Technical Data Sheet

LOCTITE MF 210

January 2018

PRODUCT DESCRIPTION

LOCTITE MF 210 provides the following product characteristics:

Technology	Liquid flux
Application	Soldering

LOCTITE MF 210 is a no clean, resin-free, halide-free liquid flux designed for surfaces with poor solderability. It is recommended for consumer electronics and general electrical soldering applications, particularly where high throughput is desirable.

FEATURES AND BENEFITS

- Large process window with sustained performance.
- High speed soldering on conventional leaded and SMD components, no bridges or icicles.
- Good through hole penetration.
- No cleaning - reduces costs .
- Minimal residues to interfere with ATE probes without cleaning.
- Compatible with rosin and OSP based surface preservatives.
- Foam, spray or wave applications.

TYPICAL PROPERTIES

Liquid Flux Typical Properties

Color	Colorless
Odor	Alcohol
Solids Content, %	2.9
Halide Content, %	Zero
Acid Value (on liquid), mg KOH/g	22.5
Specific Gravity @ 25°C	0.81
Flash Point , Abel Cup, ºC	12
Thinners	PC70i
J-STD-004 classification	OR M0
EN 29454 classification	2.2.3

DIRECTIONS FOR USE

The Printed Circuit Board:

LOCTITE MF 210 is recommended for use on copper or tin-lead coated PCBs. It will solder satisfactorily over most surface preservatives. It is recommended that these are applied no longer than 3 months before soldering, since the period of protection is limited dependent on storage conditions. LOCTITE MF 210 has been formulated to work over a wide range of solder resists. The solvent system in LOCTITE MF 210 has been designed for optimum wetting of surfaces but prolonged contact with polystyrene, PVC or polycarbonate is not recommended.

Machine Preparation:

When switching to LOCTITE MF 210 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 210 has been formulated for use in foam, spray or wave fluxers in the same way as ordinary fluxes on standard wave soldering machines.

It is important to remove excess flux from the circuit boards using the standard air knife or brushes supplied on the wave soldering machine. An air pressure of about is recommended and the nozzle should be about below the board and angled back at a few degrees to the perpendicular to the plane of the board. This will ensure effective removal of excess flux without transferring droplets to the top of the following board. Sufficient space should be allowed between the foam fluxer and the air knife to prevent the air stream from disturbing the foam.

Foaming

Observing the following instructions will help ensure optimum foaming and soldering results.

1. Use **Dry Air.**
2. Keep the flux tank **FULL** at all times.
3. The top of the foaming stone should be no more than 2 cm below the surface of the liquid flux. A fine foaming stone is preferred and if necessary, raise the level of the stone.
4. The preferred width of the slot (opening) of the foam fluxer is 10 mm. If it is wider and problems are encountered, add a strip of stainless steel or PVC across it to narrow the opening to 10 mm. It is preferrable to have a chimney for the foam which tapers towards the top.
5. **DO NOT** use hot fixtures or pallets as these cause the foam to deteriorate and increase losses by evaporation.
6. **DO NOT** use fixtures that has the potential to entrap flux.

Preheating

1. 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
2. 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
3. At a speed of 1.5 m min^{-1}, a contact length of 38 to 50 mm between the wave and the PCB is recommended. At lower speeds, this contact length should be reduced

4. Very slow speeds through the solder wave may produce dull solder joint
5. It is recommended to use a temperature profiling system to measure preheat and peak temperatures during set up of the wave soldering machine. This is also recommended for consistent process monitoring.
6. Conditions will vary from one machine to another but the following settings were found to give good results on a number of systems

Conveyor Speed, ft min^{-1}	Conveyor Speed, m min^{-1}	Topside Preheat, °C	Topside Preheat, ºF
3	0.91	80-85	176-185
4	1.22	85-90	185-194
5	1.52	95-100	203-212

7. **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 210 can be used with all solder alloys. The recommended bath temperature is 260°C . The solder bath temperature can generally be reduced compared with processes using conventional fluxes. Temperatures as low as 235°C can be used for leaded alloys and this results in improved soldering and less wastage through drossing. Dwell time on the wave should be 1.5 to 2.5 seconds. Conveyor speed for dual wave systems should be at least 1.2 m min^{-1}. To complete your no-clean assembly, use the compatible Multicore Cored Solder Wire and Solder Paste. Soldering iron tips should be kept clean with Multicore Tip Tinner/Cleaner TTC1 (data sheet available).

Cleaning:
Special applications may have regulations insisting on board cleaning and in such cases MCF800 cleaner may be used. This is an economic cleaner which is free from CFC compounds and may be used to remove any small accumulation of flux solids that might develop on parts of the soldering machine after prolonged use. Machine contamination will, in any case, be much less than with conventional rosin fluxes. Unlike water soluable fluxes, this product is not corrosive towards PCB-handling equipment.

RELIABILITY PROPERTIES

Test	Specification	Results
Copper Mirror Corrosion	IPC TM-650-2.3.32	Pass
Surface Insulation Resistance (without cleaning)	J-STD-004	Pass
Electromigration (ECM)	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

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

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