Technical Data Sheet

LOCTITE X32-10i

September 2014

PRODUCT DESCRIPTION

LOCTITE X32-10i provides the following product characteristics:

Technology	Liquid flux
Application	Solder flux

LOCTITE X32-10i is a no residue, halide-free flux formulated with a wider operating window.

FEATURES AND BENEFITS

- High speed soldering on conventional leaded and SMD components, no bridges or icicles
- No cleaning , reducing cost and elimates CFC usage
- Wide operating window
- Non-corrosive, safer than RMA flux
- High surface insulation resistance, without cleaning
- No residues to interfere with ATE probes, without cleaning

TYPICAL PROPERTIES

Liquid Flux Typical Properties

Color	Colorless
Odor	Alcohol
Solids Content, %	2.5
Halide Content, %	Zero
Acid Value (on liquid), mg KOH/g	16
Specific Gravity @ 25°C	0.812
Flash Point , Abel Cup, ºC	12
Thinners	X732-10i
ISO 9454 classification	1.2.3
ANSI/JSTD 004 classification	P
IPC classification	M3CN
EN 29454 classification	1.2.3

DIRECTIONS FOR USE

Application:

LOCTITE X32-10i is designed for use on consumer electronics and telecommunications applications as well as other professional applications with conformal coatings.

Different solvent blends may be available to meet local conditions. This will be specified by a different suffix (e.g., X32-10M).

The Printed Circuit Board:

LOCTITE X32-10i is recommended for use on copper or tin-lead coated PCBs. Specifying the use of a copper circuit preservative will ensure better soldering and excellent post-soldering cleanliness. LOCTITE X32-10i will solder satisfactorily over most rosin-based surface preservatives but the rosin residues from the preservative will reduce board cleanliness unless cleaning is employed. It is recommended that the rosin-based preservative be applied no longer than 3 months before soldering with LOCTITE X32-10i .

LOCTITE X32-10i has been formulated to work over a wide range of solder resists. The solvent system in LOCTITE X32-10i has been designed for optimum wetting of surfaces except for polystyrene, polyvinyl chloride or polycarbonate where but prolonged contact is not recommended.

Machine Preparation:

Ensure the soldering machine is thoroughly cleaned, including all fingers, pallets and converyors, so that any possible contamination has been removed.It may be necessary to steam clean the equipment to remove all residues.

It is recommended that MCF800 Cleaner is used in the finger cleaners

Fluxing

LOCTITE X32-10i has been formulated for use in foam, spray or wave fluxers in the same way as ordinary fluxes on standard wave soldering machines. The upper limit for flux coverage to ensure that soldered PCBs pass cleanliness tests is 25 g/m² of circuit. Good soldering can be achieved at half this volume.

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 5-7 psi is recommended and the nozzle should be about 25mm below the board and angled back at a few degrees, 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.

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 20 mm below the surface of the liquid flux. A fine foaming stone is preferred and, if necessary, the level of the stone should be raised.
4. The preferred width of the slot (opening) of the foam fluxer is 10 mm. If wider, add a strip of stainless steel or PVC across to narrow down to the preferred size. It is ideal to have a chimney for the foam which tapers towards the top.
5. **DO NOT** use hot fixtures or pallets as these can cause the foam to deteriorate and increase, which can cause evaporation loss.
6. **DO NOT** use fixtures that can entrap flux.

Flux Control

Control of the flux concentration is achieved by measuring the temperature and the specific gravity of the flux.A nomograph is available to show how these measurements are related to the corrective action needed.

The specific gravity of the flux and thinners are similar and varies with water content.As a result, flux concentration control by measurement of the acid value ismore convenient.

Preheating

LOCTITE X32-10i contains more solvent than conventional fluxes. It will be necessary to increase the preheat settings to remove the additional solvent and to ensure that the flux is properly activated. 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.

The combination of very low resin content and special solvent blend produce a wider operating window compared with other low solid content liquid fluxes. Conditions will vary from one machine to another. The following settings will yield good results on a number of systems.

Conveyor Speed, ft/min	Conveyor Speed, M/min	Topside Preheat, °C	Topside Preheat, ºF
4	1.22	82-83	180-183
5	1.52	93-99	200-208
6	1.83	99-104	210-218

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 , 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. Very slow speeds through the solder wave may produce dull solder joint.

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.

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 X32-10i can be used with all standard 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 1.2m/min.

Cleaning:

To complete the no-clean assembly process, compatible Multicore cored solder wire and solder paste products are available. Soldering tips should be kept clean with Multicore Tip Thinner/Cleaner TTC1.

LOCTITE X32-10i flux properly applied and processed leaves no discernible residues without cleaning.

It is recommended that the soldering system itself be tested for cleanliness using an unfluxed board passed over the soldering machine. Suppliers should be requested to supply clean components and clean boards with good solderability.

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.

Special Properties

Boards soldered with LOCTITE X32-10i pass MIL-P-28809A ionic contamination test without cleaning, provided excess flux is not applied and a clean system and components are used.

LOCTITE X32-10i passes the following corrosion tests:

USA Copper Mirror Test	MIL-F-14256D	Pass
UK Ministry of Defense	DTD 599-A	Pass
USA Bellcore	TR-TSY-000078	Pass

Surface Insulation Resistance

LOCTITE X32-10i surface insulation resistance test results are shown below.

SPEC	Bellcore TR-TSY-000078	Bellcore TA-NWT-000078	JIS-Z-3197
Temp ºC	35	35	40
Rel Humidity %	90	85	90
Time (hour)	96	96	96
Voltage	50	50	NONE
Test Voltage	100	100	500
Typical SIR (ohms)	6.5 x 1010	3.4 x 1011	5.2 x1010

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:

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 of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Belgium NV, Henkel Electronic Materials NV, Henkel Nederland BV, Henkel Technologies France SAS and Henkel France SA please additionally note the following:

In case Henkel would be nevertheless held liable, on whatever legal ground, Henkel's liability will in no event exceed the amount of the concerned delivery.

In case products are delivered by Henkel Colombiana, S.A.S. the following disclaimer is applicable:

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. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Corporation, Resin Technology Group, Inc., or Henkel Canada Corporation, the following disclaimer is applicable:

The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, **Henkel Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Henkel Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.

Trademark usage

Reference 0.1