L1 Cored Solder Wire

Lead-Free Cored Solder Wire for Manual or Automated Soldering

ROL1

No Clean

SC 100e

SAC 305

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

R-TECH

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In 1994 a single European standard, EN 29453 (ISO 9453), superseded all other European national standards including: BS 219, DIN 1707, NFC 90-550.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.

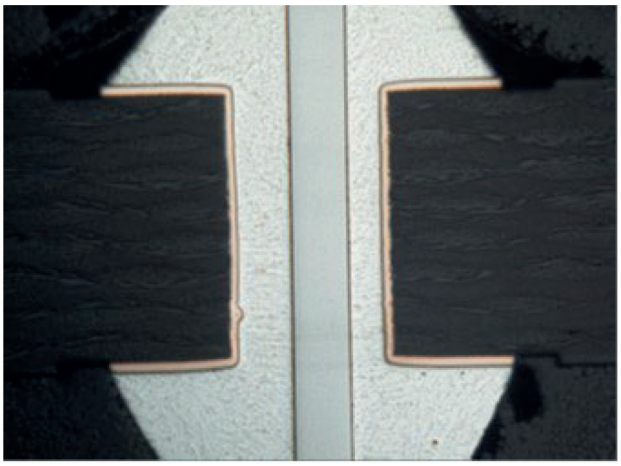
SWG	mm	Inch
10	3.25	0.128
11	2.95	0.116
12	2.64	0.104
13	2.34	0.092
14	2.03	0.080
16	1.63	0.064
18	1.22	0.048
20	0.914	0.036
21	0.813	0.032

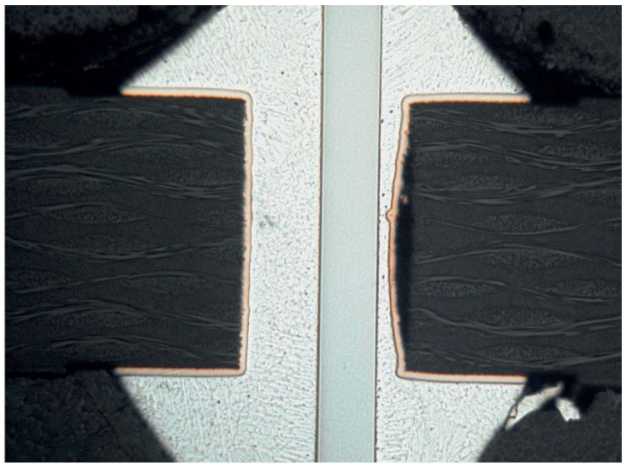
SWG	mm	Inch
22	0.711	0.028
24	0.599	0.022
26	0.457	0.018
28	0.375	0.014
30	0.315	0.012
32	0.274	0.010
34	0.234	0.009
36	0.193	0.008

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.

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.





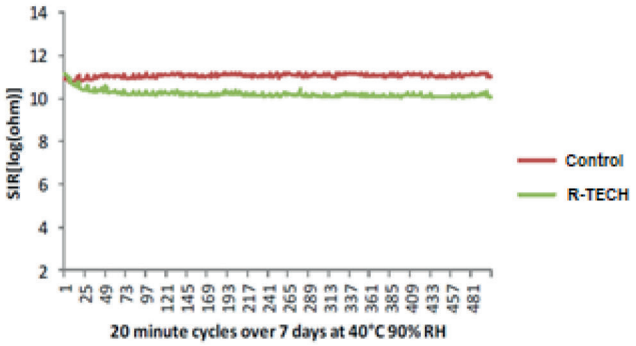
Microsection of R-TECH SAC alloy, showing a good even fill and even with poor pin placement.

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.

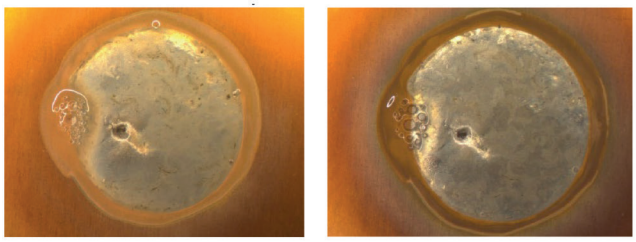
Test Data

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.

