SolderKing assembly materials ltd

Technical Data Sheet

SK P9-10 SAC305

Lead Free, Halogen Free, No Clean Solder Paste

Issue No. 1.01 May 2020

Description

Solderking SK P9-10 Solder Paste is formulated for lead free surface mount assemblies requiring excellent, halogen free, defect free soldering of even the most difficult to solder components and board finishes, including OSP, ENIG, Ag, Sn and HASL. SK P9-10 leaves minimal clear, halogen free post reflow residue. Tested to Industry standards including J-STD 004B and Bellcore (ECM), solder paste residues can be considered safe to remain on an assembly when no-clean technology is appropriate to the assembly end-use.

Available in Type 4 and Type 5 powder size, SK P9-10 offers excellent print definition for fine and ultra-fine pitch printing and offers extended tack and open times in excess of three days.

Specification

SK P9-10 Halogen Free, No Clean Solder Paste –typical batch

Flux Classification J-STD 004B	ROL0
Malcom Viscosity 10rpm, 25°C, Pa.s	160-170
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-STD004B	No Halogen
Surface Insulation Resistance J-STD 004B	Pass >100MΩ
Electrochemical Migration J-STD 004B	Pass
Electromigration Resistance GR78 Core	Pass
Copper Corrosion 10 day J-STD 004B	Pass
Copper Mirror Corrosion J-STD-004B	Pass

Benefits

Halogen Free for increased reliability

High reliability flux type ROL0 to J-STD 004B

Reduces and eliminates voiding and head-in-pillow defects

Powerful wetting on all board finishes

Shiny joint finish

Clear minimal residue

Long tack and open times

12 months refrigerated shelf life

Easy to use

Made in the UK

Availability

Solderking manufacture all soldering pastes in the UK. Packaging and modifications are available on request.

Solder Paste	Packaging
SK P9-1088.5% T4	1000g, 500g, 250g tub
20-38 µm (T4)	40g, 75g syringe
	(automatic and manual)
SK P9-10 88.5% T4	500g, 600g cartridge
SK P9-10 88.25% T5	500g, 600g cartridge
15-25 µm (T5)	

Solder Powder

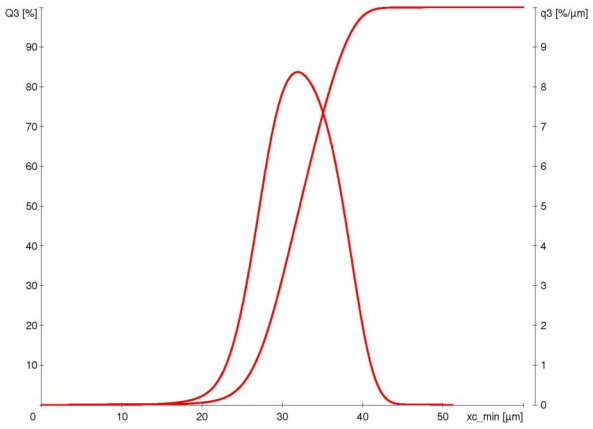
Solderking SK P9-10 Lead Free Solder pastes incorporate High Purity Solder Powders. Solder powders far exceed the purity requirements of EN29453 and J-STD 006

Solder Alloy

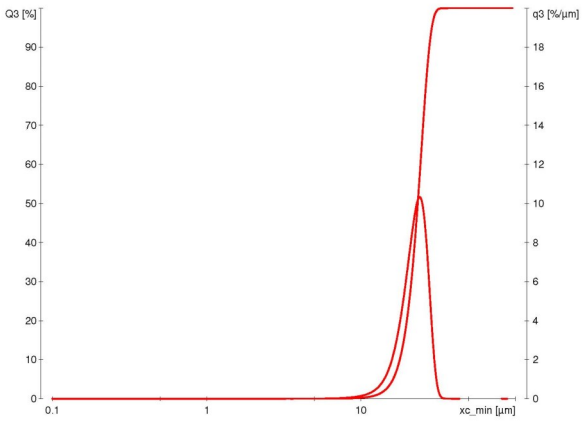
Solderking Part	Alloy	Melting point
SAC305	Sn96.5Ag3Cu0.5	217

Particle Size Distribution

Solderking Part	Distribution µm	J-STD 005A
20-38	20-38	Type 4
15-25	15-25	Type 5



Typical Particle Size 20-38 µm

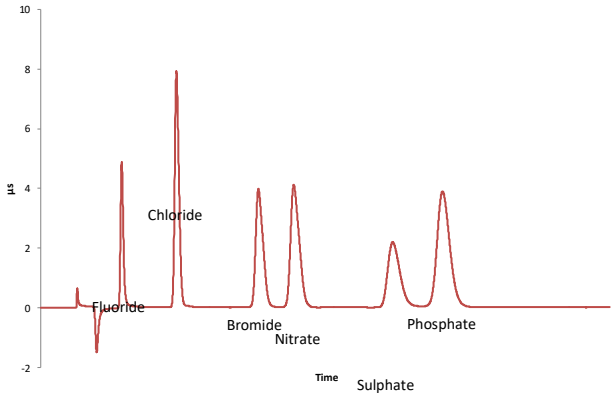


Typical Particle Size 15-25 µm

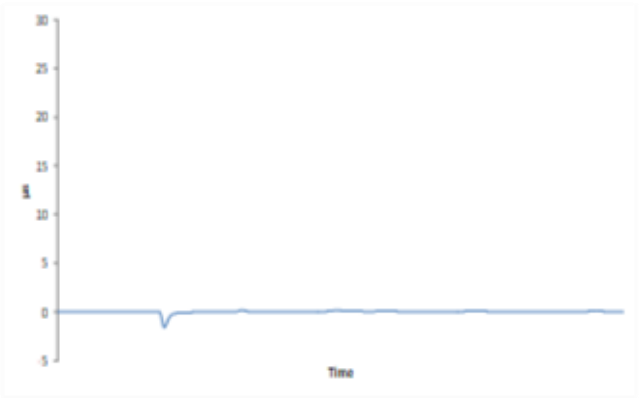
Flux Data - Flux Type ROL0

Solderking SK P9-10 flux medium passes the ion chromatography test for fluoride, chloride and bromide 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.

