

LOCTITE GC 3W

January 2016

PRODUCT DESCRIPTION

LOCTITE GC 3W provides the following product characteristics:

| | |
|--------------------|--|
| Technology | Solder paste |
| Application | Pb-free soldering, Halogen-free, Water washable flux |

LOCTITE GC 3W is a halogen free, water-washable, Pb-free solder paste specially formulated to provide excellent humidity resistance. LOCTITE GC 3W shows excellent solderability when reflowed in both air and nitrogen across a wide range of challenging surface finishes including OSP-Cu, ENIG and Silver.

FEATURES AND BENEFITS

- Water washable, Pb-free solder paste
- Halogen-free flux: passes IC with pretreatment IPC-TM-650 2.3.34/EN14582
- Halogen-free flux classification: ORM0 to ANSI/J-STD-004 Rev.
- Formulated so residues can be cleaned with deionized water
- Humidity resistance: excellent coalescence after 24 hours exposure to 27°C/80% RH
- Excellent resistance to solder balling, initially and after exposure to humidity
- Suitable for fine pitch, high speed printing up to 150 mm.s⁻¹ (6"/s)
- Excellent paste transfer efficiency after extended abandon times
- Excellent paste transfer efficiency after extended printing time
- Humidity Resistance: Enhanced tack time
- Suitable for single and double side reflow

TYPICAL PROPERTIES

Solder Powder

Careful control of the atomisation process for production of solder powders for LOCTITE GC 3W solder pastes ensures that the solder powder is produced to a quality level that exceeds J-STD-006, EN 29453 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.

All solder powders are RoHS compliant.

Particle Size Distribution (PSD) (J-STD-005A)

Type 3 Powder

| | |
|--|-------------|
| Powder Description | T3 |
| Powder Particle Size Distribution | 25 to 45 µm |
| Henkel Former Description | AGS |

Type 4 Powder

| | |
|--|-------------|
| Powder Description | T4 |
| Powder Particle Size Distribution | 20 to 38 µm |
| Henkel Former Description | DAP |

Solder Alloy (J-STD 006)

| | |
|----------------------------------|--------|
| LOCTITE Code | SAC305 |
| Henkel Former Description | 97SC |
| Melting Point (°C) | 217 |

Solder Paste Typical Properties

Based on T3 powder

| | |
|--|---------|
| Metal Content, % | 89.5 |
| Brookfield Viscosity @ 25°C, mPa.s Spindle TF, Speed 5 rpm, 2 minutes | 595,000 |
| Malcom Viscosity @ 25 °C, Pa.s Speed 10 rpm | 150 |
| Thixotropic Index (Ti) Ti = log (1.8/18 s ⁻¹) | 0.45 |
| Useful stencil life, hours | >24 |
| IPC Slump, mm 25°C, 15 minutes | |
| 0.33 x 2.0 mm pads | 0.2 |
| 0.63 x 2.0 mm pads | 0.33 |
| IPC Slump, mm 182°C, 15 minutes | |
| 0.33 x 2.0 mm pads | 0.2 |
| 0.63 x 2.0 mm pads | 0.33 |

Based on T4 powder

| | |
|--|---------|
| Metal Content, % | 89.5 |
| Brookfield Viscosity @ 25 °C, Pa.s Spindle TF, speed 5 rpm, after 2 minutes | 784,000 |
| Malcom Viscosity @ 25 °C, Pa.s Speed 10 rpm | 180 |
| Thixotropic Index (Ti) Ti = log (1.8/18 s ⁻¹) | 0.48 |
| Useful stencil life, hours | >24 |
| IPC Slump, mm 25°C, 15 minutes | |
| 0.33 x 2.0 mm pads | 0.2 |
| 0.63 x 2.0 mm pads | 0.33 |
| IPC Slump, mm 182°C, 15 minutes | |
| 0.33 x 2.03 mm pads | 0.2 |
| 0.63 x 2.03 mm pads | 0.33 |

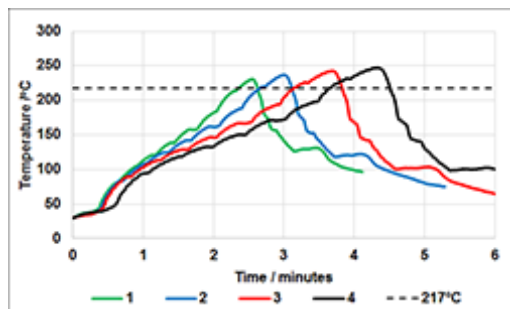
DIRECTIONS FOR USE

Printing:

- Printing at speeds up to 150 mm.s⁻¹ (6"/s) can be achieved using typical stencils and metal squeegees.
- Sufficient pressure should be applied to achieve a clean wipe of the stencil topside surface.
- Under laboratory conditions acceptable print quality on 0.5 mm ball devices and 0.4 mm QFP patterns has been achieved after printer down times of 4 hours without requiring a knead cycle.

Reflow:

- Reflow has been assessed using a typical convection reflow oven.
- Optimal aerobic reflow can be achieved by ramping to a peak temperature of 225 to 250°C at 0.8 to 1.5°C/second and with a soak above the reflow temperature (217°C) for 20 to 50 seconds.
- Example profiles that have shown good performance- for reflow and subsequent cleaning- are presented below. Reflow soldering can also be carried out in a nitrogen atmosphere.

**Cleaning:**

- The post-soldering residues of LOCTITE GC 3W solder paste must be removed by cleaning.
- Cleaning can be performed using spray in air, spray under immersion or ultrasonic cleaning methods.
- The post-soldering residues are designed to be removed from assemblies in an aqueous cleaner without the use of rinse aids and/or saponifiers, typically using water at 40 to 60°C with deionized water for the final rinse.

RELIABILITY PROPERTIES**Flux Properties:**

LOCTITE GC 3W contains a stable water-washable resin system and slow evaporating solvents

| Test | Specification | Results |
|-------------------------------------|----------------------|-------------------|
| Flux Corrosion | J-STD004B (2.6.15C) | Pass |
| Copper Mirror | J-STD004B (2.3.32D) | Pass (cleaned) |
| Surface Insulation Resistance (SIR) | J-STD004B (2.6.3.7) | Pass (cleaned) |
| | J-STD004B (2.6.3.3) | Pass (cleaned) |
| Electromigration (ECM) | J-STD004B (2.6.14.1) | Pass |
| Flux Activity Classification | J-STD004B | ORM0 |

PACKAGING

LOCTITE GC 3W is available in 500 gram jars and 600 grams Semco cartridge.

Storage:

Optimal storage: 0 to 25°C ± 1.5°C (32 to 77°F ± 1.5°F)

Storage information may be indicated on the product container labelling. Material removed from containers may be contaminated during use. Do not return products to the original container. Henkel Corporation cannot assume responsibility for product that has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Technical Service Center or Customer Service Representative.

Shelf Life:

Provided LOCTITE GC 3W is stored tightly sealed in the original container at 0 to 25°C ± 1.5°C (32 to 77°F ± 1.5°F), a minimum shelf life of 180 days can be expected.

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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