Multicore® Solder Pastes

MP200 Solder Paste — Wide Process Window

Description/Application	Alloy	% Metal Load	Tack (g./mm²)	Print Speed mm/sec.	IPC/J-STD Classification
A high activity, **soft, colorless, low residue,** no-clean solder paste that exhibits excellent print definition with long open and abandon time capabilities. High activity of the MP200 flux offers excellent wetting to a wide range of surface finishes, and an exceptional reflow process window. Is suitable for fine pitch, high speed printing applications. Pin testable.	SN62/SN63 63S4 (Anti-Tombstoning)	90 90.5	1.1	25 - 200	ROL0

Item number	Product Description	Package size	Item number	Product Description	Package size
M00439	Sn63 MP200 AGS 90	500 Gram Jar	M00443	Sn62 MP200 AGS 90	500 Gram Jar
M00440	Sn63 MP200 AGS 90	700 Gram Semco	M00444	Sn62 MP200 AGS 90	700 Gram Semco
M00441	Sn63 MP200 AGS 90	1300 Gram Semco	M00445	Sn62 MP200 AGS 90	1300 Gram Semco
M00447	Sn63 MP200 AGS 90	20CC EFD Cartridge	M00448	Sn62 MP200 AGS 90	30CC EFD Cartridge
M00505	Sn63 MP200 AGS 90.5	750 Gram Proflow	M00506	Sn62 MP200 AGS 90.5	750 Gram Proflow
M00449	Multi-Tak MP 200 (Rework Flux)	30CC Cartridge	M00479	63S4 MP200 ACP 90	500 Gram Jar
			M00480	63S4 MP200 ACP 90	700 Gram Semco
			M00481	63S4 MP200 ACP 90	1300 Gram Semco

CR36 No-Clean Solder Paste — Highest Activity Offering

Description/Application	Alloy	% Metal Load	Tack (g./mm²)	Print Speed mm/sec .	IPC/J-STD Classification
A **high activity, colorless residue,** no-clean solder paste. CR36 exhibits good abandon time, long stencil life, and minimal hot slump. It has excellent wetting to a wide range of surface finishes. The activity of CR36 gives it an exceptional reflow process window, making it suitable for both volume and high mix manufacturing.	SN62/SN63	89.5	1.3 - 1.6	20 - 200	ROL0

Item number	Product Description	Package size
M00086	Sn63 CR36 AGS 89.5	500 Gram Jar
M00219	Sn63 CR36 AGS 89.5	500 Gram Semco

NEW LF320 Lead Free Paste — Wide Process Window

Description/Application	Alloy	% Metal Load	Tack (g./mm²)	Print Speed mm/sec .	IPC/J-STD Classification
A no-clean flux system specially formulated for Pb-free alloys. High temperature tolerance and wide printing capability. 96SC alloy (Sn 95.5, Ag 3.5, Cu 0.7%) reflows at 217°C.	96SC	88	1.2	20-150	ROM0

Item number	Product Description	Package size
M00501	96SC LF320 AGS88	500 Gram Jar
M00502	96SC LF320 AGS88	600 Gram Semco

NEW WS200 Water Wash Paste

Description/Application	Alloy	% Metal Load	Tack (g./mm²)	Print Speed mm/sec .	IPC/J-STD Classification
High performance water washable solder paste. Residues are readily removed with DI water, without the need for a saponifier. WS200 has good open time with excellent print definition and soldering activity.	SN62/SN63	90.5	0.8	25-100	ORH1

Item number	Product Description	Package size	Item number	Product Description	Package size
M00486	Sn63 WS200 AGS 90.5	500 Gram Jar	M00488	Sn62 WS200 AGS 90.5	500 Gram Jar
M00487	Sn63 WS200 AGS 90.5	700 Gram Semco	M00489	Sn62 WS200 AGS 90.5	700 Gram Semco
M00508	Sn63 WS200 AGS 90.5	1300 Gram Semco	M00509	Sn62 WS200 AGS 90.5	1300 Gram Semco

Multicore® No-Clean Fluxes

X32-10 No-Clean Flux — Clear Residue-Wide Process Window

Description/Application	% Solids	% Halides	Acid Value	IPC Class	Application
A general purpose halide-free low solids flux which leaves clean, dry boards after wave soldering. Suitable for foam and spray flux application systems.	2.2	Zero	15.3	REMO	Spray/Foam

