

## TECHNICAL DATA SHEET

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# Future HF Cored Solder Wire

## No Clean Halide Free Soldering

### Description

Future HF is a flux core contained within a Warton High Purity Solder Wire. Warton's Future HF is a no clean, halide free soldering flux, and is formulated and manufactured using a unique modified rosin. The Future range of No Clean Cored Solder is available in two flux percentages, fast flow 2% and low residue 1%. Future flux cores exhibit the absolute minimum of clear residue after soldering with no offensive odours generated during the soldering operation.

### Future HF (Halide Free)

Future HF is formulated without the use of halides, suitable for applications where a products long term reliability requires the use fluxes to the ROLO specification. Future HF eliminates any long-term corrosion potential.

### Benefits

- No Clean
- Halide Free
- ROLO Classification
- BS 441 Rosin Class 5B
- DTD 599A, QQS 571E-RMA
- Minimal Clear Residues

### Properties

|   |  |
|---|--|
| Flux Classification (J-STD-004B)                              | ROLO   |
| Acid Value mg KOH/g (J-STD-004B)                              | 260 (Typical)                                  |
| Quantitative Halide (J-STD-004B) (IPC-TM-650 2.3.28)          | Halide Free (0.05% Max) < 1000ppm (JIS Z 3197) |
| 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   |

### Availability

| Product   | Flux Content | Standard Packaging  |
|-----------|--------------|---|
| Future HF | 1%, 2%       | 0.25Kg, 0.5Kg, 2.5Kg, 3Kg, 5Kg, 10Kg, 15Kg and 25Kg reels |

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

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In 1994 a single European standard, EN 29453 (ISO 9453), superseded all other European national standards including: BS 219, DIN 1707, NFC 90-550.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

Warton High Purity Solder Alloys are manufactured using only the 'Highest Purity Virgin Materials' this being part of Warton'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/Lead used in manufacturing High Purity 63/37.

#### Typical batch analysis: Tin

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

#### Typical batch analysis: Lead

| Sn    | Sb     | Pb    | Cu    | Zn     |
|-------|--------|-------|-------|--------|
| 0.001 | 0.002  | 99.99 | 0.003 | 0.0001 |
| Fe    | As     | Ag    | Bi    | In     |
| 0.002 | 0.0005 | 0.002 | 0.005 | 0.0003 |

#### Typical batch analysis: Warton High Purity 63/37

| Sn   | Sb     | Pb        | Cu     | Zn     | Fe    | As    | Ag     | Bi     | In     |
|------|--------|-----------|--------|--------|-------|-------|--------|--------|--------|
| 63.0 | 0.0095 | remainder | 0.0007 | 0.0002 | 0.002 | 0.001 | 0.0005 | 0.0003 | 0.0003 |

These consistent high standards apply not only to all of Warton'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 Warton Metals offer a complete range of 'lead free' alloys to suit all applications.

Warton's range of lead free solder alloys includes:

| Alloy Name | Alloy Breakdown    | Melting Temperature °C |
|------------|--------------------|------------------------|
| Tin        | Sn100              | 232                    |
| 96S        | Sn96.5/Ag3.5       | 221                    |
| 96/4       | Sn96/Ag4           | 221                    |
| 98S        | Sn98/Ag2           | 221-226                |
| TSC        | Sn95.8/Ag3.5/Cu0.7 | 217-218                |
| SAC405     | Sn95.5/Ag4/Cu0.5   | 217-219                |
| Sc100e     | Cu0.5-0.7/Sn Rem   | 227                    |
| LM10A      | Sn87/Ag10/Cu3      | 214-275                |
| SACXP0307  | Sn/Cu0.7/Ag0.3     | 217-227                |
| SAC0307    | Sn99/Ag0.3/Cu0.7   | 217-227                |
| SAC305     | Sn96.5/Ag3/Cu0.5   | 217-220                |
| SAC300     | Sn97/Ag3           | 221-224                |
| SAC3       | Sn96.7/Ag2.8/Cu0.5 | 217-220                |
| SAC2       | Sn97.5/Ag2/Cu0.5   | 217-220                |
| SAC1       | Sn99.2/Ag0.3/Cu0.5 | 217-220                |
| 97C        | Sn97/Cu3           | 227-310                |
| 99C        | Sn99.3/Cu0.7       | 227                    |
| 95A        | Sb4.5-5.5/Sn Rem   | 235-240                |

Key: Sn-Tin, Ag-Silver, Cu-Copper, Rem-Remainder

Other alloys available

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

### Leaded Solder Alloys

Warton are able to offer a comprehensive range of leaded solder alloys to 'Professional Users' which will be marked as **For Professional Use Only** in accordance with REACH regulations.

Warton's range of leaded solder alloys includes:

| Alloy Name    | Alloy Breakdown       | Melting Temperature °C |
|---------------|-----------------------|------------------------|
| 60/40         | Sn60/Pb40             | 183-190                |
| 63/37         | Sn63/Pb37             | 183                    |
| 50/50         | Sn50/Pb50             | 183-215                |
| 45/55         | Sn45/Pb55             | 183-226                |
| 40/60         | Sn40/Pb60             | 183-238                |
| 35/65         | Sn35/Pb65             | 183-245                |
| 30/70         | Sn30/Pb70             | 183-255                |
| 20/80         | Sn20/Pb80             | 183-280                |
| Alloy 296 HMP | Sn5/Pb92/Ag3          | 296-301                |
| 15/85         | Sn15/Pb85             | 226-290                |
| LMP 62S       | Sn62/Pb36/Ag2         | 179                    |
| TLS/5         | Sn5/Pb94/Ag1          | 296-301                |
| HMP 5S        | Sn5/Pb93.5/Ag1.5      | 296-301                |
| Sn10Pb88Ag2   | Sn10/Pb88/Ag2         | 268-290                |
| Alloy No1     | Sn50/Pb48.6/Cu1.4     | 183-215                |
| Alloy No2     | Sn60/Pb38.2/Cu1.8     | 183-190                |
| 1/99          | Sn1/Pb99              | 300                    |
| 60/40 Ant     | Sn60/Sb0.2-0.5/Pb Rem | 183-188                |

Key: Sn-Tin, Pb-Lead, Ag-Silver, Cu-Copper, Sb-Antimony, Rem-Remainder

Other alloys available

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### Wire gauge (Diameter)

The wire gauge (diameter) for Warton solid and flux cored solder wires is represented as SWG (Standard Wire Gauge). The equivalent imperial and metric values are shown below.

| 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 |
| 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 |

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.

