Leading UK Manufacturer of Solder Paste, Solid & Cored Solder Wires, Lead Free & Rosin Free Solders, Fluxes, Cleaners and High Purity Bar Solder Products.

+44 (0) 1706 218888
www.warton-metals.co.uk
sales@warton-metals.co.uk

TECHNICAL DATA SHEET

Revision 1.2 Revision Date: 18/06/2020

P2028

No Clean Halogen Free Solder Paste

Description

Microprint P2028 is a halide & halogen free, no clean solder paste formulated for lead free surface mount assemblies requiring excellent, defect free soldering of even the most difficult to solder components and board finishes, including OSP, ENIG, Ag, Sn and HASL. Microprint P2028 leave clear, minimal, halogen free post reflow residue, and has been tested to industry standards including J-STD-004B and J-STD-005A. Microprint P2028 residues can be considered safe to remain on an assembly when no-clean technology is appropriate to the assembly end use. Available in Type 3, 4 and 5 powder size, Microprint P2028 offers excellent print definitions for fine and ultra-fine pitch printing and offers extended open times in excess of three days.

Benefits

- Flux Type: ROL0 (J-STD-004B)
- No Clean, Halogen Free
- Reduces and eliminates voiding and head-in-pillow defects
- Powerful wetting on all board finishes
- Clear minimal residue
- Long stencil life
- 12 months refrigerated shelf life

Cleaning

Microprint P2028 is a no clean solder paste. If cleaning is required residues can be easily removed using Warton's Total Clean and Surf Clean range of solvent, water based and saponification cleaners. Warton has cleaners available for manual cleaning, ultrasonic, spray under immersion and spray in air cleaning systems.

Storage Conditions

The recommended storage conditions for Microprint P2028 is refrigerated between 0 and 10°C.

Shelf Life

Microprint P2028 has a shelf life of 12 months for unopened containers stored at <10°C

Availability

Warton Metals manufacture all solder paste in the UK.

Alloy	Metals	Particle Size	Packaging
SAC305	88.5%	25-45 µm (T3)	1000 g, 500 g Cartridges, 1000 g, 500 g, 250 g Tubs
SAC305	88.5%	20-38 µm (T4)	1000 g, 500 g Cartridges, 1000 g, 500 g, 250 g Tubs
SAC305	88.5%	15-25 µm (T5)	1000 g, 500 g Cartridges, 1000 g, 500 g, 250 g Tubs
SAC305	87.0%	20-38 µm (T4)	40 g, 75 g automated / manual syringes
SAC305	87.0%	15-25 µm (T5)	40 g, 75 g automated / manual syringes
Sn42 Bi58	90.0%	25-45 µm (T3)	1000 g, 500 g Cartridges, 1000 g, 500 g, 250 g Tubs

Leading UK Manufacturer of Solder Paste, Solid & Cored Solder Wires, Lead Free & Rosin Free Solders, Fluxes, Cleaners and High Purity Bar Solder Products.

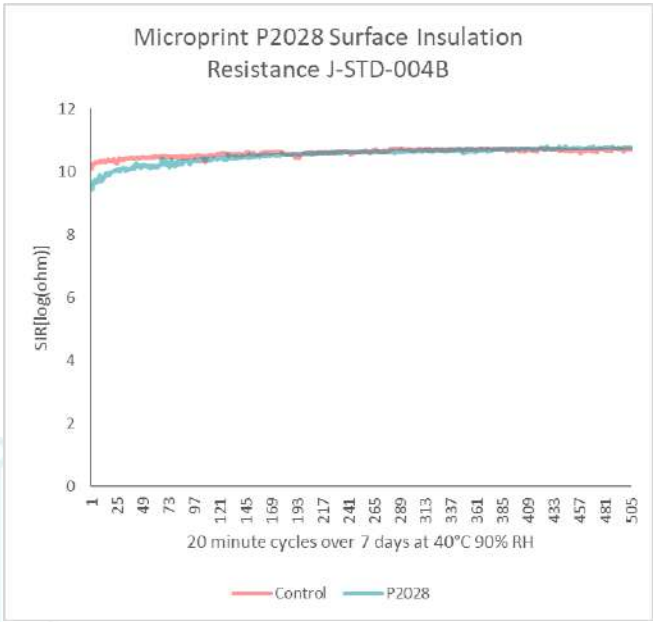
+44 (0) 1706 218888
www.warton-metals.co.uk
sales@warton-metals.co.uk