Item number	Package size
M00322	1 Gallon
M00320	5 Gallon
M00323	55 Gallon

NEW MF200 Liquid Flux — General Purpose - Lead-Free Compatible

Description/Application	% Solids	% Halides	Acid Value	IPC Class	Application
A general purpose halide-free flux with sustained activity to extend flux life in dual wave and Pb-free wave soldering aplications. Suitable for spray flux application systems.	6.4	Zero	37	ORMO	Spray/Foam

Item number	Package size
M00490	1 Gallon
M00491	5 Gallon
M00492	55 Gallon

NEW MF300 VOC-free — Clear Residue Resin Free

Description/Application	% Solids	% Halides	Acid Value	IPC Class	Application
General purpose VOC-free (water based), no-clean, halide-free and resin-free flux with special formulation to minimize solder balling. Compatible with Pb-free processes.	4.6	Zero	48.5	ORMO	Spray/Foam

Item number	Package size
M00469	1 Gallon
M00470	5 Gallon
M00471	55 Gallon

NEW MFR301 — IPA Based Rosin Flux

Description/Application	% Solids	% Halides	Acid Value	IPC Class	Application
Higher solids flux for better wetting on reduced solderability surfaces and to minimize bridging on complex geometries. Fully Pb-free and dual wave compatible.	6.5	Zero	41	ROMO	Spray/Foam

Item number	Package size
M00472	1 Gallon
M00473	5 Gallon
M00474	55 Gallon

Multicore® No-Clean VOC-Free Fluxes

NEW **MF101 Liquid Flux** — No Clean - VOC Free - Rosin Based Emulsion

Description/Application	% Solids	% Halides	Acid Value	IPC Class	Application
A unique **rosin emulsion** technology flux which combines the benefits of a **VOC-free** flux with the sustained activity of rosin. This can be used in **dual wave** applications for soldering bottom side SMD components. Excellent activity produces a wide process window reducing defects and improving hole-fill. **Can be used in lead-free wave applications.**	6.5 - 7.0	Zero	40	ROMO	Spray

Item number	Package size
M00372	1 Gallon
M00373	5 Gallon

Multicore® Water Wash Fluxes - IPA Based

Hydro-X/20 — High Activity Flux

Description/Application	% Solids	% Halides	Acid Value	Application
A high activity **water washable flux** designed for the soldering of the most difficult electronic assemblies. Unique activator package enables a wider process window and the soldering of all common electronic surfaces with ease. Residues are readily and completely removed by water wash after soldering. **Suitable for lead-free wave soldering.**	20	1.0	24	Spray/Foam

Item number	Package size
M00274	1 Gallon
M00272	5 Gallon
M00273	55 Gallon

Multicore® Cored Wire

The Multicore® line of cored wire features the renowned multiple flux cores technology to ensure even and consistent distribution of flux throughout the solder wire. This reliability makes multicore solder wire the first choice for automated wire soldering processes.

Item	Description	Halide Content	IPC Class	Alloy Options (Sn/Pb)	Alloy Options (Pb-free)	Content (by weight)*
X39	Halide free, no-clean, clear residues	Zero	ROL0	60/40, 63/37, SN62	96SC, 99C	1%
400	Halide free, no-clean, clear residue, increased flux content for improved wetting.	Zero	ROL0	60/40, 63/37, SN62	96SC, 99C	2.2%
502	No-clean, clear residue, minimal activation for increased wetting speed.	0.2%	ROM1	60/40, 63/37, SN62	96SC, 99C	3%
309	General purpose high activity for fast wetting.	<1%	ROM1	60/40, 63/37, SN62	96SC, 99C	3%
Hydro-X	High activity water washable.	3%	ORH1	60/40, 63/37, SN62	96SC, 99C	2%

*Flux content is nominal and may vary regionally due to market requirements. Please check with your regional supplier.

Multicore® Cleaners

Prozone SC01

Description/Application

Prozone SC01 is designed for the stencil cleaning and hand cleaning of process soldering residues. A highly effective cleaner that dries rapidly (fast evaporation).

