

BGA-223 SOLDER CREAM

TECHNICAL DATA SHEET

GENERAL INFORMATION

AMTECH BGA-223 is a cream conforming to ANSI/J-STD-004 - 006. It is specially designed for today's BGA and Chip Scale applications. It is a homogeneous mixture of the highest quality pre-alloyed solder powders and mildly activated resin paste flux. With a special blend of gelling additives in this formulation, it prevents segregation of solder cream and provides a creamy mixture ready for application. The residue from BGA-223 is light amber & clear of solder balls.

The solder cream is available in a wide range of solder alloys, metal percent loadings, and mesh sizes which give desired properties to meet different applications.

APPLICATION INFORMATION

BGA-223 solder cream can be applied in precise amounts to any configuration of solderable surface, using techniques such as screen printing, stenciling or dispensing.

The common techniques for reflow soldering are suitable for use with this solder cream. Because of the various types of reflow equipment, different thermal mass and thermal conductivity of the substrates, different components to be soldered and the metallurgies of the solder, the optimum reflow profile shall be determined by the user. The guidelines set below should give a good starting point.

The cream is specially developed with a non-hygroscopic activator system, which not only gives excellent solderability but also is less susceptible to humidity. Its residue is non-conductive/non-corrosive and therefore may be safely left on the boards without cleaning. The residue has a high Surface Insulation Resistance in a few orders of magnitude higher than the 100 m-Ohm requirement set by the IPC international standard.

BGA-223 uses a modified rosin, which after reflow gives, much lighter residue than traditional "RMA" solder pastes. It is therefore cosmetically more acceptable to end-users.

With the selection of fine mesh powders such as -325/+500, it can be used for fine pitch assembly application. For ultra fine pitch assembly we recommend our -400/+500 or -500+635 mesh powder.

PRINTING

There are various methods for solder cream application the most popular being metal stenciling. Advantages of this method are, longer utility life, and its ability to give better printing resolution for fine pitch designs compared to screens; and higher throughput and consistency of deposition compared to syringing methods.

For stencil printing the following parameters are recommended for initial evaluation of the cream:

Squeegee speed: 20-40 mm/sec.

Squeegee pressure: Just enough to sweep the cream from the stencil, too high a pressure will cause scoop out and a thin deposition, too low a pressure may cause smearing and bridging.

Squeegee hardness: 80-90 durometer for 25-50 mil pitch 90-110 durometer or metal blade for 25 mil and below.

For ideal stencil life and printing performance, the environment should have a temperature between 20-25^o C and relative humidity less than 65%.

COMPONENT PLACEMENT

The deposited solder cream will possess strong enough tackiness to hold the components and prevent misalignment for an exposed duration of at least 8 hours. However, it is always advisable to place components immediately after printing. The tackiness data shown in the property table is obtained by the use of a Chatillon Tack Force Measuring instrument in accordance with IPC test methods.

REFLOW SOLDERING PROCESS

There are a few main methods for solder reflow, namely infrared, hot air, and vapor phase. The most popular designs are convection or a combination of convection and IR. Heat transfers in these ovens are convection with additional energy from radiation. To properly profile a board you must measure the actual temperature, placing thermocouples at the solder joints of at least three different sized components on the board. This will allow the determination of a profile that will give sufficient time and even heat distribution to all components on various portions of the board. It is recommended to have a smooth and slow ramp of 1-2 degree/sec. in the profile. The soaking time (temperature between 150-170^o C) should not be more than 2 mins. Dwell time (temperature above liquidus point) should be 30-60 sec. This depends on board density, population and material.

CLEANING PROCESS

As this paste is classified under IPC as ROMO, its residue can be safely left on the board without cleaning. If cleaning is needed fluorinated or chlorinated solvents can be used. Saponifiers or semi-aqueous methods will also remove the residues.

STORAGE

BGA-223 should be stored @ 40° F (4° deg C), allow to reach room temperature before opening. Unopened jar properly stored will have a minimum shelf life of 6 months.

