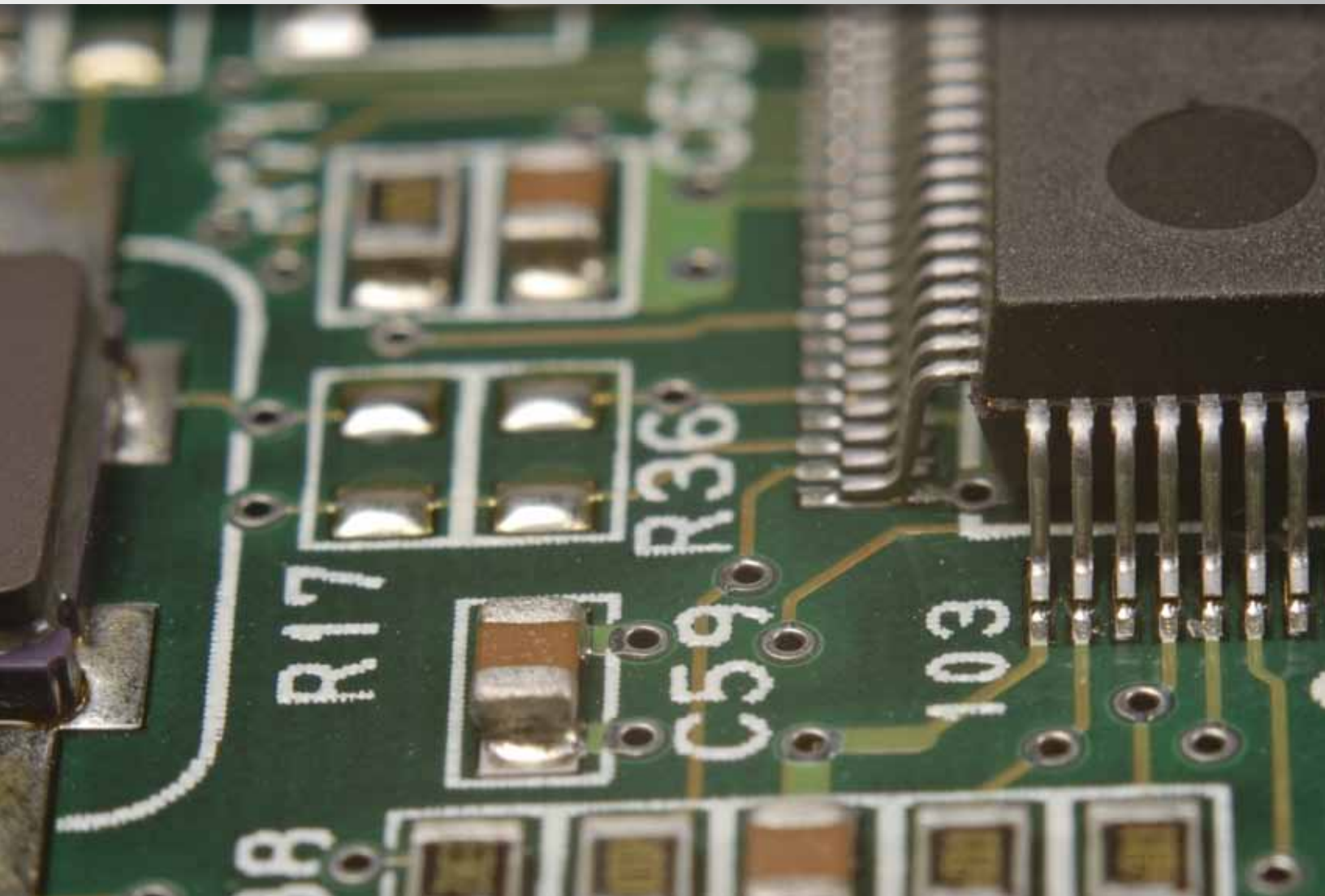




Innovative Solder Material Solutions

Pastes · Wires · Fluxes · Accessories



Excellence is our Passion



Henkel's Solder Portfolio .....	1
Halogen-Free Solder Products.....	2
High-Reliability Alloy.....	4
Advanced Solder Pastes.....	8
Liquid Fluxes.....	10
Cored Wires .....	12
Solder Accessories and Cleaners.....	14
Appendices .....	16



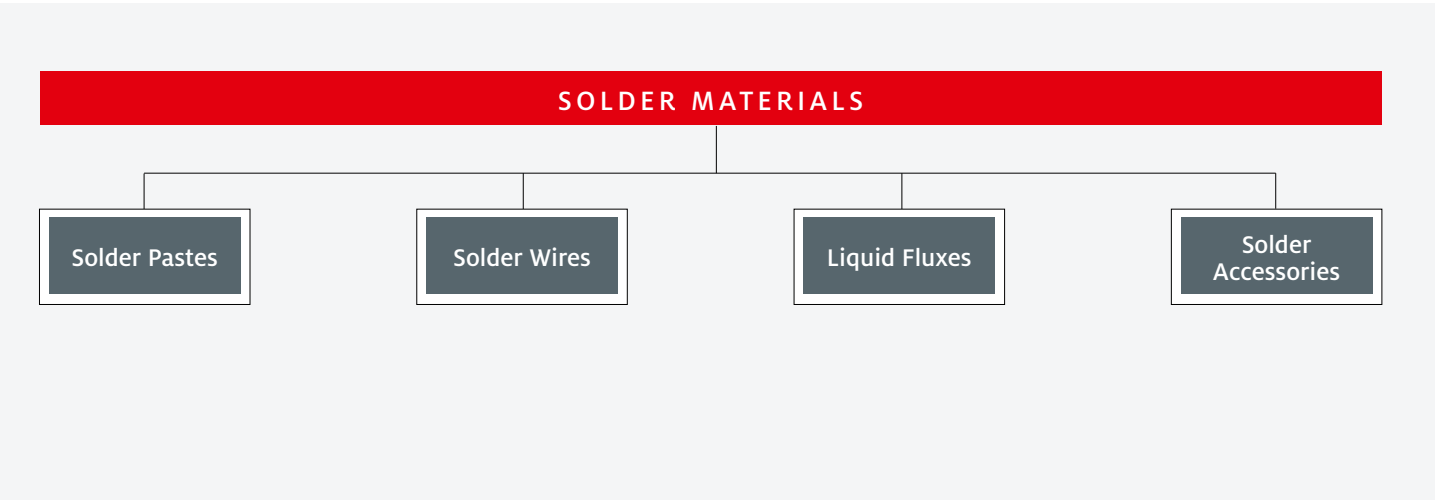
# HENKEL'S SOLDER PORTFOLIO

For decades, Henkel's LOCTITE MULTICORE brand solder products have been synonymous with exceptional performance. Developed with innovation at their core, LOCTITE MULTICORE solder materials offer high reliability, superior processability and advanced capability for almost any application – from mainstream SMT through to next-generation miniaturized assemblies.

A diverse portfolio of compatible solder products including high performance solder pastes, cored solder wire, liquid fluxes and high reliability alloys offer modern electronics specialists a comprehensive solution for varying solder processes and applications.

Henkel's lead-free and halogen-free formulations deliver the best sustainable solder materials with all of the outstanding performance that assembly professionals have come to expect.

Designing every formulation to address current and forthcoming market drivers, innovating for a future-proof solder process and providing best-in-class technical service ensures Henkel will continue to be the world's most trusted solder materials supplier worldwide.





# HALOGEN-FREE SOLDER PRODUCTS

Developed with compatibility in mind, Henkel’s complete line of LOCTITE MULTICORE halogen-free solder materials ensures excellent performance in any combination. Highly reliable with zero halogen added, Henkel halogen-free products don’t sacrifice performance for sustainability – they have it all.



