Technical Data Sheet

LOCTITE LF 620

September 2014

PRODUCT DESCRIPTION

LOCTITE LF 620 provides the following product characteristics:

Technology	Solder paste
Application	Pb-free soldering

LOCTITE LF 620 is a halide-free, no clean, low voiding Pb-free solder paste, which has excellent humidity resistance and a broad process window both for printing and reflow . It shows low hot slump to minimize the possibility of bridging and mid-chip solder balling. This product has high tack force to resist component movement during high speed placement and long printer abandon times and excellent solderability over a wide range of reflow profiles in air and nitrogen and across a wide range of surface finishes including Ni/Au, Immersion Sn, Immersion Ag and OSP copper.

FEATURES AND BENEFITS

- 4 hours between print abandon time even on small CSP apertures.
- Very low hot slump.
- Clear residues for easy post-reflow inspection.
- Suitable for fine pitch, high speed printing up to 150mm/s (6"/s).
- Halide free flux classification: ANSI/J-STD-004 for a type ROL0 classification.

TYPICAL PROPERTIES

Based on T3 powder .

Solder Paste Typical Properties

Alloys	96SC, 97SC
Powder Particle Size, µm	45-20
Powder Size Coding	T3
IPC Equivalent	Type 3
Metal Loading (Weight %)	88.5
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 0.15 0.33
Brookfield Viscosity TF spindle, 25°C, 5rpm after 2 minutes, mPa·s	580,000
Thixotropic Index (Ti), 25°C (Ti = log(viscosity @ 1.8s^{-1} / viscosity @ 18s^{-1})	0.48
Malcom Rheology, 10rpm, 25°C, Rate 6s^{-1}	1,370
Initial tack force, gF	28
Useful open time, hours	>24

Based on T4 powder .

Solder Paste Typical Properties

Alloys	96SC, 97SC
Powder Particle Size, µm	38 - 20
Powder Size Coding	DAP
IPC Equivalent	Type 4
Metal Loading (Weight %)	89.0
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 0.15 0.33
Brookfield Viscosity TF spindle, 25°C, 5rpm after 2 minutes, mPa·s	774,000
Thixotropic Index (Ti), 25°C (Ti = log(viscosity @ 1.8s^{-1} / viscosity @ 18s^{-1})	0.48
Malcom Rheology, 10rpm, 25°C, Rate 6s^{-1}	1,730
Initial tack force, gF	46
Useful open time, hours	>24

Solder Powder:

Careful control of the atomisation process for production of solder powders for LOCTITE LF 620 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

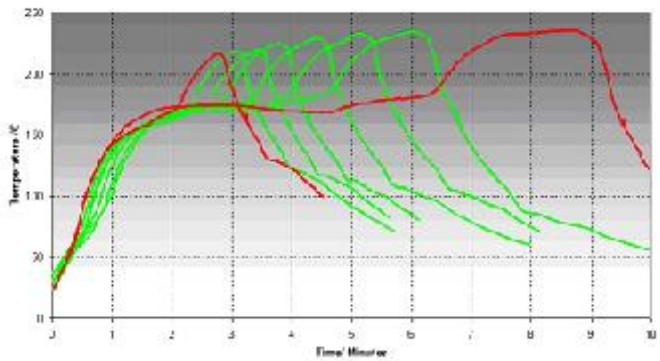
Printing:

1. LOCTITE LF 620 is available for stencil printing down to 0.4mm (0.016") pitch QFP devices, with type 3 (AGS) powder and 0.4mm CSP apertures with type 4 (DAP) powder.
2. Printing at speeds between 25mm/s (1.0"/s) and 150mm/s (6"/s) can be achieved by using laser cut and electro-polished, electro-formed stencils, metal squeegees (preferably 60°).
3. Acceptable first prints have been achieved at 0.4mm (0.016") pitch after printer down times of 240 minutes without requiring a knead cycle.

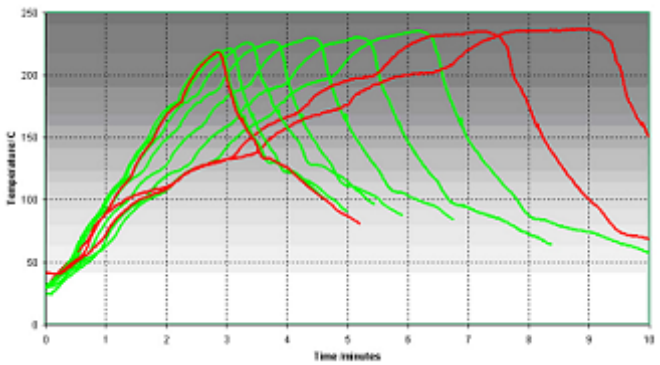
Reflow:

- Any of the available methods of heating to cause reflow may be used including IR, convection, hot belt, vapor phase and laser soldering.
- LOCTITE LF 620 is not sensitive to reflow profile type.
- No single reflow profile is deemed suitable for all processes and applications, but the following example profiles have given good results in practice.

Profile 1:



Profile 2:



Cleaning:

1. LOCTITE LF 620 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 LF 620 solder paste contains a stable resin system and slow evaporating solvents. The formulation has been tested to the requirements of Telcordia (formerly known as Bellcore) GR-78-CORE and ANSI/J-STD-004B 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
	Telcordia GR-78-Core	Pass
	JIS-Z-3248	Pass
Flux Activity Classification (without cleaning)	ANSI/J-STD-004	ROL0

STORAGE AND SHELF LIFE

Storage:

It is recommended to store LOCTITE LF 620 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 LF 620 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 LOCTITE LF 620 is stored tightly 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.

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 Corporation 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

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