TECHNICAL DATA SHEET

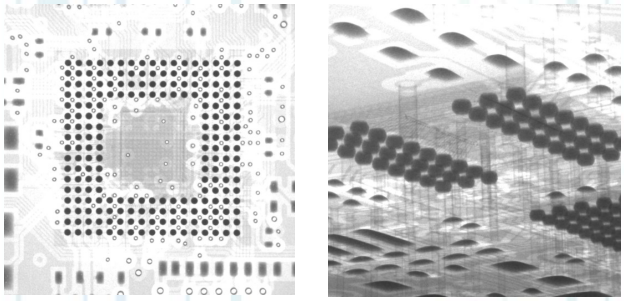
Test Data

Typical properties for P2028, 88.5%, 20-38 (T4)

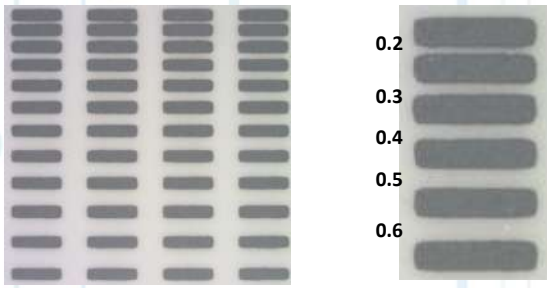
Flux Classification J-STD-004B	ROL0
Slump J-STD-005A	Pass <0.2 mm
Metal Content J-STD-005A	88.5%
Tack Test J-STD-005A	>3 days
Solder Ball Test J-STD-005A	Pass
Quantitative Halide J-STD-004B	No Halogen
Surface Insulation Resistance J-STD-004B	Pass >100MΩ
Copper Corrosion 10 day J-STD-004B	Pass
Copper Mirror Corrosion J-STD-004B	Pass



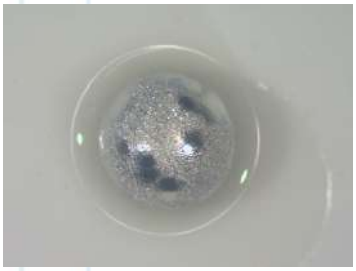
7 day continuous Surface Insulation Resistance test, testing cycles every 20 minutes at 5V. Showing no dendrite formation and far exceeding J-STD-004B requirements of greater than 100 MΩ.



Typical x-ray images of BGA's with no voiding, or head-in-pillow defect visible



J-STD-005A 150°C, 15 minutes - no slump to 0.2mm.



J-STD-005A solder balling—no solder balls.