HALOGEN-FREE SOLDER PRODUCTS

Solder Pastes

PRODUCT	DESCRIPTION	ALLOY	METAL LOADING (% WEIGHT)	PARTICLE SIZE DISTRIBUTION	IPC TACK (g/mm²)	APPLICATION	IPC/J-STD-004B CLASSIFICATION
LOCTITE MULTICORE HF 108	A halogen-free, no clean, high tack, low voiding Pb-free solder paste. Designed for medium- large size boards. Excellent fine pitch coalescence. Robust reflow process window with exceptional solderability in both air and nitrogen across a wide range of surface finishes including Immersion Ag and OSP copper.	96SC (SAC387) 97SC (SAC305)	88.5	AGS (type 3) DAP (type 4)	3.0	Printing 30 -100mms <sup>-1</sup>	ROLO
LOCTITE MULTICORE HF 200	A halogen-free, no clean, high tack, low voiding Pb-free solder paste. Suitable for high speed printing demands. Designed for small-medium size boards. Excellent abandon time and stencil work-life. Excellent fine pitch coalescence. Exceptional solderability in both air and nitrogen across a wide range of challenging surface finishes including OSP copper.	90iSC (Hi-Rel)* 96SC (SAC387) 97SC (SAC305)	88.5	AGS (type 3) DAP (type 4) DAP+ (type 4.5)	2.7	Printing 50 -140mms <sup>-1</sup>	ROLO
LOCTITE MULTICORE HF 212	A halogen-free, no clean, high tack, low voiding Pb-free solder paste. Designed for medium-large size boards. Excellent abandon time and stencil work-life. Excellent fine pitch coalescence. Exceptional solderability in both air and nitrogen across a wide range of challenging surface finishes including OSP copper. Optimized for long soak reflow.	90iSC (Hi-Rel)* 97SC (SAC305)	88.5	AGS (type 3) DAP (type 4)	3.0	Printing 40 -120mms <sup>-1</sup>	ROLO
LOCTITE MULTICORE HF 250DP	A halogen-free, no clean, type 5, low voiding, Pb-free solder dispensing paste. A dispensing solution for all halogen-free requirements.	96SC (SAC387)	84	KBP (type 5)	0.8	Dispensing Gauge 23-27	ROLO

Solder Wires

PRODUCT	DESCRIPTION	ALLOY (Pb-Free)	DIAMETER RANGE (mm)	APPLICATION	IPC/J-STD-004B CLASSIFICATION
LOCTITE MULTICORE C 400	Halogen-free, no-clean, clear residue, cored solder wire with increased flux content for improved wetting.	96SC (SAC387) 97SC (SAC305) 99C (SnCu)	0.23 - 1.22	Rework	ROLO

Liquid Fluxes

PRODUCT	DESCRIPTION	SOLID CONTENT (%)	ACID VALUE (mg KOH/g)	APPLICATION	IPC/J-STD-004B CLASSIFICATION
LOCTITE MULTICORE MF 300	General purpose, VOC-free (water-based), no-clean, halogen-free and resin-free flux with special formulation to minimize solder balling. Compatible with lead-free processes.	4.6	37	Spray/Foam	ORM0
LOCTITE MULTICORE MF 390HR	Halogen-free, liquid flux designed for exceptional through-hole fill and recommended for automotive electronics and general electrical soldering applications.	6	20-25	Spray/Foam	ROLO

Solder Accessories

Tacky Fluxes					
PRODUCT	DESCRIPTION	SOLID CONTENT (%)	ACID VALUE (mg KOH/g)	APPLICATION	IPC/J-STD-004B CLASSIFICATION
LOCTITE MULTICORE 450-01	Halogen-free tacky flux designed for use in a wide range of electronics assembly and rework processes.	43	68	Rework Dispensing	ROLO
LOCTITE MULTICORE HF 108RWF	Halogen-free, no-clean, low-voiding rework flux. Suitable for traditional rework, laser and selective soldering. It can be dispensed, printed or dipped.	66	130	Rework Dispensing	ROLO
Cleaners					
PRODUCT	DESCRIPTION	FLASH POINT °C	BOILING POINT °C	APPLICATION	
LOCTITE MULTICORE MCF 800	Designed for the effective removal of all types of soldering process residues from circuit boards, screens, fixtures and equipment. Flash point of 105°C makes it ideal for use in heated cleaning systems.	105	225	Cleaning (prior to reflow)	
LOCTITE MULTICORE SC 01	Designed for the stencil cleaning and hand cleaning of process soldering residues. A highly effective cleaner that dries rapidly (fast evaporation).	40	N/A	Cleaning (post reflow)	
Wicks					
PRODUCT	DESCRIPTION				SIZE REFERENCE APPROXIMATE WIDTH
LOCTITE MULTICORE NC-AA	No-clean desoldering wick is designed for static-free desoldering applications and repair of PC boards, without the need for subsequent clean-up. It is formulated using a special halogen-free, vacuumized, no-clean, flux-coated copper braid for improved wicking. Will not lose its efficiency even after prolonged storage in humid conditions. It is made to remain flexible and will not flake.				1.42 mm (0.056 in.) ± 10%
LOCTITE MULTICORE NC-AB	No-clean desoldering wick is designed for static-free desoldering applications and repair of PC boards, without the need for subsequent clean-up. It is formulated using a special halogen-free, vacuumized, no-clean, flux-coated copper braid for improved wicking. Will not lose its efficiency even after prolonged storage in humid conditions. It is made to remain flexible and will not flake.				1.88 mm (0.074 in.) ± 10%
LOCTITE MULTICORE NC-BB	No-clean desoldering wick is designed for static-free desoldering applications and repair of PC boards, without the need for subsequent clean-up. It is formulated using a special halogen-free, vacuumized, no-clean, flux-coated copper braid for improved wicking. Will not lose its efficiency even after prolonged storage in humid conditions. It is made to remain flexible and will not flake.				2.59 mm (0.102 in.) ± 10%

\* High Reliability.

# HIGH-RELIABILITY ALLOY

A breakthrough in solder alloy development, Henkel’s highly reliable, lead-free solder alloy, 90iSC, provides superior thermal cycling, thermal shock, vibration, creep resistance while maintaining solderability and void levels over traditional SAC and SnPb solder. Developed with and globally accepted by the automotive industry, 90iSC is the world’s leading lead-free, RoHS compliant solder alloy.



FAILURE MECHANISMS	HIGH RELIABILITY ALLOYS VS TRADITIONAL ALLOYS <sup>[1][2][3]</sup>
Thermal Cycling	<ul style="list-style-type: none"><li>Thermal cycling causes stress to build within the soldered assembly</li><li>Stress relief mechanism is crack propagation through the solder joint</li><li>90iSC alloy gives reduced electrical failures in comparison to SnPb in both -40°C+150°C and -40°C+125°C</li><li>Under -40°C+150°C, 90iSC has similar electrical failure levels to SnPb at -40°C+125°C</li></ul>
Thermal Shock	<ul style="list-style-type: none"><li>Thermal shock testing is a more extreme version of thermal cycling</li><li>Failure mechanism is the same as thermal cycling, but failure occurs earlier</li><li>90iSC alloy has outperformed SnPb and SAC alloys in thermal shock testing</li></ul>
Vibration	<ul style="list-style-type: none"><li>20% of airborne failures are attributed to vibrational stress<sup>[4]</sup></li><li>SAC alloys have been shown to fail more frequently than SnPb alloys</li><li>90iSC alloy returns the failure resistance performance back to SnPb standards</li></ul>
Drop Test	<ul style="list-style-type: none"><li>Drop test resistance should not be compromised</li><li>90iSC has reduced ductility over standard alloys</li><li>90iSC alloy gives similar results to standard SAC with same failure mode</li><li>Failure mechanism is crack propagation along the intermetallic</li></ul>
Creep	<ul style="list-style-type: none"><li>Creep resistance at a specified temperature is directly linked to thermal cycle failure</li><li>90iSC alloy has a similar plastic strain constant at 150°C when compared to SnPb at 80°C</li></ul>

<sup>[1]</sup> Lead-free Solders for High-Reliability Applications: High-cycle Fatigue Studies, Barry N., University of Birmingham, 2008.

<sup>[2]</sup> Live project seminar, Ratchev R., Berlin 2008.

