Technical Data Sheet

Multicore® MCF800

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THE ESSENTIAL COMPONENT IN SOLDERING PROCESS RESIDUE REMOVAL

MCF800 is designed for the effective removal of all types of soldering process residues from circuit boards, screens, fixtures and equipment.

- **No ozone depleting chemicals**
- **Very low volatility**
- **Low odour**
- **Flash point 105°C**
- **Safe with common PCB and equipment construction materials**

APPLICATIONS

MCF800 is intended primarily for the cleaning of printed circuit boards after soldering by any of the normal processes. However, it is also suitable for other cleaning applications, including soldering process equipment and fixtures, electronic components, stencils and screens.

Cleaned boards can be conformally coated if required.

Multicore SC-01 is a related product which is more volatile and so may find use where rapid drying is preferred. However, its primary field of application is in screen/stencil printing. A separate data sheet is available.

PROCESS CONFIGURATIONS

Many pieces of equipment are suitable for use as part of an MCF800 cleaning process. Users are advised to discuss their intentions with Henkel technical staff and the equipment supplier. The following is for guidance towards selecting the most appropriate option.

MCF800 only: MCF800 is a blend of solvents showing the correct combination of affinity for non-polar molecules (such as resins) and polar molecules (such as ionic residues and surplus flux activators). Consequently it is capable of dissolving all residues from a soldering process in an acceptably short time under mild conditions. At the same time, the solvents will not harm PCB or component materials and most equipment may safely be left in contact with MCF800 for extended times.

The typical process using only MCF800 consists of an immersion wash, preferably incorporating agitation by ultrasonics and/or spray under immersion, at a temperature of 50-60°C. This is followed by a rinse with agitation in pure MCF800 at room temperature and forced air drying. A second rinse may be incorporated as a way of reducing solvent usage. The solvent is normally cascaded from pure MCF800 back into the initial wash tank, the contents of which eventually require replacement. The purity of the rinse sections may be maintained using a suitable filtration and purification process.

Attention to the drying process may be required to ensure that it is capable of removing MCF800 from beneath components. MCF800 usage and drying time can be minimised by ensuring effective drainage of excess material between process steps.

Mixed solvent processes: It is probable that situations will arise in which the drying attributes of MCF800 cause the total process to take too long or the boards and components to be subjected to too much heat stress. A way to resolve this problem is to substitute the final rinse step in the process described above by a rinse in a low boiling point solvent, producing a board residue with much increased volatility. A popular choice is a low molecular weight alcohol since this class of materials is totally miscible with MCF800 and does not cause flux residues to precipitate back onto the board in the tank. However, this mixture has a low flashpoint and appropriate precautions must be taken in equipment design and operation.

This process can be viewed as a variant by which MCF800 volatility may be increased. However, experience with alcohol-only processes suggests that it may also be appropriate to consider the use of an MCF800 pre-wash, as a system enhancement which yields improved product cleanliness levels.

Henkel Technologies

Multicore MCF800-water processes: Water is totally miscible with MCF800. The improved volatility of MCF800 achieved with a solvent rinse may also be obtained to a lesser degree with a water rinse, without the extra costs associated with a reduction in the flashpoint of the solvent. Of course water is not as volatile as low molecular weight alcohols but the blend with MCF800 in the rinse stage is sufficiently volatile for practical processes. The rinse water requires continuous disposal and/or purification and this may be achieved in a number of ways, determined by the equipment design and the overall process configuration. The initial washing stages utilise pure MCF800 in the same way as the MCF800 only process.

There are some situations where it would be more appropriate to use a blend of MCF800 and water in a single stage cleaning operation. Obviously total cleaning capacity is reduced and the disposal of the exhausted cleaner will be different to that of either contaminated MCF800 or water on their own. An example where this might be suitable is the cleaning of process equipment such as solder cream screens and stencils.

SUMMARY OF PROCESS CONFIGURATIONS

System	Wash	Rinse	Rinse	Dry
MCF800 only	MCF800	MCF800	MCF800	Dry
Semi-aqueous	MCF800	MCF800	Deionised water	Dry
	MCF800	Water	Deionised water	Dry
Mixed solvent	MCF800	MCF800	Alcohol	Dry*
	MCF800	Alcohol	Alcohol	Dry*

* drying by evaporation, no forced drying required

PROCESS FEATURES

System	Advantages	Disadvantages
MCF800 only	No DI water supply needed No DI water treatment needed Single chemical system	Drying times slower than water or alcohol, unless special drier or in-line process used
Semi-aqueous	Non-flammable Reasonable drying times Non-foaming Neutral pH Fully water soluble	DI water supply needed Water treatment may be needed
Mixed solvent	No DI water supply needed No DI water treatment needed Fast drying Solvents compatible	Control of flammability Multiple chemical system

DISPOSAL OF PROCESS BY-PRODUCTS

DISPOSAL

A test kit is available to help the user decide when MCF800 is contaminated to the extent that it requires replacement. The principle of the method is to cause the contaminants dissolved in the MCF800 to be partially rejected from solution making it appear turbid. Turbidity is easily checked visually using a test cell and printed grid.

The user is advised to consult local regulations and to refer to the Material Safety Data Sheet before implementing particular strategies for the handling of process by-products. Different process options may variously produce:

- MCF800 contaminated by flux residues, possibly including the metals tin and lead
- Water contaminated by MCF800 and a small amount of flux residue
- A mixture of water, MCF800 and flux residues
- Filters and ion exchange resins contaminated by flux residues.

There is no unique strategy for dealing with these by-products. However, Henkel personnel can direct the user to technically and economically viable alternatives which meet regulatory criteria. In many locations, contaminated water may be disposed of directly on site after suitable pre-treatment and/or dilution. Small users will probably find that the most attractive option is to pay for approved operators to remove by-products for controlled disposal. MCF800 contaminated by flux residues has an intrinsic value as a low grade fuel.

TECHNICAL INFORMATION

Product compatibility data

When introducing MCF800 it is sensible to test compatibility with construction/PCB materials through off-line tests, although the following materials are known to exhibit excellent resistance.

Compatible plastics
High density polyethylene (HDPE)
Low density polyethylene (LDPE)
Linear low density polyethylene (LLDPE)
Polypropylene
Nylon

Since MCF800 is designed to remove organic materials (resins) from surfaces, it is not compatible with many painted or varnished surfaces. It should not be used for cleaning these, and process equipment having a painted metal finish is not recommended.

MCF800 is compatible with all commonly encountered metals.

Typical physical properties of MCF800

Flashpoint (PMCC)	105°C
Boiling point	225°C
Vapour pressure, 20°C	0.4mbar
Density, 20°C	0.949

PACKAGING

Containers: MCF800 is supplied in the following:

- 1 litre, 5 litre and 25 litre plastic containers
- 200 litre drums

GENERAL INFORMATION

For safe handling information on this product, consult the Material Safety Data Sheet, (MSDS).

Note

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.

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