SK P9-10 is halogen free and a type ROL0.



Ion chromatogram of halide analytical standard showing fluoride, chloride, bromide, nitrate, sulphate and phosphate as low as 3 mg Kg^{-1}



Ion chromatogram of SK P9-10 reflowed flux residue in accordance to J-STD-004B, TM 650 2.2.34 showing no evidence of halide.

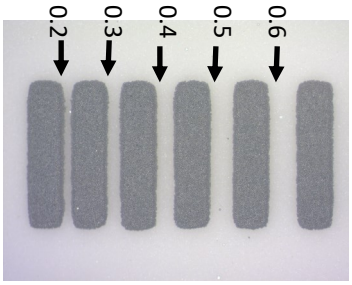
No Solder Balls

J-STD 005A solder balling—no solder balls



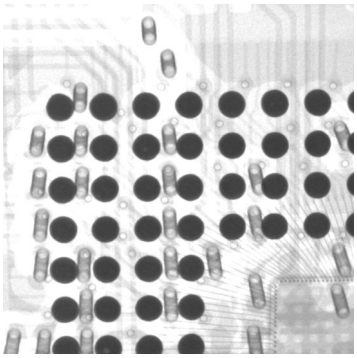
No Slump

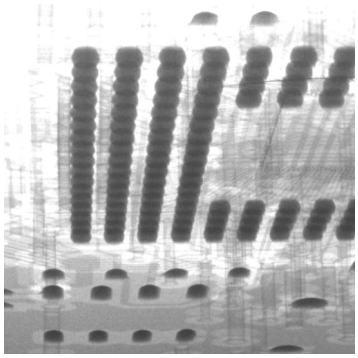
J-STD 005A 150°C, 15 minutes—no



No Voiding or 'head in pillow' defects

Typical SK P9-10 x-ray images of BGA's with no voiding, or head-in-pillow defect visible

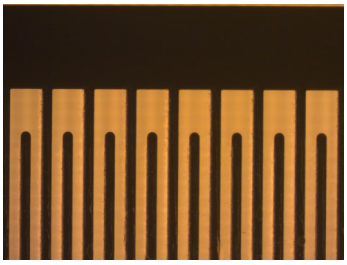


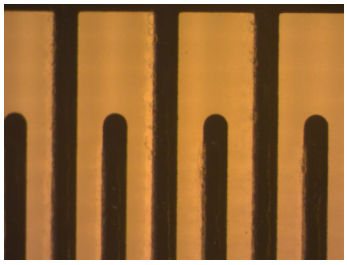


Surface Insulation Resistance

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

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





Printing

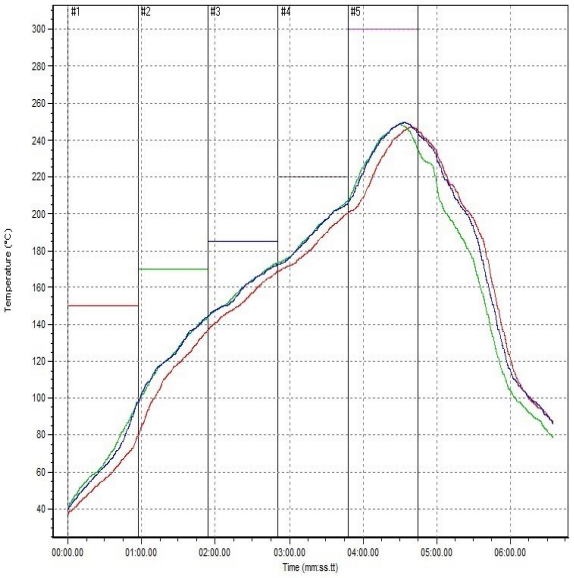
Ensure the paste is at room temperature before opening, preferably removed from the refrigerator the evening before use. For tubs, stir and apply sufficient paste to the stencil to allow for an even roll whilst printing. SK P9-10 is suitable for printing speeds between 25-150 mm s^{-1} using laser cut, electropolished and electroform stencils.

Reflow

SK P9-09 No Clean Lead Free Solder Paste 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.

Solder Paste Profile

A typical profile showing good soldering performance of SK P9-10 SAC305 88.5% 20-38.



RoHS & REACH Directive

Solderking SK P9-10 is RoHS and REACH compliant. The product does not contain any SVHC's as per the current list.

Conflict Free

Solderking uses due diligence in the manufacture of SK P9-10 and uses metals which are 'conflict free' as per the Dodd-Frank Conflict Minerals Law 1502.

Safety information

Always read safety data sheet before use. For any further information please contact:

info@solderking.com.

The information supplied in this technical data sheet is designed only as guidance for 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.