<sup>[3]</sup> Fraunhofer

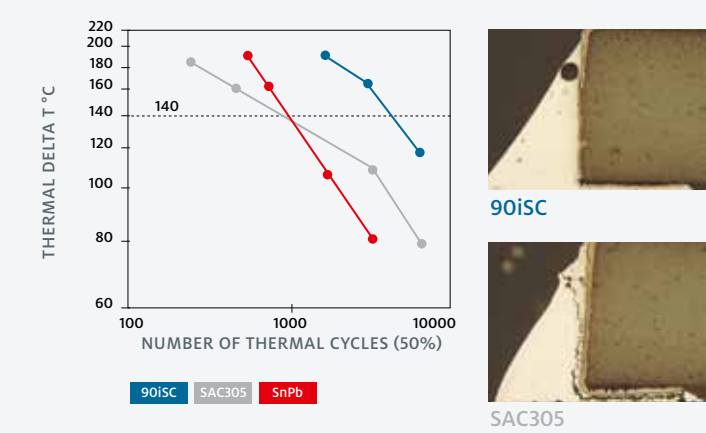
<sup>[4]</sup> Designing Electronics for High Vibration and Shock, Dave S. Steinberg, Steinberg & Associates.

## STANDARD ALLOY VS. HIGH RELIABILITY

### Thermal Cycling

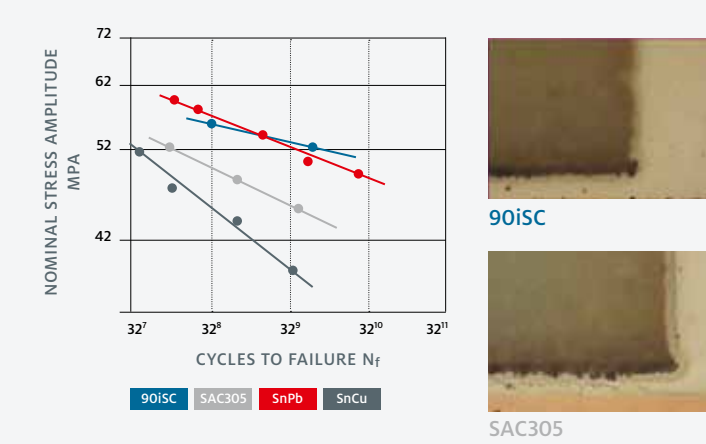
90iSC alloy gives reduced electrical failures in comparison to SnPb in both -40°C+150°C and -40°C+125°C.

Under -40°C+150°C, 90iSC has similar electrical failure levels to SnPb at -40°C+125°C.



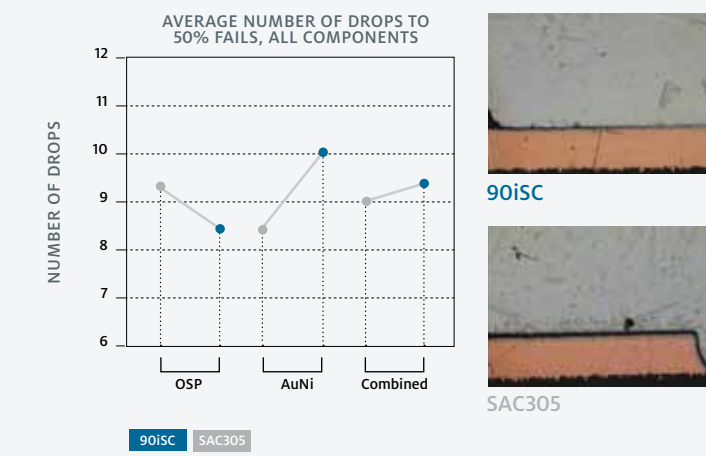
### Vibration

The 90iSC alloy failure resistance is comparable to SnPb, but significantly better than both SAC305 and SnCu.



### Drop Test

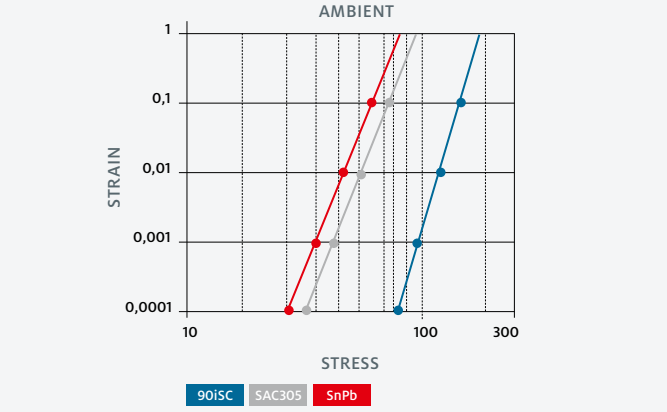
Drop test analysis on two surface finishes, OSP and AuNi. 90iSC alloy gives similar results to standard SAC305.\*



\*Customer Specified Drop Test.

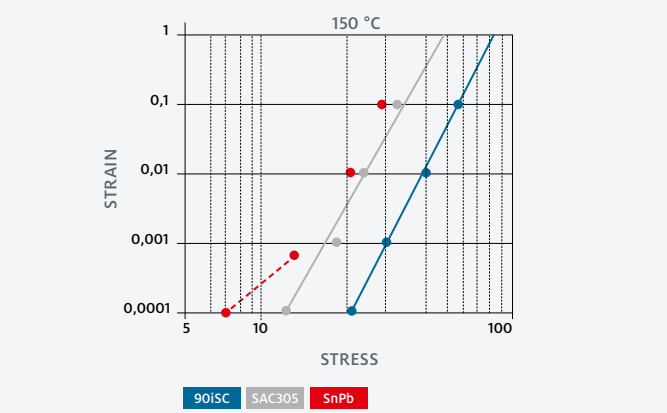
### Creep (Ambient)

90iSC alloy shows improved creep resistance at ambient temperature over both SAC305 and SnPb (higher stress required to give equivalent creep).



### Creep (150°C)

90iSC alloy shows improved creep resistance at 150°C temperature over both SAC305 and SnPb.





HIGH RELIABILITY SOLDER PASTES

90iSC has exceptional performance in high-reliability applications. It is compatible with several lead-free and halogen-free flux systems, ensuring adaptability for customized manufacturing requirements. The alloy is easily integrated into LOCTITE MULTICORE HF 200, LOCTITE MULTICORE HF 212, LOCTITE MULTICORE HF 250DP and LOCTITE MULTICORE LF 318 flux technologies.

FLUX TECHNOLOGY		ELECTRONICS ASSEMBLY MARKET	ROHS COMPLIANT		APPLICATION	
			High Reliability Pb-free Solder Alloy (90iSC)	Industry Pb-free Standard Solder Alloy (SAC305)	Printing	Dispensing
Halogen-Free	LOCTITE MULTICORE HF 200	Handheld computing	•	•	•	
	LOCTITE MULTICORE HF 212	Appliances Aerospace Automotive Medical Lighting Displays Solar	•	•	•	
	LOCTITE MULTICORE HF 250DP *		•	•		•
Halide-Free	LOCTITE MULTICORE LF 318	Wireless Datacom Infrastructure	•	•	•	•

Halogen-Free

PRODUCT	DESCRIPTION	ALLOY	METAL LOADING (% WEIGHT)	PARTICLE SIZE DISTRIBUTION	IPC TACK (g/mm²)	APPLICATION	IPC/J-STD-004B CLASSIFICATION
LOCTITE MULTICORE HF 200	A halogen-free, no clean, high tack, low voiding Pb-free solder paste. Suitable for high speed printing demands. Designed for small-medium size boards. Excellent abandon time and stencil work-life. Excellent fine pitch coalescence. Exceptional solderability in both air and nitrogen across a wide range of challenging surface finishes including OSP copper.	90iSC (Hi-Rel)** 96SC (SAC387) 97SC (SAC305)	88.5	AGS (type 3) DAP (type 4) DAP+ (type 4.5)	2.7	Printing 50 -140mms <sup>-1</sup>	ROLO
LOCTITE MULTICORE HF 212	A halogen-free, no clean, high tack, low voiding Pb-free solder paste. Designed for medium-large size boards. Excellent abandon time and stencil work-life. Excellent fine pitch coalescence. Exceptional solderability in both air and nitrogen across a wide range of challenging surface finishes including OSP copper. Optimized for long soak reflow.	90iSC (Hi-Rel)** 97SC (SAC305)	88.5	AGS (type 3) DAP (type 4)	3.0	Printing 40 -120mms <sup>-1</sup>	ROLO
LOCTITE MULTICORE HF 250DP	A halogen-free, no clean, type 5, low voiding Pb-free solder dispensing paste. A dispensing solution for all halogen-free requirements.	96SC (SAC387)	84	KBP (type 5)	0.8	Dispensing Gauge 23-27	ROLO

Halide-Free

PRODUCT	DESCRIPTION	ALLOY	METAL LOADING (% WEIGHT)	PARTICLE SIZE DISTRIBUTION	IPC TACK (g/mm²)	APPLICATION	IPC/J-STD-004B CLASSIFICATION
LOCTITE MULTICORE LF 318	A halide-free, no-clean, Pb-free solder paste that has excellent humidity resistance and a broad process window for both reflow and printing. Ability to resist component movement during high-speed placement, long printer abandon times and excellent solderability over a wide range of reflow profiles in air and nitrogen reflow ovens and across a wide range of surface finishes.	90iSC (Hi-Rel)** 96SC (SAC387) 97SC (SAC305)	88.5 84	AGS (type 3)	1.8	Printing 25-150mms <sup>-1</sup> Dispensing Gauge 23	ROLO

\* All Electronics Assembly Market  
\*\* High Reliability.