Item number	Package size
M00290	1 Gallon
M00297	5 Gallon
M00296	55 Gallon

Other Multicore® Product Offerings

Solder Mask

Temporary solder resists used with circuit boards prior to soldering. Will withstand flux and wave soldering operations. Suitable for use with copper, hand, robotic, pneumatic or template screening applications and brush.

Item number	Description	Package size
M292961	Spot-On Solder Mask	250 ml
M292967	Spot-On Solder Mask	5 liters

Mini Fluxers and Cleaners

Perfect for SMT re-work

Controlled release flux and cleaner pen applicators. Range of compatible flux types available. Ideal for controlled application of flux when carrying out SMT re-work. Cleaner pen easily removes residues.

Item number	Description
M00385	MF-X33-04 No-Clean
M293319	MF-X33S-07i No-Clean
M00387	MF-638125 RMA Type
M293321	MF-Prozone Cleaner

No-Clean Desoldering Wicks

Item number	Description	Length	Width
M293366	NCAA	5 ft. (1.524m)	1.5 mm (0.06in.)
M290996	NCAA	10 ft.(3.048m)	1.5 mm (0.06 in)
M00390	NCAA	100 ft.(30.48 m)	1.5 mm (0.06 in.)
M290998	NCAB	5 ft.(1.524m)	2.2 mm (0.08 in.)
M291001	NCAB	100 ft.(3.048m)	2.2 mm (0.08 in.)
M291005	NCBB	5 ft.(1.524m)	2.7 mm (0.10 in.)
M291008	NCBB	10 ft.(30.48m)	2.7 mm (0.10 in.)
M00393	NCBB	100 ft.(30.48 m)	2.7 mm (0.10 in.)
M291013	NCOO	5 ft.(1.524m)	0.8 mm (0.03 in.)
M291017	NCOO	10 ft.(3.048m)	0.8 mm (0.03 in.)

Tip Tinner

Extends solder iron tip life

Handy, non-abrasive solder iron tip-tinner. Easily wets hot solder irons leaving a brightly tinned tip. Improves hand soldering efficiency and extends tip life. Adhesive pad allows easy mounting on or near the solder iron holder.

Item number	Description
M293011	Tip-Tinner

LOCTITE®

Product 3888

July 2003

PRODUCT DESCRIPTION

LOCTITE® 3888 Silver Filled Conductive Adhesive provides the following product characteristics:

Technology	Epoxy
Chemical Type	Epoxy
Appearance (Resin)	Silver paste[LMS]
Appearance (Hardener)	Clear to amber liquid[LMS]
Components	Two part - Resin & Hardener
Viscosity	Thick paste
Cure	Room Temperature Cure
Application	Bonding
Key Substrates	Electronic components
Other Application Areas	Thermally conductive
Dispense Method	Syringe
Operating Temperature	Up to +80°C

Product 3888 is designed for bonding of metals, ceramics, rubbers and plastics as used in electronic parts, where good adhesion combined with electrical and thermal conductivity is required. Typical applications include solder replacement, repair/rework of interconnections, and bonding of heat sensitive components where solder temperatures are impractical.

TYPICAL PROPERTIES OF UNCURED MATERIAL

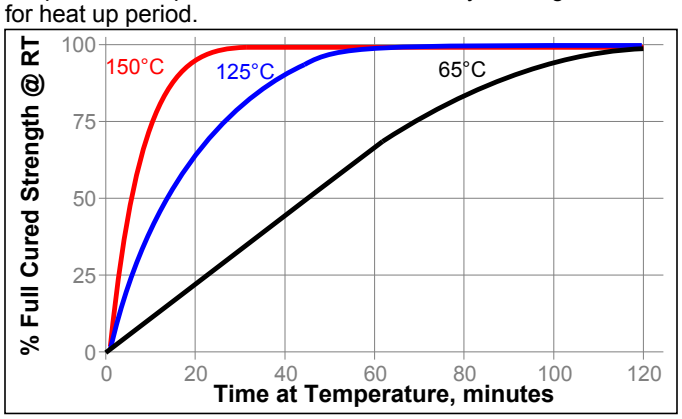
Specific Gravity @ 25°C	2.50
Hardness, Shore D	89
Mix Ratio, Resin: Hardener	100:6
Pot life, minutes	90

TYPICAL CURING PERFORMANCE

Recommended conditions for curing are exposure to room temperature heat for 24 - 48 hours. Rate of cure and final strength will depend on the residence time at the cure temperature.

