

# LOCTITE LF 318 90iSC

November 2014

## PRODUCT DESCRIPTION

LOCTITE LF 318 90iSC provides the following product characteristics:

<b>Technology</b>	Solder paste
<b>Application</b>	Pb-free soldering

LOCTITE LF 318 90iSC solder paste is a halide-free, no clean, pin testable Pb-free solder paste, formulated to have excellent humidity resistance and a broad process window, both for reflow and printing. This product has high tack force to resist component movement during high speed placement and long printer abandon times. LOCTITE LF 318 90iSC shows excellent solderability over a wide range of reflow profiles in both air and nitrogen across a wide range of surface finishes including Ni/Au, Immersion Sn, Immersion Ag, OSP copper.

LOCTITE LF 318 90iSC should not be used to solder to component or PCB finishes containing lead (Pb), as a low melting eutectic (at 98°C) will form.

LOCTITE LF 318 90iSC contains a modified Pb-free solder alloy developed in a co-operative project for improved reliability as compared with standard SAC alloys, with a standard flux medium, LF 318.

## FEATURES AND BENEFITS

- Available in solid bar solid wire forms.
- Good humidity resistance. Gives excellent coalescence even after 72 hours exposure to 27°C/80% RH, reducing process variation due to environmental factors.
- Colorless residues for easy post-reflow inspection.
- Soft, non-stick, pin testable residues allow easy in-circuit testing.
- Suitable for fine pitch, high speed printing up to 150mm/s (6"/s).
- Suitable for pneumatic dispensing.
- Extended open time and tack-life leading to low wastage.
- Halide free flux classification: ROL0 to ANSI/J-STD-004.

## TYPICAL PROPERTIES

Based on Type 3 powder.

### Solder Paste Printing Grade version

Alloy	90iSC
Metal Content, %	88.5
Powder Particle Size, µm	20 to 45
Multicore Powder Size Coding	AGS
Brookfield Viscosity TF spindle, 25°C, 5rpm after 2 minutes, mPa·s	650,000 to 880,000
Malcom Viscosity at 6 s <sup>-1</sup> @ 25°C, P	1,667 to 2,255
Thixotropic Index (Ti), 25°C (Ti = log(viscosity @ 1.8s <sup>-1</sup> / viscosity @ 18s <sup>-1</sup> ))	0.483 to 0.591

### Solder Paste Dispensing Grade version

Alloy	90iSC
Metal Content, %	84
Powder Particle Size, µm	20 to 45
Multicore Powder Size Coding	AGS
Malcom Viscosity at s <sup>-1</sup> @ 25°C, P	570 to 850
Thixotropic Index (Ti), 25°C (Ti = log(viscosity @ 1.8s <sup>-1</sup> / viscosity @ 18s <sup>-1</sup> ))	0.458 to 0.687

## Solder Powder:

Careful control of the atomisation process for production of solder powders for LOCTITE LF 318 90iSC 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. For availability contact your local technical service helpdesk.

## DIRECTIONS FOR USE

### Printing:

1. LOCTITE LF 318 90iSC is available for stencil printing down to 0.4mm (0.016") pitch devices, with type Type 3 (AGS) 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, electroformed 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.

### Dispensing:

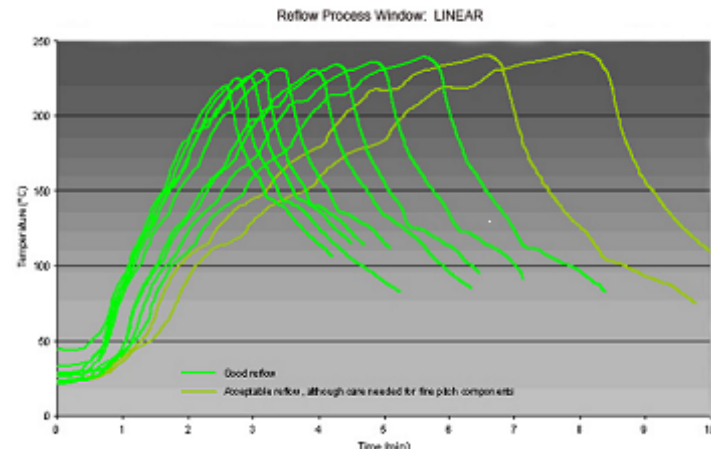
LOCTITE LF 318 90iSC solder paste can be dispensed using pneumatic (time pressure) dispense systems.