ELECTRONICS ASSEMBLY MARKETS

Henkel’s solder alloy, 90iSC, is the solution to various market segments that require high reliability with RoHS compliance.

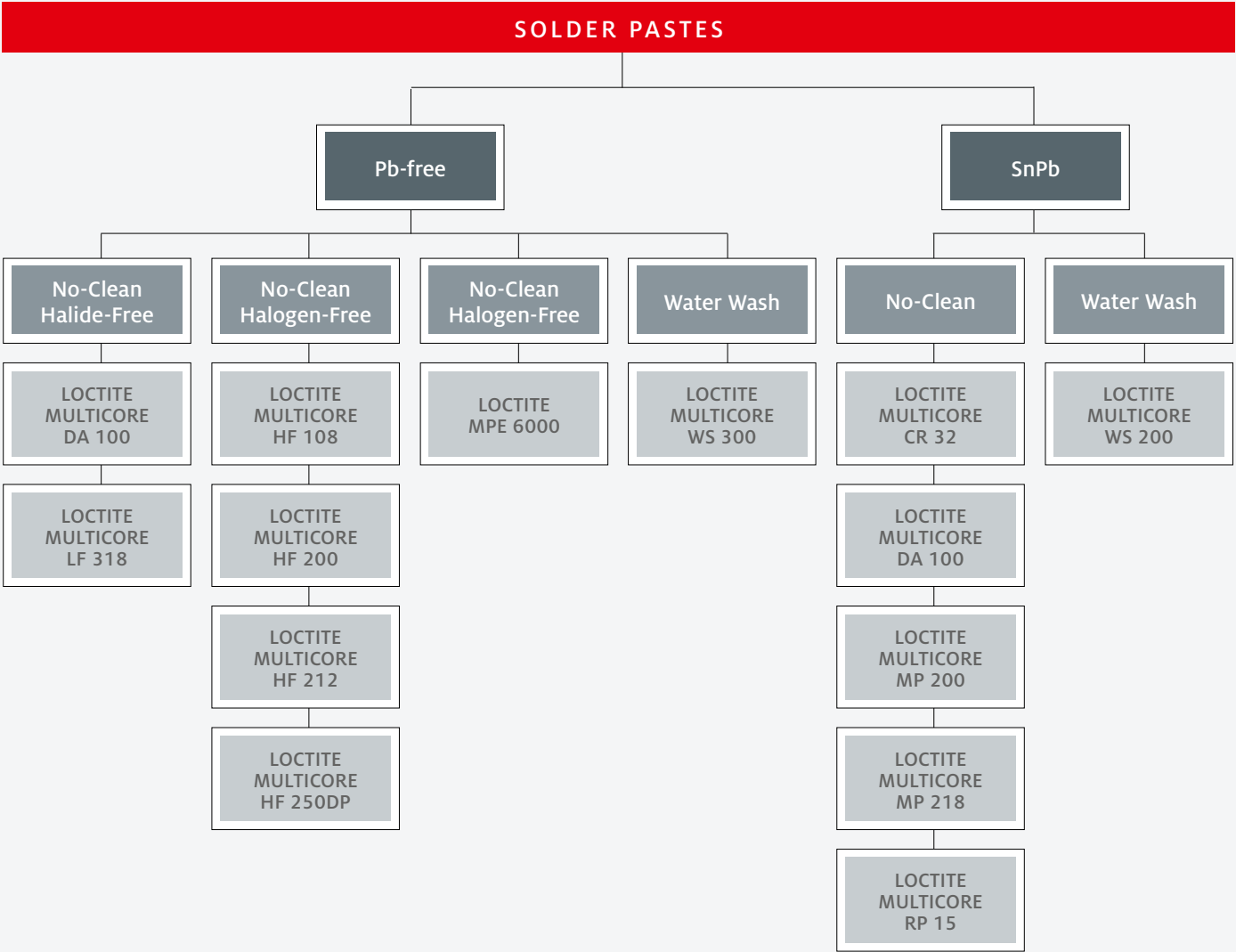
- Handheld
- Appliances
- Computing
- Aerospace
- Automotive
- Medical
- Lighting
- Displays
- Solar
- Wireless Datacom Infrastructure





# ADVANCED SOLDER PASTES

When it comes to solder paste innovation, Henkel is the industry front-runner, delivering the best in performance, printability and reliability for today’s most demanding applications.



## SOLDER PASTES

### Pb-Free

PRODUCT	DESCRIPTION	ALLOY	METAL LOADING (% WEIGHT)	PARTICLE SIZE DISTRIBUTION	IPC TACK (g/mm²)	APPLICATION	IPC/J-STD-004B CLASSIFICATION
Halide-Free							
LOCTITE MULTICORE DA 100	Dispensing grade, halide-free solder paste intended for solder die-attach applications. Provides effective thermal control for copper leadframe power semiconductor devices, such as rectifiers, power transistors and is suitable for automotive and consumer packages.	92A	85	AGS (Type 3) DAP (Type 4)	N/A	Dispensing Gauge 23-25	ROLO
LOCTITE MULTICORE LF 318	A halide-free, no-clean, Pb-free solder paste that has excellent humidity resistance and a broad process window for both reflow and printing. Offers high tack to resist component movement during high-speed placement, long printer abandon times and excellent solderability over a wide range of reflow profiles in air and nitrogen reflow ovens and across a wide range of surface finishes.	90iSC (Hi-Rel)* 96SC (SAC387) 97SC (SAC305)	88.5 84	AGS (type 3)	1.8	Printing 25-150mms <sup>-1</sup> Dispensing Gauge 23	ROLO

PRODUCT	DESCRIPTION	ALLOY	METAL LOADING (% WEIGHT)	PARTICLE SIZE DISTRIBUTION	IPC TACK (g/mm²)	APPLICATION	IPC/J-STD-004B CLASSIFICATION
Halogen-Free							
LOCTITE MULTICORE HF 108	A halogen-free, no clean, high tack, low voiding Pb-free solder paste. Designed for medium- large size boards. Excellent fine pitch coalescence. Robust reflow process window with exceptional solderability in both air and nitrogen across a wide range of surface finishes including Immersion Ag and OSP copper.	96SC (SAC387) 97SC (SAC305)	88.5	AGS (type 3) DAP (type 4)	3.0	Printing 30 -100mms <sup>-1</sup>	ROLO
LOCTITE MULTICORE HF 200	A halogen-free, no clean, high tack, low voiding Pb-free solder paste. Suitable for high speed printing demands. Designed for small-medium size boards. Excellent abandon time and stencil work-life. Excellent fine pitch coalescence. Exceptional solderability in both air and nitrogen across a wide range of challenging surface finishes including OSP copper.	90iSC (Hi-Rel)* 96SC (SAC387) 97SC (SAC305)	88.5	AGS (type 3) DAP (type 4) DAP+ (type 4.5)	2.7	Printing 50 -140mms <sup>-1</sup>	ROLO
LOCTITE MULTICORE HF 212	A halogen-free, no clean, high tack, low voiding Pb-free solder paste. Designed for medium-large size boards. Excellent abandon time and stencil work-life. Excellent fine pitch coalescence. Exceptional solderability in both air and nitrogen across a wide range of challenging surface finishes including OSP copper. Optimized for long soak reflow.	90iSC (Hi-Rel)* 97SC (SAC305)	88.5	AGS (type 3) DAP (type 4)	3.0	Printing 40 -120mms <sup>-1</sup>	ROLO
LOCTITE MULTICORE HF 250DP	A halogen-free, no clean, type 5, low voiding Pb-free solder dispensing paste. A dispensing solution for all halogen-free requirements.	96SC (SAC387)	84	KBP (type 5)	0.8	Dispensing Gauge 23-27	ROLO
LOCTITE MPE 6000	Metal Polymer Epoxy paste is a potential halogen and Pb-free alternative for high melting point solder used in passives (capacitors) and power discretes using curing flux technology. Enabling Pb-free assembly without the use of precious – high cost – metals (like Au containing alloys and metallization and highly Ag filled solutions).	95A	84	DAP (type 4)	N/A	Dispensing Gauge 25	ROLO