Cure Speed vs. Time, Temperature

The following graph shows the rate of torque strength developed with time at different temperatures. These times are defined from the moment the adhesive reaches cure temperature. In practice, total oven time may be longer to allow for heat up period.



TYPICAL PROPERTIES OF CURED MATERIAL

Cured for 24 hours @ 22°C.

Physical Properties:

Coefficient of Thermal Expansion, ASTM E 831-93, µm/(m°C)	$<50\times10^{-6}$
Coefficient of Thermal Conductivity, W/m°C	>1.50
Glass Transition Temperature, Tg, ASTM D 3418-82, °C	50
Extractable Ionic Content:	
Flourine, ppm	<6.00
Chloride, ppm	95.80
Potassium, ppm	4.20
Sodium, ppm	2.80

Electrical Properties:

Volume Resistivity, MIL 883 E, Method 5011, Ωcm	<0.001

Cured for 1 hour @ 125°C.

Electrical Properties:

Volume Resistivity, MIL 883 E, Method 5011, Ωcm	≤0.0005[LMS]

PERFORMANCE OF CURED MATERIAL

Cured for 24 hours @ 22°C.

Adhesive Properties:

Shear Strength, ASTM D 1002, N/mm² :	
Aluminum	≥12

GENERAL INFORMATION

This product is not recommended for use in pure oxygen and/or oxygen rich systems and should not be selected as a sealant for chlorine or other strong oxidizing materials.

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

Storage

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.

If supplied as separate containers of parts A and B, store at room temperature for up to 6 months. If supplied pre-mixed and frozen, store at -40°C for up to 1 year. Shelf life will vary with speciality packages

Material removed from containers may be contaminated during use. Do not return product to the original container. Loctite cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Technical Service Center or Customer Service Representative.

Loctite Material Specification[LMS]
LMS dated July 15, 2003. Test reports for each batch are available for the indicated properties. LMS test reports include selected QC test parameters considered appropriate to specifications for customer use. Additionally, comprehensive controls are in place to assure product quality and consistency. Special customer specification requirements may be coordinated through Henkel Loctite Quality.

Conversions
(°C x 1.8) +32 = °F
kV/mm x 25.4 = V/mil
mm x 0.039 = inches
mPas = cP
N/mm^2 x 145 = psi
N x 0.225 = lbs

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 Loctite 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 Loctite Corporation's products. Henkel Loctite 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 Loctite 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
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Reference 0.0

Multicore MP218

The solder paste you can rely on in any environment

Reduce process variation in challenging climatic environments; cut down on paste wastage and minimize inventory and scrap– just some of the advantages you can expect from using Multicore MP218 solder paste from Henkel.

Today, it's the norm for major electronics manufacturers to carry out assembly in several global locations, whether for delivery expediency or to achieve economical advantage. But going through the source-and-trial process in each market to find solder products that give consistent results can be both time-consuming and expensive.

This is especially true of solder pastes, which are highly sensitive to temperature and humidity variations in the operating environment. A non-ideal combination can cause premature drying or promote excessive moisture absorption by the paste, leading to problems with printing and component placement, or creating solderballing defects during reflow.

Engineered for dependable performance, wherever you must produce

If you need a solder paste you can depend on to work under various harsh climate conditions, and you're not switching to lead-free manufacture just yet, then Multicore MP218 solder paste is designed for you. (If you need an equivalent lead-free product, ask us about LF318 solder paste). Here are some of the benefits you'll enjoy:

MP218 Attribute	Process Benefit
Outstanding humidity resistance – exhibits high coalescence even after 24 hours exposure to 75%RH. In independent testing to IPC ANSI/J-STD-005 and JIS-Z-3284 standards	Reduces process variation due to environmental factors, a particular advantage where assembly is carried out in hot and humid conditions
Superior slump resistance	Reduced bridging
Colorless residues	Better cosmetic appearance
Soft, non-stick pin-testable residues	Improves ease and reliability of in-circuit testing and reduces frequency with which test probes require cleaning
Optimized paste viscosity	Suitable for fine pitch, high speed printing up to 150 mm/s (6 in/s)
Extended open time & tack-life	Reduces material scrap
Halide-free flux classification: ROL0 to ANSI/J-STD-004	High reliability of finished assembly without cleaning
High tack force	Resists acceleration forces during high speed placement, eliminating skewed and missing component and need for rework
Long printer abandon times	Reduces solder paste wastage, increases process efficiency
Excellent solderability	Suitable for use on a wide range of surface finishes including HASL, Ni/Au, immersion Sn, immersion Ag and OSP Cu
Wide printing and reflow process windows	Accommodates a wide range of printer settings and reflow profiles. Suitable for use in air and nitrogen

Multicore MP218

Alloy powder data

Available alloys Sn62, Sn63, 63S4* (Anti-tombstone)			
Powder particle size, µm	15-38	15-45 (63S4)	25-45
Multicore powder size coding	ADP	ACP	AGS
Metal loading (% weight)	89.5%	89.5%	89.5 & 90%

*63S4 (Anti-Tombstone Alloy): A drop-in replacement for standard lead alloys, the anti-tombstone alloy works using a phased reflow process where a small amount of SN62 wets both sides of the termination before the SN63 melting point is reached, tack-soldering components to the PCB and delivering a larger assembly process window.

Printing

Multicore MP218 solder paste is available for stencil printing down to 0.4 mm (0.016 in) pitch devices, with type 3 (AGS) powder. Printing at speeds between 25 mm/s (1.0 in/s) & 150 mm/s (6 in/s) can be achieved using laser cut, electro-polished, or electroformed stencils and metal squeegees (preferably 60°).

Reflow

Any available method of heating to effect reflow may be used, including IR, convection, hot belt, vapor phase and laser soldering. Please consult the MP218 Engineering Manual, available from your local Henkel office, for examples of suitable reflow profiles.

Cleaning

Multicore MP218 solder paste residues are no-clean and are designed to be left on the PCB, since they do not pose a hazard to long-term reliability. Should there be a specific requirement for residue removal, this may be achieved using conventional cleaning processes based on solvents such as Multicore MCF800, or suitable saponifying agents. For stencil cleaning and cleaning board misprints, Multicore SC-01 Solvent Cleaner is recommended.

Reliability data

Test	Specification	Results
Copper Plate Corrosion	ANSI/J-STD-004	Pass
Copper Mirror Corrosion	ANSI/J-STD-004	Pass
Chlorides and Bromides	ANSI/J-STD-004	Pass
Surface Insulation Resistance (without cleaning)	ANSI/J-STD-004 Telcordia GR-78-Core JIS-Z-3284	Pass Pass Pass
Electromigration (without cleaning)	Telcordia GR-78-Core JIS-Z-3284	Pass Pass
Flux Activity Classification (without cleaning)	ANSI/J-STD-004	ROL0

Packaging

Multicore MP218 solder paste is supplied in plastic jars, and Semco cartridges. Other packaging types may be available on request.

Storage and shelf life

Multicore MP218 should be stored at 0-10°C. Shelf life is 6 months, provided the solder paste is stored tightly sealed in the original container at 0-10°C.

Further product information

A comprehensive engineering manual containing detailed technical data and application notes is available for Multicore MP218 solder paste. For safe handling information on this product, consult the Material Safety Data Sheet appropriate to your region. Contact your local Henkel technical service helpdesk to obtain copies.

Multicore LF318

The lead-free solder paste you can rely on in any production environment

Reduce process variation under challenging lead-free operating conditions; cut down on paste wastage; minimize inventory and scrap – you can expect all of these advantages and more by choosing Henkel's Multicore® LF318 solder paste for your lead-free manufacturing.

Multicore LF318 is the result of continuous improvement of Henkel's solder paste technology and offers an extremely wide process window and performance aspects that are important for all electronics manufacturers carrying out assembly in several global locations.

Multicore LF318 also helps to ensure robust production processes under varying production conditions. Less forgiving solder paste technologies may cause production downtime due to temperature and humidity variations, but LF318's resistance to premature drying or moisture absorption prevents printing or placement problems and solderballing defects from occurring.