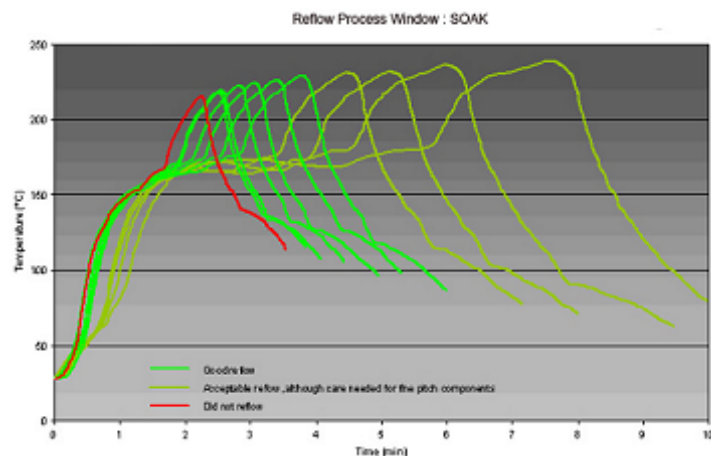
Recommended Smallest Needle, gauge	23
Internal Diameter, mm	0.33

### 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 318 90iSC is not sensitive to reflow profile type.
- No single reflow profile is deemed suitable for all processes and applications, but the following graph shows example profiles that have given good results in practice.

### Profile 1:



**Profile 2:****Cleaning:**

1. LOCTITE LF 318 90iSC solder paste are no-clean and are designed to be left on the PCB in many applications post assembly since it does not pose a hazard to long-term reliability.
2. Residue removal can be achieved using conventional cleaning processes based on solvents such as MCF800 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 318 90iSC medium contains a stable resin system, slow evaporating solvents and with minimal odor. The formulation has been tested to the requirements of the Telcordia (formerly known as Bellcore) GR-78-CORE and ANSI/J-STD-004 for a type ROL0 classification specifications.

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	ANSI/J-STD-004	Pass
Resistance (without cleaning)	Telcordia GR-78-Core	Pass
	JIS-Z-3248	Pass
Flux Activity Classification (without cleaning)	ANSI/J-STD-004	ROL0

**PACKAGING**

**Containers:** LOCTITE LF 318 90iSC is supplied in:

- 500g plastic jars with an air seal insert
- 600g Semco cartridges
- 75g (30cc) EFD cartridges for dispensing

Other packaging types may be available on request; please contact your local technical service helpdesk for assistance.

**Storage:**

It is recommended to store LOCTITE LF 318 90iSC 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. Multicore LOCTITE LF 318 90iSC has been formulated to minimize flux separation on storage but should this occur, gentle stirring for 15 seconds will return the product to its 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 LF 318 90iSC is stored tightly sealed in its 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 Technologies Technical Service for assistance and recommendations on specifications for this product.

**Conversions**

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$   
 $\text{kV/mm} \times 25.4 = \text{V/mil}$   
 $\text{mm} / 25.4 = \text{inches}$   
 $\mu\text{m} / 25.4 = \text{mil}$   
 $\text{N} \times 0.225 = \text{lb}$   
 $\text{N/mm} \times 5.71 = \text{lb/in}$   
 $\text{N/mm}^2 \times 145 = \text{psi}$   
 $\text{MPa} \times 145 = \text{psi}$   
 $\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$   
 $\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$   
 $\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$   
 $\text{mPa}\cdot\text{s} = \text{cP}$

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