PRODUCT	DESCRIPTION	ALLOY	METAL LOADING (% WEIGHT)	TACK (g/mm²)	APPLICATION	IPC/J-STD-004B CLASSIFICATION
Water Wash						
LOCTITE MULTICORE WS 300	A no-clean flux system, specially formulated for Pb-free alloys. High performance, water washable solder paste. Residues are easily removed with DI water, without the need for a saponifier. Good open time with excellent print definition and soldering.	96SC (SAC387) 97SC (SAC305)	87	0.8	Printing 25-100mms <sup>-1</sup>	ORH1

### SnPb

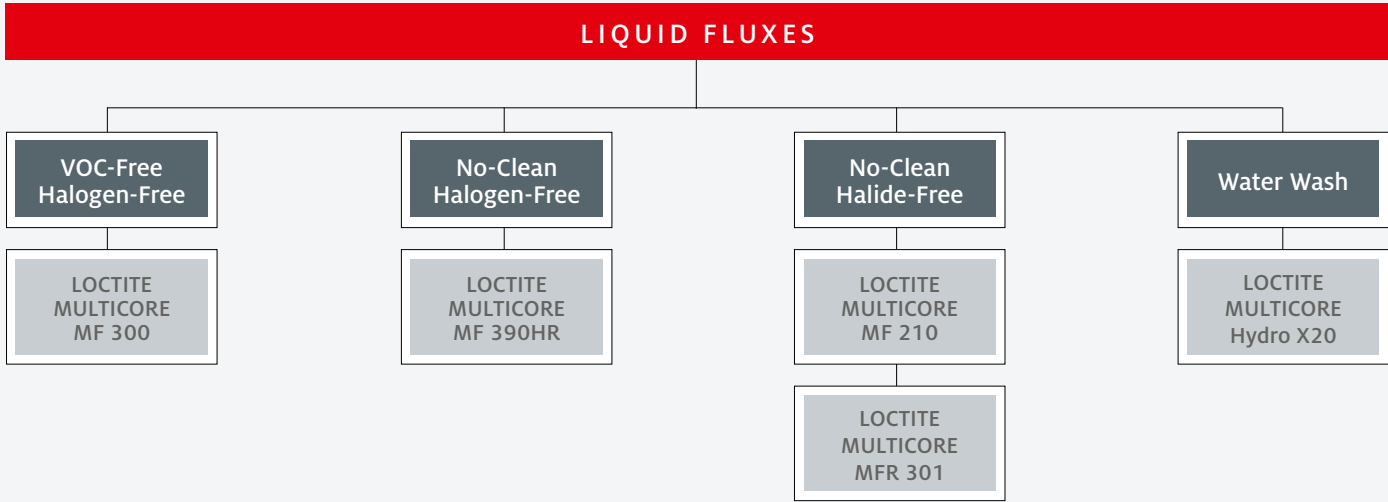
PRODUCT	DESCRIPTION	ALLOY	METAL LOADING (% WEIGHT)	TACK (g/mm²)	APPLICATION	IPC/J-STD-004B CLASSIFICATION
No-Clean						
LOCTITE MULTICORE CR 32	A modest residue level solder paste for printing and reflow in air. Non-corrosive residues, which eliminates the need for cleaning. Excellent resistance to solder balling and suitable for fine pitch, stencil printing applications.	Sn62 Sn63	89.5	1.2	Printing 25-150mms <sup>-1</sup>	ROLO
LOCTITE MULTICORE DA 100	Dispensing grade, halide-free solder paste intended for solder die-attach applications. Provides effective thermal control for copper leadframe power semiconductor devices, such as rectifiers, power transistors and is suitable for automotive and consumer packages.	2.5S	88	N/A	Dispensing Gauge 23-25	ROLO
LOCTITE MULTICORE MP 200	A no-clean solder paste for high speed printing and reflow in both air and nitrogen. Extended printed open time and tack life. Resistant to both hot and cold slump.	Sn62 Sn63	90	1.1	Printing 25-200mms <sup>-1</sup>	ROLO
LOCTITE MULTICORE MP 218	High activity, soft residue, colorless, halide-free, no-clean solder paste that displays outstanding resistance to high temperature and humidity environments. Suitable for a large range of assembly processes, including rheo pump, proflow, large high-density.	Sn62 Sn63 63S4 (anti-tombstoning)	89.5	1.6	Printing 25-150mms <sup>-1</sup>	ROLO
LOCTITE MULTICORE RP 15	No-clean solder paste for dispensing or printing and reflow in air, where process yield is critical. Offers excellent open time, good soldering activity, especially on OSP copper.	Sn62 Sn63 63S4 (anti-tombstoning)	89 85	1.5	Printing 25-150mms <sup>-1</sup> Dispensing	ROL1
Water Wash						
LOCTITE MULTICORE WS 200	High performance, water-washable solder paste. Residues are readily removed with DI water, without the need for a saponifier. Good open time with excellent print definition and soldering activity.	Sn62 Sn63 63S4 (anti-tombstoning)	88.5	0.8	Printing 25-100mms <sup>-1</sup>	ORH1

\* High Reliability.