Engineered for dependable performance, wherever or whatever you manufacture

Helping manufactures to keep the competitive edge while moving towards lead-free, Multicore LF318 solder paste is designed to contribute flexibility and reliability to your manufacturing process – from printing to final testing - providing consistent results under various harsh climate conditions that would normally cause process variation. If you need an equivalent Sn/Pb alloy product for use in a conventional process, ask us about MP218 solder paste.

LF318 attribute	Process Benefit
Outstanding humidity resistance – exhibits high coalescence even after 72 hours exposure to 27°C/80%RH	Reduces process variation due to environmental factors, a particular advantage where assembly is carried out in hot and humid conditions
Superior slump resistance	Reduced bridging
Colorless residues	Improves cosmetic appearance, allows easy post-reflow inspection
Soft, non-stick pin-testable residues	Improves ease and reliability of in-circuit testing and reduces frequency with which test probes require cleaning
Optimized paste viscosity	Suitable for fine pitch, high speed printing up to 150 mm/s (6 in/s)
Extended open time & tack-life	Reduces solder paste wastage

Multicore LF318

Continued

LF318 attribute	Process Benefit
Low voiding	Reduced risk of bridging on small pitch BGA's or CSP's. Reduced risk of decreased joint reliability and/or outgassing
Halide-free flux classification: ROL0 to ANSI/J-STD-004	High reliability of finished assembly without cleaning
High tack force	Resists acceleration forces during high speed placement, eliminating the need for rework due to skewed or missing components
Long printer abandon times	Reduces solder paste wastage, increases process efficiency
Excellent solderability	Compatible with a wide range of surface finishes including HASL, Ni/Au, immersion Sn, immersion Ag and OSP Cu
Wide printing and reflow process windows	Accommodates a wide range of printer settings and reflow profiles. Suitable for use in air and nitrogen

Alloy powder data

Available alloys	96SC (SAC387), 97SC (SAC305)
Powder particle size, μm	20 - 45
Multicore powder size coding	AGS
Metal loading (% weight)	88.5%

Printing

Multicore LF318 solder paste is available for stencil printing down to 0.4 mm (0.016 in) pitch devices, with type 3 (AGS) powder. Printing at speeds between 25 mm/s (1.0 in/s) & 150 mm/s (6 in/s) can be achieved using laser cut, electro-polished, or electroformed stencils and metal squeegees (preferably 60°).

Reflow

Any available method of heating to effect reflow may be used, including IR, convection, hot belt, vapor phase and laser soldering. Please consult the LF318 Engineering Manual, available from your local Henkel office, for examples of suitable reflow profiles.

Reliability data

Test	Specification	Results
Copper Plate Corrosion	ANSI/J-STD-004	Pass
Copper Mirror Corrosion	ANSI/J-STD-004	Pass
Chlorides and Bromides	ANSI/J-STD-004	Pass
Surface Insulation Resistance (without cleaning)	ANSI/J-STD-004 Telcordia GR-78-Core JIS-Z-3284	Pass Pass Pass
Electromigration (without cleaning)	Telcordia GR-78-Core JIS-Z-3284	Pass Pass
Flux Activity Classification (without cleaning)	ANSI/J-STD-004	ROL0

Packaging

Multicore LF318 solder paste is supplied in plastic jars and Semco cartridges. Other packaging types may be available on request.

Storage and shelf life

Multicore LF318 should be stored at 0-10°C. Shelf life is 6 months, provided the solder paste is stored tightly sealed in the original container at 0-10°C.

Further product information

A comprehensive engineering manual containing detailed technical data and application notes is available for Multicore LF318 solder paste. For safe handling information on this product, consult the Material Safety Data Sheet appropriate to your region. Contact your local Henkel technical service helpdesk to obtain copies.

Cleaning

Multicore LF318 solder paste residues are no-clean and are designed to be left on the PCB, since they do not pose a hazard to long-term reliability. Should there be a specific requirement for residue removal, this may be achieved using conventional cleaning processes based on solvents such as Multicore MCF800, or suitable saponifying agents. For stencil cleaning and cleaning board misprints, Multicore SC-01 Solvent Cleaner is recommended.