



RM92

March 2007

NO CLEAN RMA SOLDER CREAMS

Multicore RM92 solder creams have been formulated as No Clean RMA type products showing superior resistance to preheat slump during reflow processes.

- Screen printing and stencilling grades available
- Grades suitable for fine pitch applications available
- Excellent resistance to preheat slump
- Good tack performance and wetting
- Residues may be left uncleaned

PRODUCT RANGE

Multicore RM92 solder creams may be supplied with solder powder made from most solder alloys in the Multicore Product Range. The most common alloys used are Sn60, Sn62 and Sn63 conforming to the purity requirements of J-STD-006 and EN 29453. Minimum order requirements may apply to certain alloys and powder particle sizes.

A wide range of metal contents and solder powder particle size distributions may be ordered but most applications will be served by the following recommended products:

Metal Content, % in RM92 Solder Creams For Particular Applications				
		Solder Powder Particle Size		
Application (Viscosity)	Size Multicore Code	75-53µm BAS	53-38µm AAS	45-20µm AGS
Screen Printing (650,000cP)		88-650,000	88 -650,000	-
Stencil Printing (800,000 -1,000,000cP)		90 -800,000	90 -900,000	90 -980,000

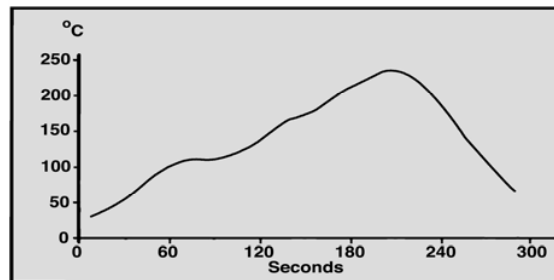
For dispensing applications, the equivalent Multicore RM89 solder creams are recommended.

If clear residues are preferred, the user should evaluate the No-Clean range. Customers wishing to print at high speed should consider Multicore RP10 solder creams.

RECOMMENDED OPERATING CONDITIONS

Application: The appropriate grades of Multicore RM92 solder creams have been specially formulated for application by screen printing and stencilling. They do not require the addition of thinners either before or during use. It is recommended that products shipped in jars should be gently stirred for 15 seconds before use.

Reflow: Any of the available methods of heating to cause reflow may be used including IR, convection, hot belt, vapour phase and laser soldering. It is not practicable to recommend an ideal reflow temperature profile for all situations. However, the following shows an example profile which has given good results in practice.



Multicore RM92 solder creams have been specially formulated to show a **marked resistance to preheat slump**. They can **tolerate the longer preheat times** often required for large surface mounted devices or densely populated boards. Furthermore, Multicore RM92 solder creams are **less liable to char** during reflow at the elevated temperatures required for some solder alloys.

Cleaning: The residues from Multicore RM92 solder creams may be left on the PCB in many applications since they do not pose a hazard to long term reliability. However, should there be a specific requirement for residue removal, this may be achieved using conventional cleaning processes based on solvents such as Multicore Prozone, or water containing suitable saponifying agents such as Multicore PC85.

NOT FOR PRODUCT SPECIFICATIONS
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TECHNICAL SPECIFICATIONS

Solder Powder: The solder powder for Multicore RM92 solder creams is produced by atomising alloys conforming to the purity requirements of J-STD-006, EN 29453 or other national and international standards where relevant.

Careful control of production processes ensures that the solder powder is at least 97% spherical (aspect ratio < 1.5) and contains less than the minimum level of contaminants that would adversely affect solder cream performance. A typical maximum oxide contamination level of 80 ppm (expressed as oxygen in the solder) is regularly achieved or bettered.

Solder Cream Medium: The flux for Multicore RM92 solder creams is a RMA type showing the following characteristics. Test reports are available on request.