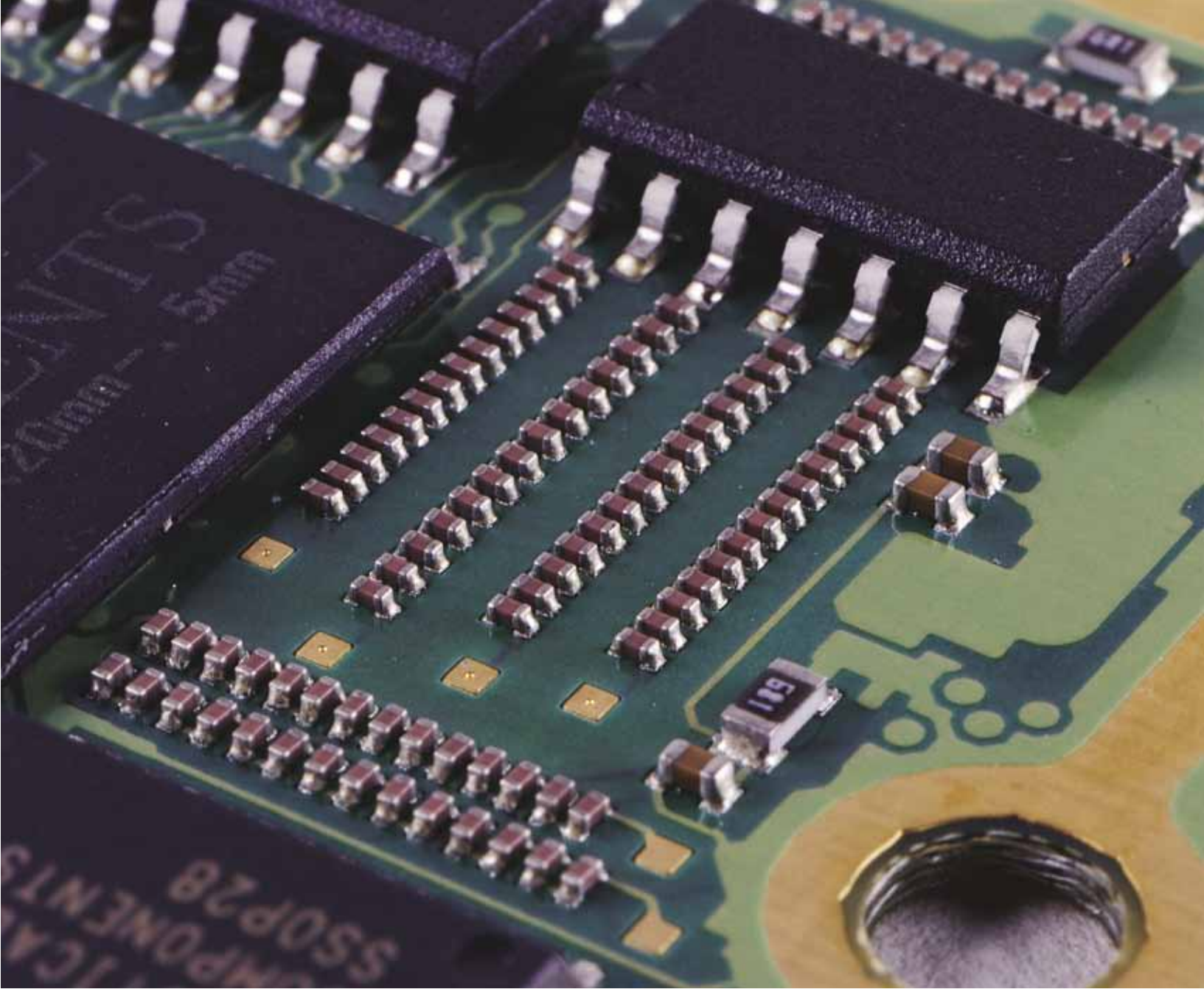


# LIQUID FLUXES

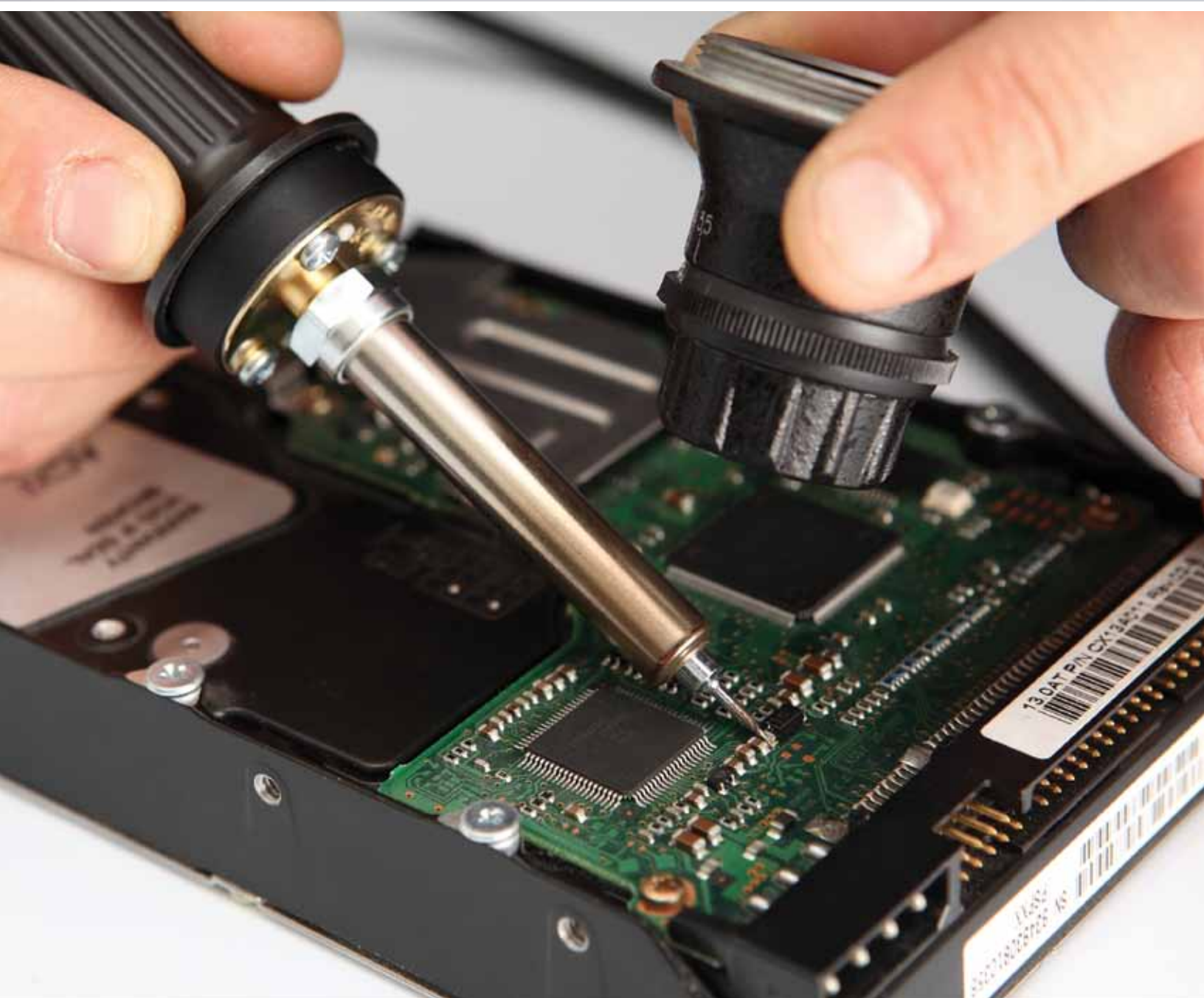
Henkel’s liquid flux formulations deliver solutions for multiple wave soldering processes as well as for rework and technology build processes such as laser soldering. No-clean, low-residue, VOC-free and halogen-free fluxes are all part of a comprehensive flux portfolio designed to accommodate varying requirements.



LIQUID FLUXES					
PRODUCT	DESCRIPTION	SOLID CONTENT (%)	ACID VALUE (mg KOH/g)	APPLICATION	IPC/J-STD-004B CLASSIFICATION
VOC-Free Halogen-Free					
LOCTITE MULTICORE MF 300	General purpose, VOC-free (water-based), no-clean, halogen-free and resin-free flux with special formulation to minimize solder balling. Compatible with lead-free processes.	4.6	37	Spray/Foam	ORM0
No-Clean Halogen-Free					
LOCTITE MULTICORE MF 390HR	Halogen-free, liquid flux designed for exceptional through-hole fill and recommended for automotive electronics and general electrical soldering applications.	6.0	20-25	Spray/Foam	ROL0
No-Clean Halide-Free					
LOCTITE MULTICORE MF 210	No clean, resin-free, halide-free liquid flux designed for surfaces with poor solderability. Recommended for consumer electronics and general electrical soldering applications, particularly where high throughput is desirable.	2.9	22.5	Spray/Foam	ORM0
LOCTITE MULTICORE MFR 301	Higher solids, halide-free flux for better wetting on reduced solderability surfaces and to minimize bridging on complex geometries. Fully Pb-free and dual wave compatible. Solvent-based flux may be thinned with IPA.	6.0	40	Spray/Foam	ROM0
Water Wash					
PRODUCT	DESCRIPTION	SOLID CONTENT (%)	ACID VALUE (mg KOH/g)	APPLICATION	IPC/J-STD-004B CLASSIFICATION
LOCTITE MULTICORE Hydro X20	Water soluble flux is formulated for use on electronic assemblies designed for water cleaning. Hydro X20 will solder copper, brass, nickel and mild steel efficiently.	2.0	24	Spray/Foam	ORH1

