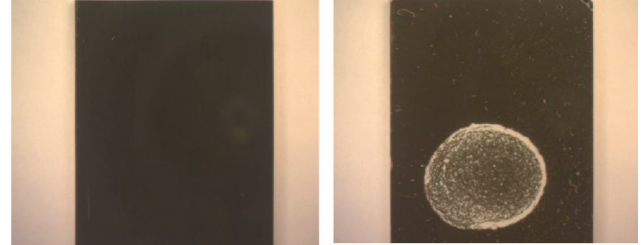


0 Hours

240 Hours

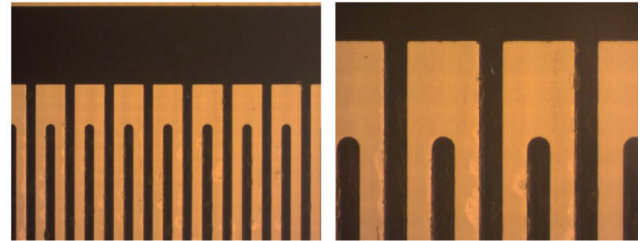
No evidence of corrosion or green/blue discoloration

J-STD-004B copper mirror test. 24 hr 23°C 50% RH requirement for type L (low corrosion) is no evidence of breakthrough of the copper mirror.



R-TECH Flux  
(non-corrosive)

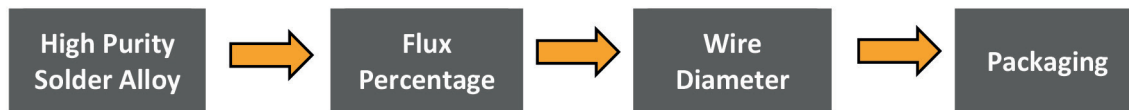
Competitor Type M Flux  
(corrosive)



J-STD-004B Surface Insulation Resistance test showing no conductive anodic filament (CAF) migration or dendritic growth after 168 hours at 40°C, 90% relative humidity.

## Selecting R-TECH Cored Solder Wire

To choose the perfect solder wire for your application select the alloy, flux percentage, wire gauge and packaging.





## CERTIFICATION AND STANDARDS

|   |  |
|---|--|
| Flux Classification<br>(J-STD-004B)                                 | ROL1   |
| Quantitative Halide<br>(J-STD-004B)<br>(IPC-TM-650 2.3.28)          | < 0.5%   |
| Rosin Softening Point   | 70-80°C  |
| Surface Insulation Resistance<br>(J-STD-004B)<br>(IPC-TM-650 2.6.3) | Pass   |
| Electro Migration<br>(Bellcore GR-78)<br>(IPC-TM-650 2.6.14)        | Pass   |
| Copper Mirror Test<br>(J-STD-004A/B)<br>(IPC-TM-650 2.3.32)         | Pass   |
| Copper Corrosion Test<br>(J-STD-004A/B)<br>(IPC-TM-650 2.6.15)      | Pass   |
| Shelf Life<br>(Stored in dry conditions)<br>(10°C to 40°C)          | 4 Years (guaranteed)<br>Indefinite if stored correctly |



## OPTIONS (MOQ may apply)

| Product | Flux Content  | Standard Packaging                            |
|---------|---------------|---|
| L1      | 1%, 2% and 3% | 0.25Kg, 0.5Kg, 2.5Kg, 3Kg, 5Kg and 10Kg reels |

Other packaging options available. For more information on alternate packaging options please contact our sales team.

Available in all SAC, Sn Ag, Sn Cu alloys and R-TECH High Purity SC100e a cobalt doped, strong, shiny, low cost SAC alternative.



## PART NUMBER TABLE

| Part number    | Alloy  | Flux Content | Gauge | Reel size | UNSPSC   | EAN           | Country of Origin |
|----------------|--------|--------------|-------|-----------|----------|---------------|-------------------|
| <b>85-7014</b> | SC100e | 2%           | 18    | 250g      | 23271806 | 5053556008667 | United Kingdom    |
| <b>85-6992</b> | SC100e | 2%           | 18    | 500g      | 23271806 | 5053556008186 | United Kingdom    |
| <b>85-7015</b> | SC100e | 2%           | 20    | 500g      | 23271806 | 5053556008674 | United Kingdom    |
| <b>85-7016</b> | SC100e | 2%           | 22    | 250g      | 23271806 | 5053556008681 | United Kingdom    |
| <b>85-6991</b> | SC100e | 2%           | 22    | 500g      | 23271806 | 5053556008179 | United Kingdom    |
| <b>85-7017</b> | SC100e | 2%           | 26    | 250g      | 23271806 | 5053556008698 | United Kingdom    |
| <b>85-7018</b> | SC100e | 2%           | 26    | 500g      | 23271806 | 5053556008704 | United Kingdom    |
| <b>85-7019</b> | SAC305 | 2%           | 18    | 250g      | 23271806 | 5053556008711 | United Kingdom    |
| <b>85-6994</b> | SAC305 | 2%           | 18    | 500g      | 23271806 | 5053556008209 | United Kingdom    |
| <b>85-7020</b> | SAC305 | 2%           | 20    | 500g      | 23271806 | 5053556008728 | United Kingdom    |
| <b>85-7021</b> | SAC305 | 2%           | 22    | 250g      | 23271806 | 5053556008735 | United Kingdom    |
| <b>85-6993</b> | SAC305 | 2%           | 22    | 500g      | 23271806 | 5053556008193 | United Kingdom    |
| <b>85-7022</b> | SAC305 | 2%           | 26    | 250g      | 23271806 | 5053556008742 | United Kingdom    |
| <b>85-7023</b> | SAC305 | 2%           | 26    | 500g      | 23271806 | 5053556008759 | United Kingdom    |

For further information on pricing, delivery, and long-term stock agreements please contact your local business development person, telephone our main office on **01206 838000** or email **Sales@Rapidonline.com**.



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