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LOCTITE

Technical Data Sheet

LOCTITE MP 200

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PRODUCT DESCRIPTION

LOCTITE MP 200 provides the following product characteristics:

Technology	Solder paste
Application	Sn/Pb soldering

LOCTITE MP 200 solder pastes have been formulated as no-clean, Sn/Pb solder paste for high speed printing and reflow in both air and nitrogen. The product was specifically formulated to have increased reflow operating window.

FEATURES AND BENEFITS

- Suitable for fine pitch, high speed printing up to 200mms^{-1}
- Extended printer open time and tack life
- Long abandon time
- Colorless residues
- Soft residues make pin testing easier eliminating any need for cleaning
- Resistant to both hot and cold slump
- 63S4 alloy for Anti-Tombstoning
- Halide free flux classification: ROL0 to ANSI/J-STD-004 (Jan. 1995)

TYPICAL PROPERTIES

Based on Type 3 powder .

Solder Paste Typical Properties

Alloys	Sn62, SN63
Powder Particle Size, µm	25-45
Powder Size Coding	AGS
IPC Equivalent	Type 3
Metal Loading (Weight %)	90% metal
Slump J-STD-005, mm *RT, 15 minutes* 0.33 x 2.03 mm pads 0.63 x 2.03 mm pads *150°C, 15 minutes* 0.33 x 2.03 mm pads 0.63 x 2.03 mm pads	IPC A21 Pattern 0.08 0.33 0.08 0.33
Brookfield Viscosity TF spindle, 25°C, 5rpm after 2 minutes, mPa·s	680,000
Thixotropic Index (Ti), 25°C (Ti = log(viscosity @ 1.8s^{-1} / viscosity @ 18s^{-1})	0.61
Malcom Rheology, 10rpm, 25°C, Rate 6s^{-1}	1,350
Initial tack force, gF	86.4
Useful open time, hours	>24

63S4 ANTI-TOMBSTONING ALLOY

63S4 alloy offers an instant solution where tombstoning is a particular process problem. 63S4 alloy is a blend of different melting point alloys with a special mix of solder particle sizes. This modification extends the melting range of the alloy reducing the possibility that one solder deposit at a component termination can fully reflow before the other.

Solder Paste Typical Properties

Alloys	63S4
Powder Size Coding	ACP
Metal Loading (Weight %)	90% metal
Slump, J-STD-005, mm *RT, 15 minutes* 0.33 x 2.03 mm pads 0.63 x 2.03 mm pads *150°C, 15 minutes* 0.33 x 2.03 mm pads 0.63 x 2.03 mm pads	IPC A21 Pattern 0.06 0.33 0.08 0.33
Brookfield Viscosity TF spindle, 25°C, 5rpm after 2 minutes, mPa·s	680,000
Thixotropic Index (Ti), 25°C (Ti = log(viscosity @ 1.8s^{-1} / viscosity @ 18s^{-1})	0.58
Malcom Rheology, 10rpm, 25°C, Rate 6s^{-1}	1,400
Initial tack force, gF	86.4
Useful open time, hours	>24

Solder Powder:

Careful control of the atomisation process for production of solder powders for LOCTITE MP 200 solder pastes ensures that the solder powder is produced to a quality level that exceeds IPC/J-STD-006 & EN29453 requirements for sphericity, size distribution, impurities and oxide levels. Minimum order requirements may apply to certain alloys and powder sizes.

DIRECTIONS FOR USE

Printing:

1. LOCTITE MP 200 is available for stencil printing down to 0.4mm (0.016") pitch QFP devices, with type 3 (AGS) powder.
2. Printing at speeds between 25 mm/s (1 "/s) and 200 mm/s (8 "/s) can be achieved by using laser cut, electropolished or electroformed stencils and metal squeegees (preferably 60°).
3. Unlike some pastes, high squeegee pressures are not required, making LOCTITE MP 200 particularly useful for second side printing processes.
4. Acceptable first prints have been achieved at 0.4 mm (16 mils) pitch after printer down times of >90 minutes without requiring a knead cycle.

