INDIUM CORPORATION®

Product Data Sheet

WMA-SMQ® 64A Solder Paste

Features

- Water-soluble flux residue
- Halide-free
- High activity
- Works with low melting point alloys
- Works with fine particle size powders
- Meets ANSI/J-STD-004, -005 and Bellcore requirements

Alloys

Indium Corporation manufactures low-oxide spherical powder in the industry standard type 3 mesh size. Other non-standard mesh sizes are available upon request. The weight ratio of the flux/vehicle to the solder powder is referred to as the metal load and is typically in the range of 83-92% for standard alloy compositions.

Standard Product Specifications

Alloy	Metal Load		Mesh Size	Particle Size
Bi58/Sn42	Printing 90%	Dispensing 86%	Type 3 -325/+500	25-45 μ 0.001-0.0018"

Packaging

Standard packaging for stencil printing applications includes 500g jars and 700g cartridges. For dispensing applications, 10cc and 30cc syringes are standard. Other packaging options may be available upon request.

Storage and Handling Procedures

Refrigerated storage will prolong the shelf life of solder paste. The shelf life of **WMA-SMQ64A** is 6 months when stored at-20° to +5°C. Storage temperatures should not exceed 25°C. When storing solder paste contained in syringes and cartridges, they should be stored tip down.

Solder paste should be allowed to reach ambient working temperature prior to use. Generally, paste should be removed from refrigeration at least two hours before use. Actual time to reach thermal equilibrium will vary with container size. Paste temperature should be verified before use. Jars and cartridges should be labeled with date and time of opening.

Technical Support

Indium Corporation's internationally experienced engineers provide in-depth technical assistance to our customers. Thoroughly knowledgeable in all facets of Material Science as it applies to the electronics and semiconductor sectors, Technical Support Engineers provide expert advice in solder properties, alloy compatibility and selection of solder preforms, wire, ribbon and paste. Indium Corporation's Technical Support engineers provide Rapid Response to all technical inquiries.

Material Safety Data Sheets

The MSDS for this product can be found online at http://www.indium.com/techlibrary/msds.php

OVER→

BELLCORE AND J-STD TESTS & RESULTS

Test	Result
J-STD-004 (IPC-TM-650)	
• Flux Type Classification	ORM0
• Flux Induced Corrosion (Copper Mirror)	Pass
• Presence of Halide	
Silver Chromate	Pass
Fluoride Spot Test	Pass
Elemental Analysis (Br,C1,F)	0%
• SIR	Pass
• Bellcore Electromigration	Pass
• Acid Value	149

Test	Result
J-STD-005 (IPC-TM-650)	
• Typical Solder Paste Viscosity (90%) Malcom (10 rpm),	4000 poise
• Slump Test	Pass
• Solder Ball Test	Pass
• Wetting Test	Pass

All information is for reference only. Not to be used as incoming product specifications.

Form No. 97761 R2

S O L D E R

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WMA-SMQ®64A Solder Paste

Printing

Stencil Design:

Electroformed and laser cut/electropolished stencils produce the best printing characteristics among stencil types. Stencil aperture design is a crucial step in optimizing the print process. The following are a few general recommendations:

- Discrete components — A 10-20% reduction of stencil aperture area may significantly reduce or eliminate the occurrence of mid-chip solder beads. The “home plate” design is a common method for achieving this reduction.
- Fine pitch components — A surface area reduction is recommended for apertures of 20 mil pitch and finer. This reduction will help minimize solder balling and bridging that can lead to electrical shorts. The amount of reduction necessary is process dependent (5-15% is common).
- A minimum aspect ratio of 1.5 is suggested for adequate release of solder paste from stencil apertures. The aspect ratio is defined as the width of the aperture divided by the thickness of the stencil.

Printer Operation:

The following are general recommendations for stencil printer optimization. Adjustments may be necessary based on specific process requirements:

- Solder Paste Bead Size: 20-25mm diameter
- Print Speed: 25-100mm sec
- Squeegee Pressure: 0.018-0.027kg/mm of blade length
- Underside Stencil Wipe: Once every 10-25 prints
- Solder Paste Stencil Life: >4 hrs. @ 30-60% R.H. & 22-28°C

Cleaning

WMA-SMQ64A residue is easily cleaned with water at no less than 40 psi and 55°C. These parameters are a function of a board complexity and cleaner efficiency.

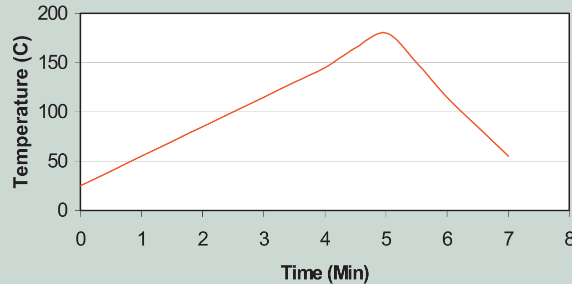
Stencil Cleaning: This is best-performed using an automated stencil cleaning system for both stencil and misprint cleaning to prevent extraneous solder balls. Most commercially available stencil cleaners, plain hot water, and isopropyl alcohol (IPA) also work well.

Compatible Products

- Rework Flux: TACFlux 013

Reflow

Recommended Profile:



This profile is designed for use with Bi58/Sn42. It will serve as a general guideline in establishing a reflow profile for these alloys. Adjustments to this profile may be necessary based on specific process requirements and the use of alloys with different melting temperatures.

Heating Stage:

A linear ramp rate of 0.5°-1°C/second allows gradual evaporation of volatile flux constituents and prevents defects such as solder balling/beading and bridging as a result of hot slump. It also prevents unnecessary depletion of fluxing capacity when using higher temperature alloys.

Liquidus Stage:

A peak temperature of 25°-45°C above the melting point of the solder alloy is needed to form a quality solder joint and achieve acceptable wetting due to the formation of an intermetallic layer. If the peak temperature is excessive, or the time above liquidus greater than the recommended 45-90 seconds, flux charring, excessive intermetallic formation and damage to the board and components can occur.

Cooling Stage:

A rapid cool down of <4°C/second is desired to form a fine grain structure in the solder joint. Slow cooling will form a large grain structure, which typically exhibit poor fatigue resistance. If excessive cooling (>4°C/second) is used, both the components and the solder joint can be stressed due to a high CTE mismatch.

This product data sheet is provided for general information only. It is not intended, and shall not be construed, to warrant or guarantee the performance of the products described which are sold subject exclusively to written warranties and limitations thereon included in product packaging and invoices.

SOLDER

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