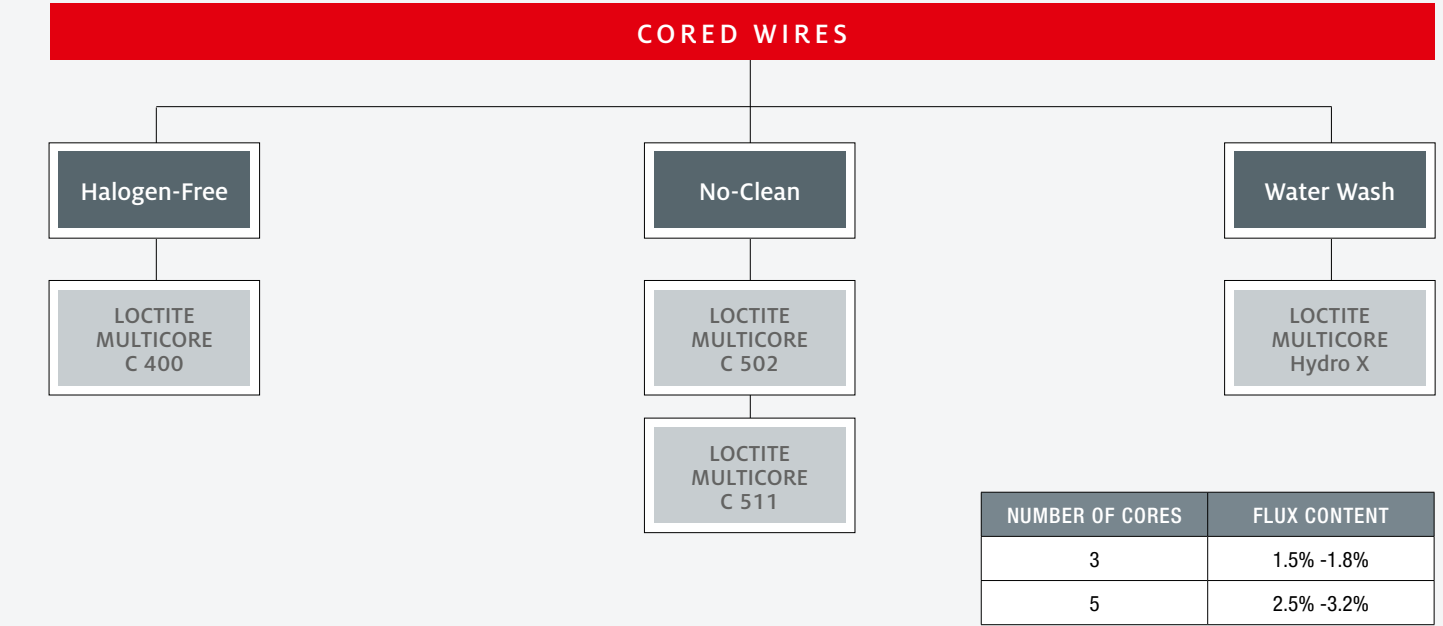






# CORED WIRES

Henkel’s LOCTITE MULTICORE brand cored wire utilizes award-winning multiple flux core technology to deliver even flux distribution throughout the solder wire. The fast-wetting material offers excellent solder joint reliability and is available in traditional tin-lead, lead-free and halogen-free formulations.

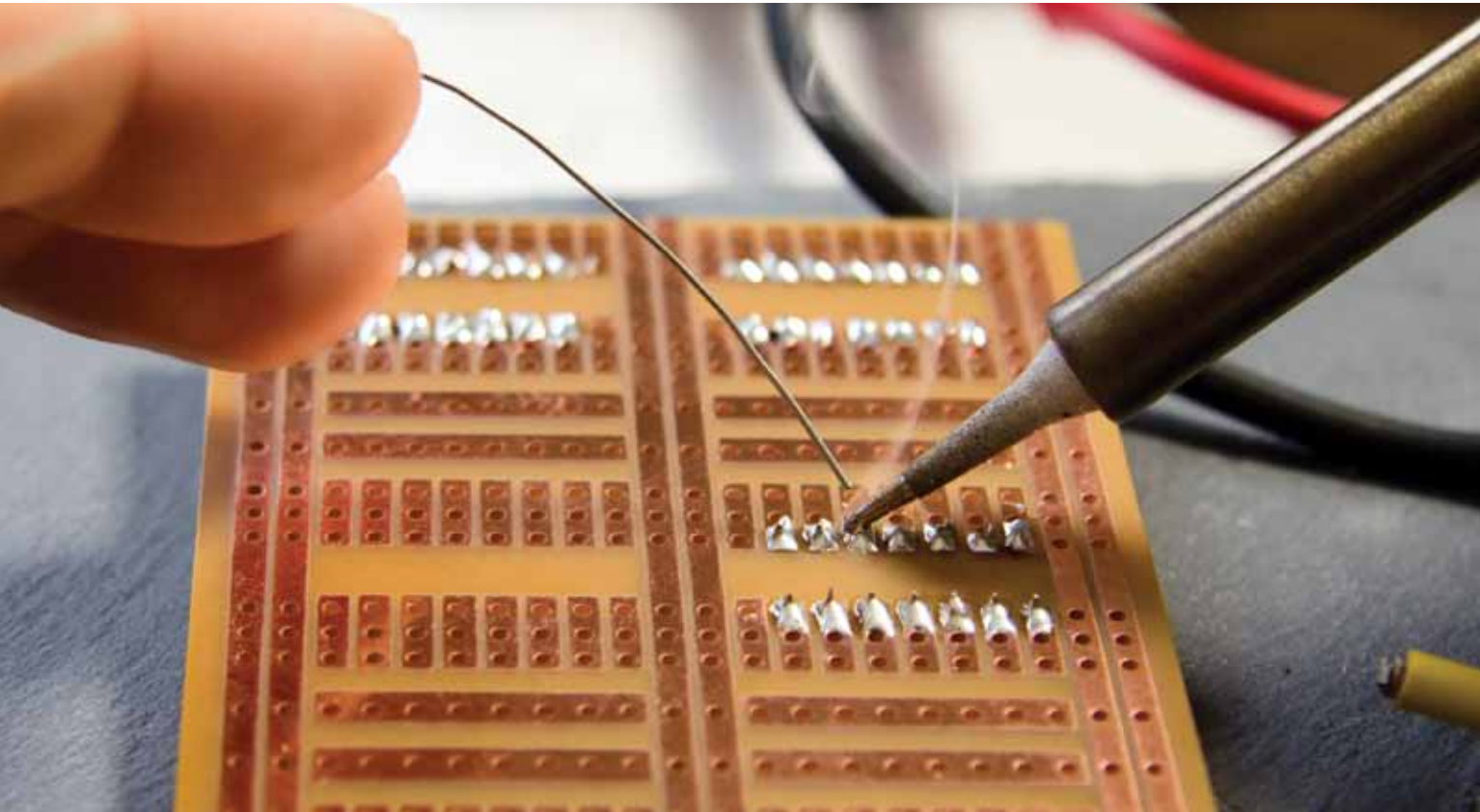
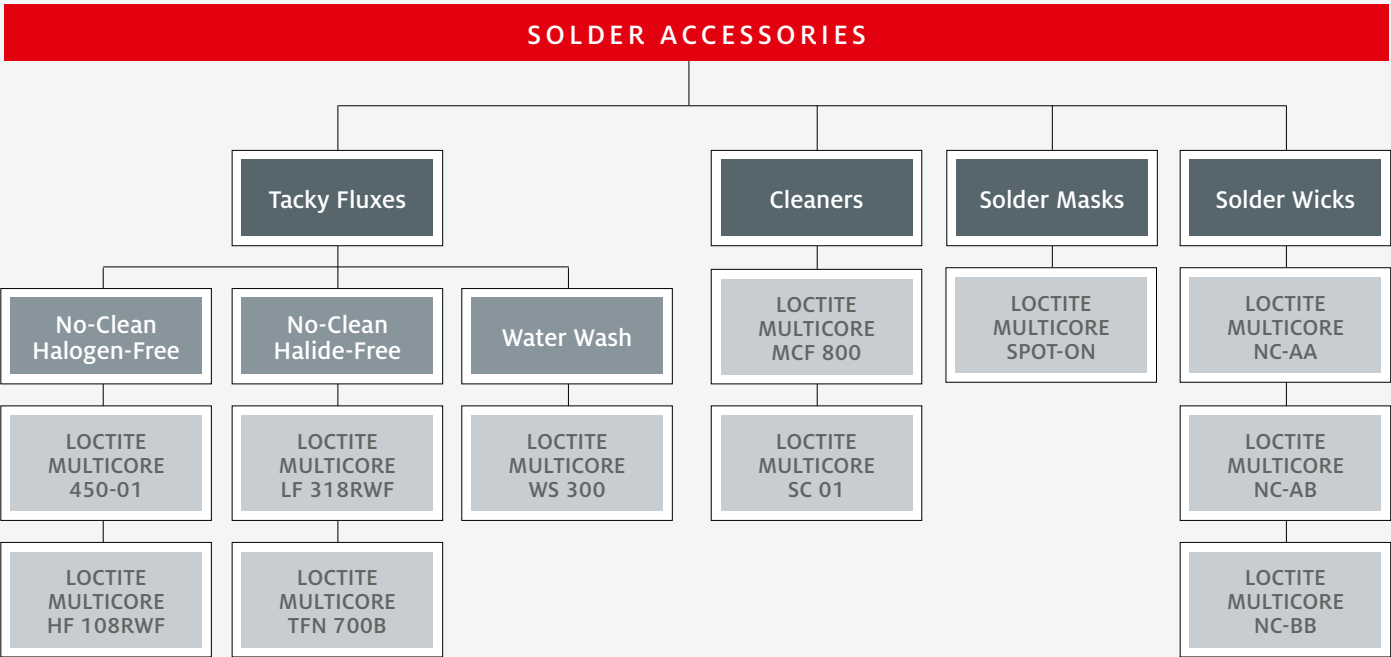


