Technical Data Sheet

LOCTITE MF 390HR

September 2014

PRODUCT DESCRIPTION

LOCTITE MF 390HR provides the following product characteristics:

Technology	Liquid flux
Product Benefits	• Halogen free • No clean • High Activity
Application	Wave soldering flux

LOCTITE MF 390HR is designed for exceptional through-hole fill and is recommended for automotive electronics and general electrical soldering applications.

FEATURES AND BENEFITS

- No bridges or icicles.
- Exceptional through-hole penetration.
- Sustained performance for maximum process window.
- No cleaning - reduces costs .
- Minimal residues - reduced contamination of ATE probes.
- Halogen free - zero added halogen.
- "L0" flux classification.
- Passes Telcordia GR-78-CORE requirements.

TYPICAL PROPERTIES

Liquid Flux Typical Properties

Solids Content, %	6
Halide Content, %	<0.005
Acid Value, mg KOH, g	20 to 25
Specific Gravity @ 25°C	0.8
J-STD-004 (IPC-TM-650) classification	ROL0
EN 29454 classification	1.1.3
Thinners	PC70i

DIRECTIONS FOR USE

The Printed Circuit Board:

LOCTITE MF 390HR has been formulated to work over a wide range of solder finishes, including bare copper, immersion tin and nickel-gold. LOCTITE MF 390HR is tolerant of poorly adherent finishes. The solvent system in LOCTITE MF 390HR has been designed for optimum wetting of surfaces and is not aggressive towards common plastics. Low residue fluxes generally produce poor through-hole filling, particularly on copper finishes. LOCTITE MF 390HR is especially formulated to overcome this problem.

Machine Preparation:

When switching to LOCTITE MF 390HR from any other flux, ensure all fingers, pallets and conveyors are thoroughly cleaned. It is recommended that MCF800 Cleaner is used in the finger cleaners.

Fluxing

LOCTITE MF 390HR is formulated for use in spray fluxers in the same way as ordinary fluxes on standard wave soldering machines.

Flux Control

Control of the flux concentration can be achieved in the conventional manner by measuring temperature and specific gravity. However, as the specific gravities of the flux and thinners are similar and will vary with water content, flux concentration control by measurement of acid value is more convenient and accurate.

Preheating

- The optimum preheat temperature and time for a PCB will depend on its design and the thermal mass of the components. The cycle should be sufficient to ensure that the flux coating is not visibly wet when it contacts the wave.
- It is advantageous to fit a topside canopy over the preheaters to produce more effective drying and activation.
- This will allow the use of faster conveyor speeds and improve soldering.
- At a speed of 1.5m.min^{-1}, a contact length of 50 to 75 mm between the wave and the PCB is recommended.
- At lower speeds, this contact length should be reduced.
- Very slow speeds through the solder wave may produce dull solder joint.
- Conditions will vary from one machine to another but the settings listed below are a guide for both lead free and leaded alloys.
Conveyor Speed, ft min^{-1}	Topside Preheat, °C	Topside Preheat, ºF
3	80-85	176-185
4	85-90	185-194
5	95-100	203-212

  .
- **IT IS IMPORTANT** that flux solvent be removed by the preheat and that the PCB **IS NOT WET** when it reaches the solder wave.

Solders

- LOCTITE MF 390HR can be used with pb-free solder alloys.
- The recommended maximum solder bath temperature is 260°C for leaded alloys.
- Temperatures as high as 275 to 280°C may be necessary for some lead free alloys.
- The solder bath temperature can generally be reduced compared with processes using conventional fluxes.
- Temperatures as low as 235°C may be used in some situations and this results in improved soldering and less wastage through drossing.
- Dwell time on the wave should be 0.5-1.0 seconds (chip wave) and 2.0-3.0 seconds (laminar wave).
- Conveyor speed for dual wave systems should be at least 1.2 m min-1.

Cleaning:

1. Special applications may have regulations insisting on board cleaning and in such cases MCF800 cleaner may be used.

2. This cleaner may also be used to remove any small accumulation of flux solids that might develop on parts of the soldering machine after prolonged use.
3. Machine contamination will, in any case, be much less than with conventional rosin fluxes.
4. Unlike water soluable fluxes, this product is not corrosive towards PCB-handling equipment.

RELIABILITY PROPERTIES

Test	Specification	Results
Surface Insulation Resistance (without cleaning)	J-STD-004	Pass
Electromigration	Telcordia GR-78-Core	Pass

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:

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Reference 0.2

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