Reflow:

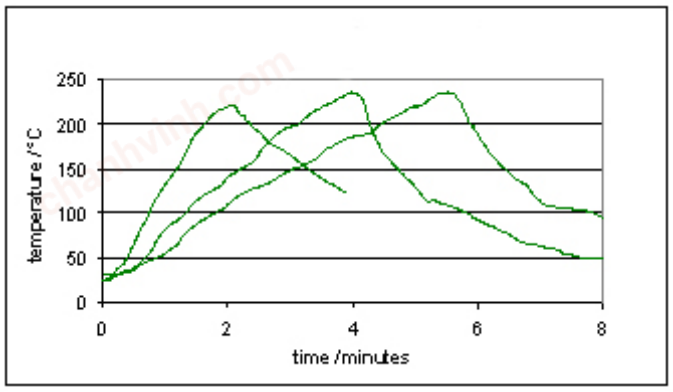
- Any of the available methods of heating to cause reflow may be used including IR, convection, hot belt, vapor phase and laser soldering.
- There is no single reflow profile which is suitable for all processes and applications, but the following graphs show profile examples that have given good results in practice.
- 63S4 anti-tombstoning is selected when tombstone defects are experienced with standard alloys and when it is not possible to eliminate by design changes..
- Typical reflow profile as follows:
  1. Ramp to 130 to 165ºC at no more than 2ºC s^{-1} .
  2. Hold at 130 to 165ºC for 60 to 120 seconds.
  3. Ramp to peak reflow temperature at no more than 2ºC s^{-1} .
  4. Recommended peak reflow temperature is 205 to 225ºC.

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5. Dwell time above liquidus of 30 to 75 seconds.

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Cleaning:

1. LOCTITE MP 200 solder pastes are no-clean and are designed to be left on the PCB in many applications post-assembly since they do not pose a hazard to long-term reliability.
2. Residue removal can be achieved using conventional cleaning processes based on solvents such as LOCTITE MCF 800 or suitable saponifying agents.
3. For stencil cleaning and cleaning board misprints, LOCTITE MSC 01 solvent cleaner is recommended.

RELIABILITY PROPERTIES

Solder Paste Medium:

LOCTITE MP 200 medium contains a stable resin system and slow evaporating solvents. The formulation has been tested to the requirements of ANSI/J-STD-004 for a type ROL0 classification.

Test	Specification	Results
Copper Plate Corrosion	ANSI/J-STD-004	Pass
Copper Mirror Corrosion	ANSI/J-STD-004	Pass
Chlorides & Bromides	ANSI/J-STD-004	Pass
Surface Insulation Resistance (without cleaning)	ANSI/J-STD-004	Pass Pass
Electromigration (ECM)	Telecordia GR-78-Core	Pass
Flux Activity Classification (without cleaning)	ANSI/J-STD-004 (Jan. 1995)	ROL0

STORAGE AND SHELF LIFE

Storage:

It is recommended to store LOCTITE MP 200 at 0 to 10°C. (NB cartridges should be stored tip down to prevent the formation of air pockets). The paste should be removed from cold storage a minimum of 8 hours before use. Do not use forced heating methods to bring solder paste up to temperature. LOCTITE MP 200 solder paste has been formulated to minimize flux separation on storage but should this occur, gentle stirring for 15 seconds will return the product to the correct rheological performance. To prevent contamination of unused product, do not return any material to its original container. For further specific shelf life information, contact your local Technical Service Center.

Shelf Life:

Provided Multicore LOCTITE MP 200 is stored tighly sealed in the original container at 0 to 10°C, a minimum shelf life of 183 days can be expected. Air shipment is recommended to minimize the time the containers are exposed to higher temperatures. Short term storage at room temperature during use is acceptable provided the paste is sealed in original containers. Laboratory testing has shown that the paste remains in a useable condition after 2 months of storage at room temperature.

DATA RANGES

The data contained herein may be reported as a typical value and/or a range. Values are based on actual test data and are verified on a periodic basis.

GENERAL INFORMATION

For safe handling information on this product, consult the Material Safety Data Sheet (MSDS).

Not for Product Specifications

The technical information contained herein is intended for reference only. Please contact Henkel Technologies Technical Service for assistance and recommendations on specifications for this product.

Conversions

(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
µm / 25.4 = mil
N x 0.225 = lb
N/mm x 5.71 = lb/in
N/mm² x 145 = psi
MPa x 145 = psi
N·m x 8.851 = lb·in
N·m x 0.738 = lb·ft
N·mm x 0.142 = oz·in
mPa·s = cP

Disclaimer

Note:

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

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Reference N/A

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