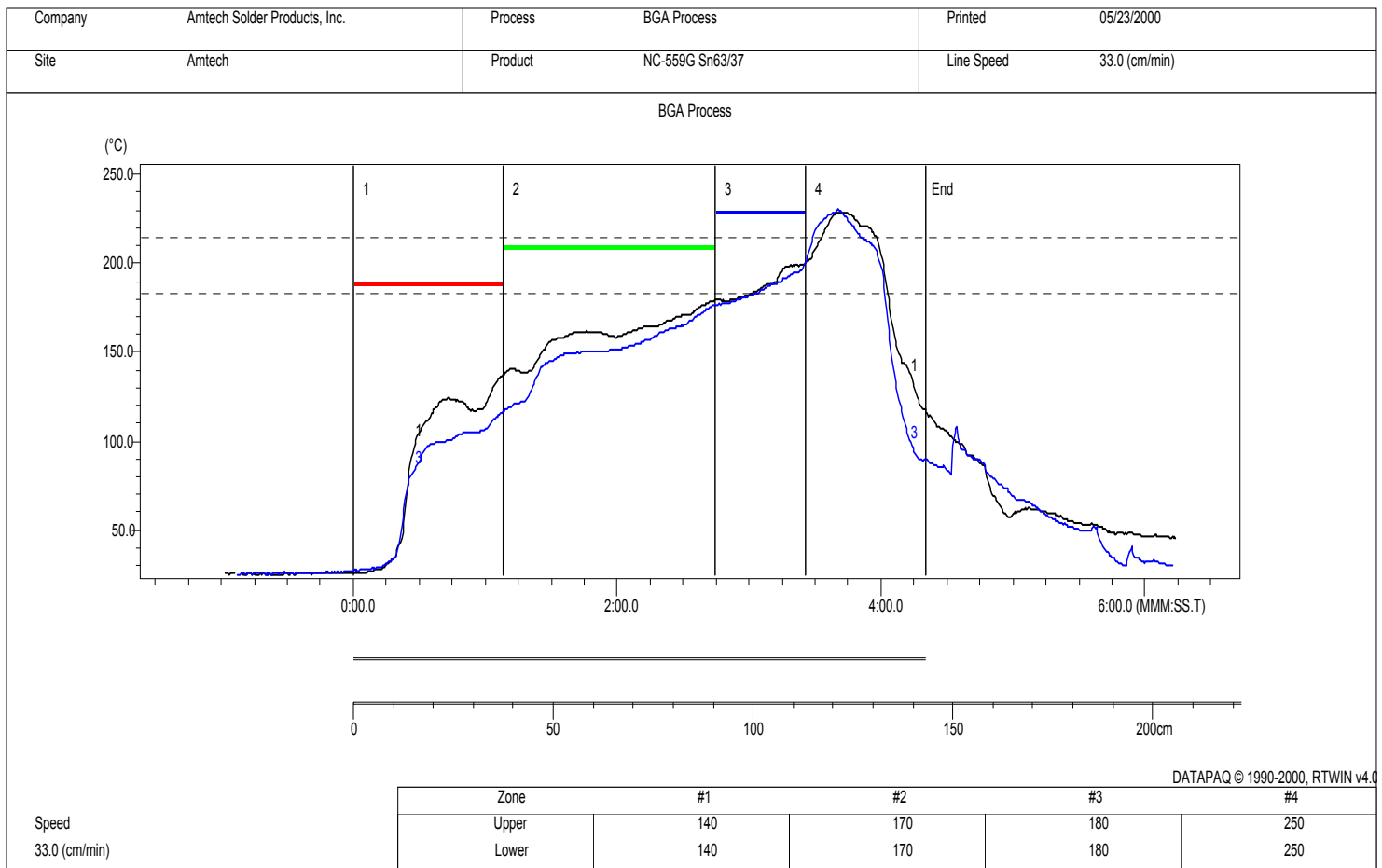
PROPERTIES

	Mesh Size	%Metal	Viscosity (kcps)
Std Alloy 63/37	-325/+500	90	700
		89	670
	-400/+500	90	770
		89	750

Percent Free Halide in Cream: <20 PPM
 Surface Insulation Resistance: >2.8x10 ohm
 (IPC-SP-819, method 2.6.3.3.)
 >2.5x10 ohm
 (BELLCORE TRTSY-000078)

Copper Mirror Corrosion: Pass
 Water Extract Resistivity: 110,000 ohm-cm

PACKAGING: Available in 35 & 100 gram syringes, 250 & 500, gram jars; 700 & 1400 gram cartridges; and 750 gram DEK Pro-Flow cartridges.



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 REV: 7/00