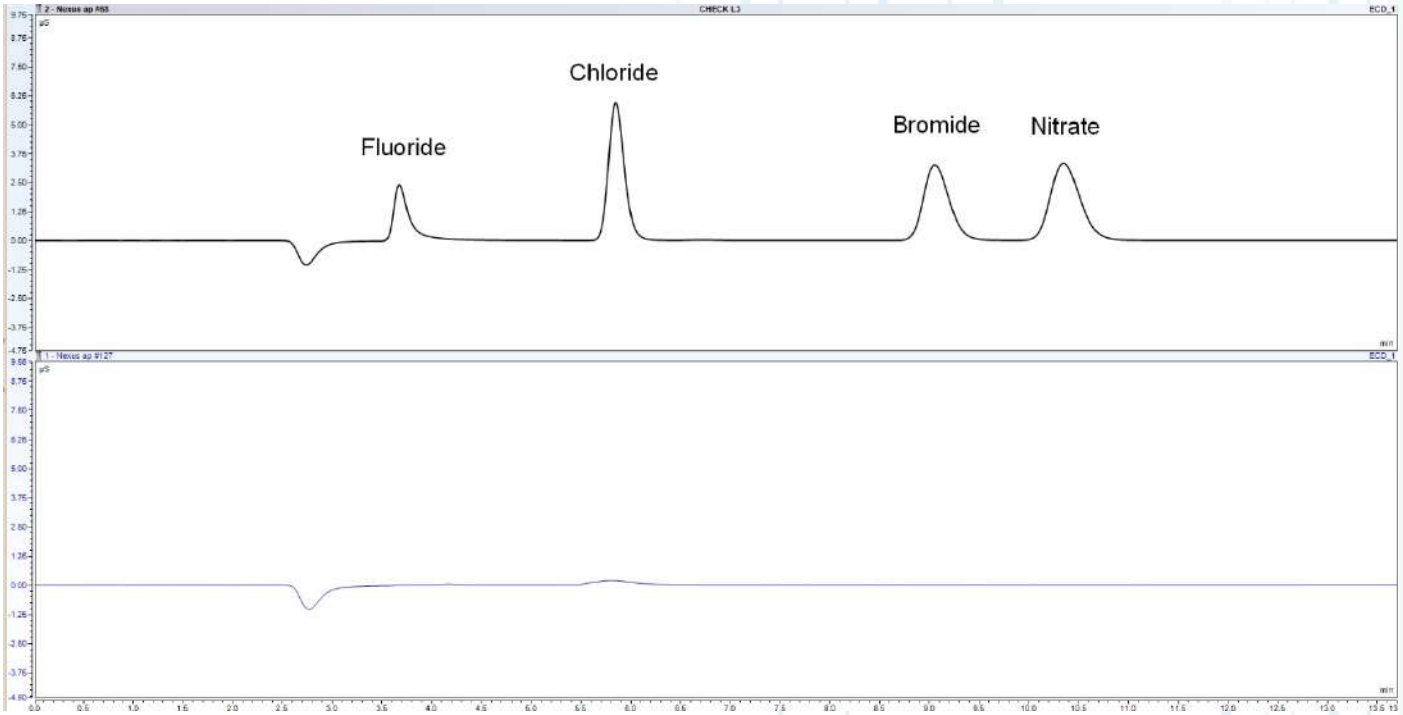
J-STD-004B Surface Insulation Resistance test showing no conductive anodic filament (CAF) migration or dendritic growth after 168 hours at 40°C, 90% relative humidity.

+44 (0) 1706 218888
www.warton-metals.co.uk
sales@warton-metals.co.uk

TECHNICAL DATA SHEET

Halogen Free

Microprint P2028 flux medium passes the ion chromatography test for fluorides, chlorides and bromides in accordance with J-STD-004 revision B. This revision demands a reflow pre-treatment of the solder paste flux in accordance with IPC TM650 2.3.34. Older revisions of J-STD-004 do not test for covalent halogens and can lead to confusion by allowing halogen containing fluxes to be classified as ROL0. Microprint P2028 is a true halogen free type ROL0.



Ion chromatogram of Microprint P2028 reflowed flux residue in accordance to J-STD-004B, TM 650 2.2.34, showing trace background levels of chloride (<0.05%) with no evidence of added halide or halide bearing materials, demonstrating halide and halogen free.

Leading UK Manufacturer of Solder Paste, Solid & Cored Solder Wires, Lead Free & Rosin Free Solders, Fluxes, Cleaners and High Purity Bar Solder Products.