Test	Specification	Results
Corrosion	DTD 599A IPC-SF-818 BS5625	Pass
Copper Mirror Corrosion	IPC-SF-818 J-STD-004	Pass
Chlorides and Bromides	Bellcore TR-NWT-000078	
Spread Test	QQ-S-571E	Pass
Surface Insulation Resistance (without cleaning)	IPC-SP-819 Bellcore TR-NWT-000078	Pass
Electromigration (without cleaning)	Bellcore TR-NWT-000078	Pass
Flux Activity Classification	IPC-SF-818	LR3CN
	J-STD-004	RO L1
	EN 29454	1.1.2

Solder Cream: The properties of a solder cream depend in part on the metal content, the solder alloy and the solder powder particle size range. In general terms, increasing metal content reduces the tendency to slump and reduces the tackiness of the solder cream while the solder balling performance improves. Using solder alloys with increased density has the same effect as reducing the metal content.

It is common practice to characterise the rheology of solder creams by making a viscosity measurement at a single specified shear condition. Increasing metal content increases the measured value and at higher metal contents, decreasing the mean solder powder particle size can have the same effect.

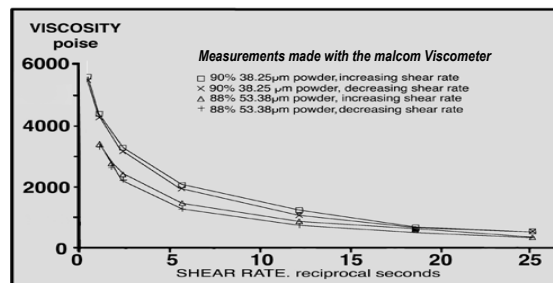
The characteristics of Multicore RM92 solder creams which confer their superior slump performance also increase their sensitivity to the conditions of sample preparation before making Brookfield viscosity determinations. Excessive stirring before testing can lead to erroneously low values for viscosity. A more informative indication of the rheological properties of solder creams is provided by a plot of viscosity versus shear rate and these data are summarised as the “Thixotropic Index” of a cream. Some typical results for a selected Multicore RM92 solder cream are shown in the following graph.

Typical properties of selected Multicore RM92 solder creams are as follows. Full details of test methods will be supplied on request.

Alloy	Sn60, Sn62, Sn63			
	88		90	
Metal Content %	88		90	
Powder particle size	75-53 µm	53-38 µm	75-53 µm	53-38 µm
code	BAS	AAS	BAS	AAS
Viscosity, 25°C Brookfield, cP (1)	600,000	650,000	800,000	900,000
Malcom viscosity, P (2)		1,870	2,080	2,350
Thixotropic index (3)	0.52	0.52	0.52	0.56
Slump,(4) IIW test method, mm				
1 hour, room temp.				
0.7mm pads	0.2	0.2	0.2	0.2
1.5mm pads	0.2	0.2	0.2	0.2
80°C, 20 minutes				
0.7mm pads	0.5	0.3	0.4	0.3
1.5mm pads	0.4	0.3	0.3	0.4
Tack (5)				
Peak tack force, g.mm-2		1.4	1.1	1.2
Useful open time, h	72	72	20	25

- (1) Measured at 25°C, TF spindle at 5rpm after 2 minutes.
- (2) Measured at 25°C and a shear rate of 6s⁻¹
- (3) The Thixotropic Index (TI) is defined as: TI=log (viscosity at 1.8s⁻¹/viscosity at 18s⁻¹)
- (4) The slump data are expressed as the minimum spacing between pads of the size shown that does not allow bridging.
- (5) Tack data are derived from comparative laboratory tests and do not necessarily relate directly to particular user conditions.

VISCOSITY DATA FOR SELECTED MULTICORE Sn62RM92 SOLDER CREAMS



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PACKAGING

Containers: Multicore RM92 solder creams are supplied in:

- 1 kg, 500g or 250g plastic jars with an insert to seal off the surface of the cream
- 1 kg vacuum filled cartridges for direct application

Other forms of packaging may be available on request.

Shelf Life: Providing Multicore RM92 solder creams are stored at 5-10°C tightly sealed in the original container, a minimum shelf life of 6 months can be expected. Air shipment is recommended to minimise the time the containers are exposed to higher temperatures.

Multicore RM92 solder creams have been formulated to reduce separation on storage to a minimum but should it occur, gentle stirring for 15 seconds will return the products to their correct rheological performance.

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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