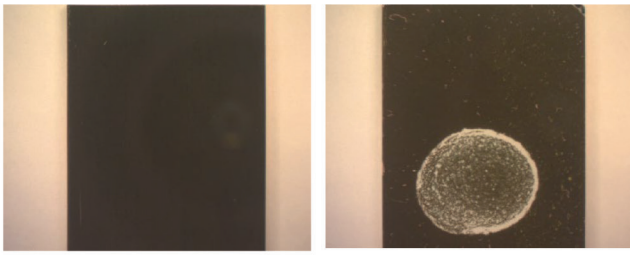
J-STD-004B 10 day corrosion test. 40°C 93% RH



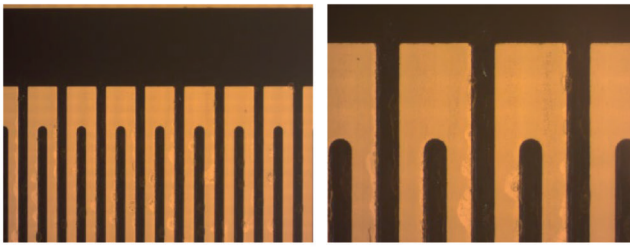
0 Hours 240 Hours

No evidence of corrosion or green/blue discolouration

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.



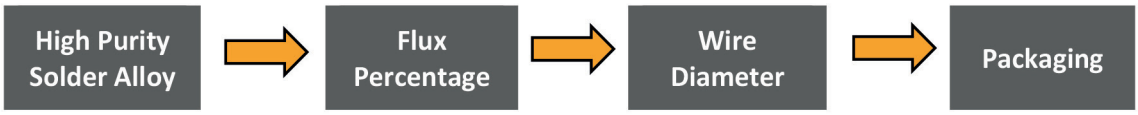
R-TECH Flux (non-corrosive) Competitor Type M Flux (corrosive)



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



CERTIFICATION AND STANDARDS

Flux Classification (J-STD-004B)	ROL1
Quantitative Halide (J-STD-004B) (IPC-TM-650 2.3.28)	< 0.5%
Rosin Softening Point	70-80°C
Surface Insulation Resistance (J-STD-004B) (IPC-TM-650 2.6.3)	Pass
Electro Migration (Bellcore GR-78) (IPC-TM-650 2.6.14)	Pass
Copper Mirror Test (J-STD-004A/B) (IPC-TM-650 2.3.32)	Pass
Copper Corrosion Test (J-STD-004A/B) (IPC-TM-650 2.6.15)	Pass
Shelf Life (Stored in dry conditions) (10°C to 40°C)	4 Years (guaranteed) 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
85-7014	SC100e	2%	18	250g	23271806	5053556008667	United Kingdom
85-6992	SC100e	2%	18	500g	23271806	5053556008186	United Kingdom
85-7055	SC100e	2%	20	100g	23271813	5053556036776	United Kingdom
85-7015	SC100e	2%	20	500g	23271806	5053556008674	United Kingdom
85-7016	SC100e	2%	22	250g	23271806	5053556008681	United Kingdom
85-6991	SC100e	2%	22	500g	23271806	5053556008179	United Kingdom
85-7056	SC100e	2%	26	100g	23271814	5053556036783	United Kingdom
85-7017	SC100e	2%	26	250g	23271806	5053556008698	United Kingdom
85-7018	SC100e	2%	26	500g	23271806	5053556008704	United Kingdom
85-7049	SAC305	2%	18	100g	23271812	5053556036738	United Kingdom
85-7019	SAC305	2%	18	250g	23271806	5053556008711	United Kingdom
85-6994	SAC305	2%	18	500g	23271806	5053556008209	United Kingdom
85-7057	SAC305	2%	20	100g	23271815	5053556036790	United Kingdom
85-7020	SAC305	2%	20	500g	23271806	5053556008728	United Kingdom
85-7048	SAC305	2%	22	100g	23271811	5053556036721	United Kingdom
85-7021	SAC305	2%	22	250g	23271806	5053556008735	United Kingdom
85-6993	SAC305	2%	22	500g	23271806	5053556008193	United Kingdom
85-7058	SAC305	2%	26	100g	23271816	5053556036806	United Kingdom
85-7022	SAC305	2%	26	250g	23271806	5053556008742	United Kingdom
85-7023	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**.

R-TECH

Tried & trusted technology

Important Notice: This data sheet and its contents (the "Information") belong to Rapid Electronics Limited or are licensed to it. No licence is granted for the use of it other than for information purposes in connection with the products to which it relates. No licence of any intellectual property rights is granted. The Information is subject to change without notice and replaces all data sheets previously supplied. The Information supplied is believed to be accurate but Rapid Electronics Limited assumes no responsibility for its accuracy or completeness, any error in or omission from it or for any use made of it. Users of this data sheet should check for themselves the Information and the suitability of the products for their purpose and not make any assumptions based on information included or omitted. Liability for loss or damage resulting from any reliance on the Information or use of it (including liability resulting from negligence or where Rapid Electronics Limited were aware of the possibility of such loss or damage arising) is excluded. This will not operate to limit or restrict Rapid Electronics Limited's liability for death or personal injury resulting from its negligence.