+44 (0) 1706 218888
www.warton-metals.co.uk
sales@warton-metals.co.uk

TECHNICAL DATA SHEET

Solder Powder

All Warton High Purity Solder Powders are either manufactured in-house using our solder powder plant with all powders using only virgin raw materials coming from 'conflict free' sources, or are externally sourced from certified 'conflict free' approved suppliers.

Warton High Purity Solder Powders exhibit excellent sphericity and size distribution allowing consistent trouble-free printing for ultra-fine pitch QFP's, CSP's and BGA's, with strong control of the oxide layer ensuring no oxidisation of the solder powder. Warton High Purity Solder Powders are produced and stored under inert gas and vacuum preventing oxidisation.

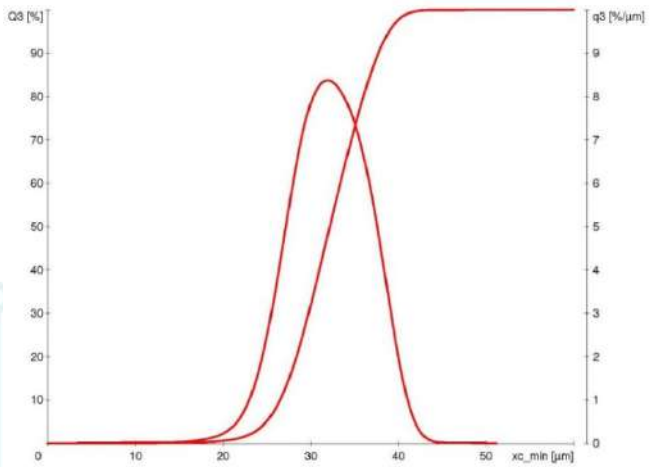
Warton High Purity Solder Powders far exceed the purity requirements of EN29453 and J-STD-006, and come with both a Chemical and Dimensional Analysis. The chemical (alloy) analysis checks exactly what has gone into the alloy, demonstrating the purity of the solder alloy, and that it has been produced within the standards specification. The particle size (dimensional) and distribution analysis shows that the upper and lower limits of the particle size are within the specification required by the standards, and demonstrates the distribution of particle size within the solder powder.

Solder Alloy

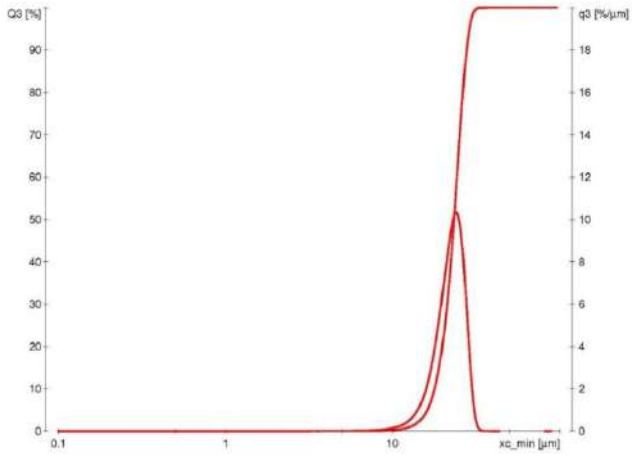
Warton Part	Alloy	Melting Point
SAC305	Sn96.5Ag3Cu0.5	217°C
Sn42 Bi58	Sn42 Bi58	139°C

Particle Size Distribution

Warton Part	Distribution µm	J-STD-005A
25-45	25-45	Type 3
20-38	20-38	Type 4
10-25	15-25	Type 5



Typical Particle Size 20-38 µm



Typical Particle Size 15-25 µm

Leading UK Manufacturer of Solder Paste, Solid & Cored Solder Wires, Lead Free & Rosin Free Solders, Fluxes, Cleaners and High Purity Bar Solder Products.

+44 (0) 1706 218888
www.warton-metals.co.uk
sales@warton-metals.co.uk

TECHNICAL DATA SHEET

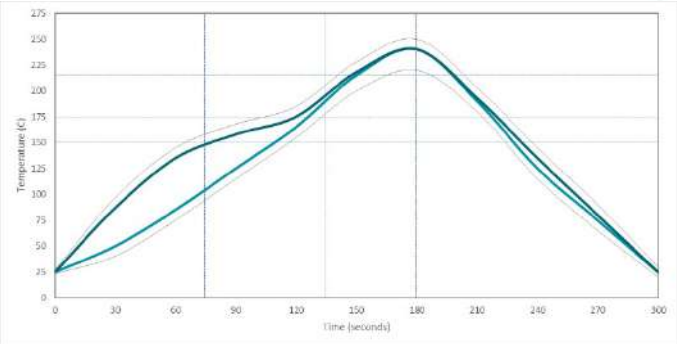
Printing

Ensure the paste is at room temperature before opening, preferably removed from the refrigerator the evening before use. For tubs, stir and apply sufficient paste to the stencil to allow for an even roll whilst printing. Microprint P2028 is suitable for printing speeds between 25-150 mm/sec using laser cut, electropolished and electroform stencils.

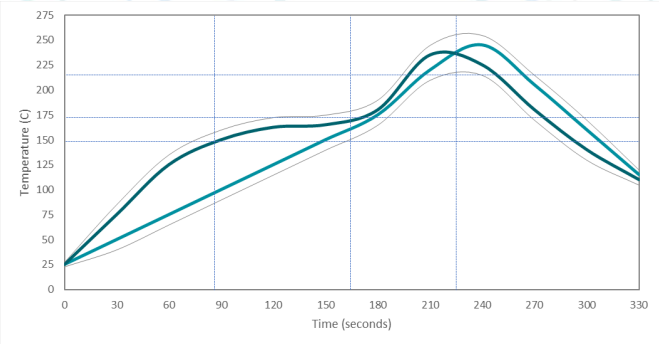
Reflow

Microprint P2028 can be reflowed in air or nitrogen using IR, convection, vapour phase and laser soldering. Good results can be achieved using most common reflow profiles including ramp-soak-spike and ramp-to-spike.

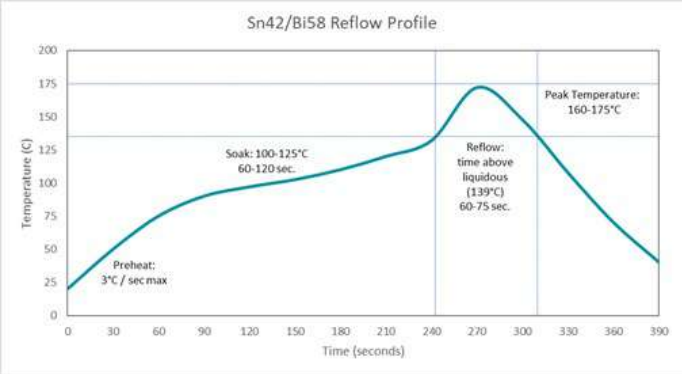
Typical Reflow Profile for Low Density Boards



Typical Reflow Profile for High Density Boards



Typical Reflow Profile for Sn42 Bi58



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. Microprint P2028 Solder Paste is not only formulated without the use of toxic metals such as Lead, Antimony or Nickel, the flux and activation system does not include any known carcinogens. Unfortunately, some manufacturers insist on using known carcinogenic halogen activators for their alleged superior activity, as these are only used in a low level, typically ~1% within the flux formulation, so ~0.1% within the solder paste, these activators are not reported in SDS documentation even though used in considerable volume within the flux. Warton Metals offers a commitment to care for users of Microprint P2028 by never using known carcinogens, whilst still offering an improvement in performance and reliability. Microprint P2028 Solder Paste and Warton Metals insistence on ethical product development allows you to fulfil your commitment to the environment and manufacturing performance whilst offering you peace of mind.