CORED WIRE					
PRODUCT	DESCRIPTION	FLUX CONTENT APPROXIMATE (% BY WEIGHT)	ALLOY (SnPb)	ALLOY (Pb-Free)	IPC/J-STD-004B CLASSIFICATION
Halogen-Free					
LOCTITE MULTICORE C 400	Halogen-free, no-clean, clear residue, cored solder wire with increased flux content for improved wetting on challenging surfaces.	2.2	Sn60 Sn62 Sn63	96SC (SAC387) 97SC (SAC305) 99C (SnCu)	ROLO
No-Clean					
LOCTITE MULTICORE C 502	No-clean, clear residue, cored solder wire with medium activity flux with good wetting on difficult substrates.	2.7	Sn60 Sn62 Sn63	96SC (SAC387) 97SC (SAC305) 99C (SnCu)	ROM1
LOCTITE MULTICORE C 511	No-clean, amber residue, heat stable cored solder wire. Good wetting on difficult substrates.	2.7	Sn60 Sn62 Sn63	96SC (SAC387) 97SC (SAC305) 99C (SnCu)	ROM1
Water Wash					
LOCTITE MULTICORE Hydro X	High activity, water washable, flux-cored solder wire with excellent wetting on difficult substrates.	2.0	Sn60 Sn62 Sn63	96SC (SAC387) 97SC (SAC305) 99C (SnCu)	ORH1



# SOLDER ACCESSORIES AND CLEANERS

Because even the best soldering processes may result in some rework, Henkel has designed a suite of solder accessories and cleaners to make solder joint rework fast and reliable. From de-soldering wick to solder mask to residue-removing cleaners, Henkel’s rework solutions help preserve valuable components for re-use.



SOLDER ACCESSORIES

Tacky Flux

No-Clean Halogen-Free					
PRODUCT	DESCRIPTION	SOLID CONTENT (%)	ACID VALUE (mg KOH/g)	APPLICATION	IPC/J-STD-004B CLASSIFICATION
LOCTITE MULTICORE 450-01	Halogen-free tacky flux designed for use in a wide range of electronics assembly and rework processes.	43	68	Dispensing	ROLO
LOCTITE MULTICORE HF 108RWF	Halogen-free, no-clean, low-voiding rework flux. Suitable for traditional rework, laser and selective soldering. It can be dispensed, printed or dipped.	66	130	Dispensing	ROLO
No-Clean Halide-Free					
PRODUCT	DESCRIPTION	SOLID CONTENT (%)	ACID VALUE (mg KOH/g)	APPLICATION	IPC/J-STD-004B CLASSIFICATION
LOCTITE MULTICORE LF 318RWF	A halide-free, no-clean, tacky flux designed for use in a wide range of electronic assembly and Pb-free rework processes. Suitable for dispensing and doctor blading. Sufficient activity to deal with difficult surface finishes.	N/A	107	Dispensing	ROLO
LOCTITE MULTICORE TFN 700B	A halide-free, no clean, Newtonian tacky flux for PoP Pb-free applications. Ideally suited for dip-transfer process.	75	90	Dispensing	ROLO
Water Wash					
PRODUCT	DESCRIPTION	SOLID CONTENT (%)	ACID VALUE (mg KOH/g)	APPLICATION	IPC/J-STD-004B CLASSIFICATION
LOCTITE MULTICORE WS 300	A water soluble tacky flux designed for use of wide range of electronic assembly. Suitable for dispensing and doctor blading. Sufficient activity to deal with different surface finishes.	N/A	32	Dispensing	ORH1

Cleaners

PRODUCT	DESCRIPTION	FLASH POINT °C	BOILING POINT °C	APPLICATION
LOCTITE MULTICORE MCF 800	Designed for the effective removal of all types of soldering process residues from circuit boards, screens, fixtures, and equipment. Flash point of 105°C makes it ideal for use in heated cleaning systems.	105	225	Cleaning (prior to reflow)
LOCTITE MULTICORE SC 01	Designed for the stencil cleaning and hand cleaning of process soldering residues. A highly effective cleaner that dries rapidly (fast evaporation).	40	N/A	Cleaning (post reflow)

Solder Mask

PRODUCT	DESCRIPTION	DRY TIME
LOCTITE MULTICORE SPOT-ON	Temporary solder used with circuit boards prior to soldering. Suitable for use with hand or pneumatic applications. Will withstand flux and soldering.	40 mins. @ 80°C or 2 hrs. at ambient temp.

Solder Wicks

PRODUCT	DESCRIPTION	SIZE REFERENCE APPROXIMATE WIDTH
LOCTITE MULTICORE NC-AA	No-clean desoldering wick is designed for static-free desoldering applications and repair of PC boards, without the need for subsequent clean-up. It is formulated using a special halogen-free, vacuumized, no-clean, flux-coated copper braid for improved wicking. Will not lose its efficiency even after prolonged storage in humid conditions. It is made to remain flexible and will not flake.	1.42 mm (0.056 in.) ± 10%
LOCTITE MULTICORE NC-AB	No-clean desoldering wick is designed for static-free desoldering applications and repair of PC boards, without the need for subsequent clean-up. It is formulated using a special halogen-free, vacuumized, no-clean, flux-coated copper braid for improved wicking. Will not lose its efficiency even after prolonged storage in humid conditions. It is made to remain flexible and will not flake.	1.88 mm (0.074 in.) ± 10%
LOCTITE MULTICORE NC-BB	No-clean desoldering wick is designed for static-free desoldering applications and repair of PC boards, without the need for subsequent clean-up. It is formulated using a special halogen-free, vacuumized, no-clean, flux-coated copper braid for improved wicking. Will not lose its efficiency even after prolonged storage in humid conditions. It is made to remain flexible and will not flake.	2.59 mm (0.102 in.) ± 10%



APPENDICES

Solder Form Availability

LOCTITE MULTICORE CODE	ALLOY	MELTING POINT °C	RoHS	SOLDER PASTE	CORED WIRE	SOLID WIRE	BAR SOLDER
96SC	SAC387 or Sn95.5/Ag3.8/Cu0.7	217	YES	YES	YES	YES	NO
97SC	SAC305 or Sn96.5/Ag3.0/Cu0.5	217	YES	YES	YES	YES	YES
SAC0307*	SAC0307	217 - 226	YES	YES	YES	NO	YES
90iSC	SAC387Bi3Sb1.5Ni0.02	205 - 218	YES	YES	NO	NO	NO
96S	Sn96.5/Ag3.5	221	YES	YES	YES	NO	NO
99C *	Sn99.3/Cu0.7	227	YES	NO	YES	YES	YES
95A	Sn95/Sb5	236 - 240	YES	YES	YES	NO	NO
92A	Sn91.5/Sb8.5	238 - 246	YES	YES	NO	NO	NO
Bi58	Sn42/Bi58	138	YES	YES	NO	NO	NO
Sn63	Sn63/Pb37	183	NO	YES	YES	YES	YES
Sn62	Sn62/Pb36/Ag2	179	NO	YES	YES	YES	YES
Sn60	Sn60/Pb40	183 - 188	NO	NO	YES	YES	YES
63S4	Sn62.8/Pb36.8/Ag0.4	179 - 183	NO	YES	NO	NO	NO
HMP	Sn5Pb93.5/Ag1.5	296 - 301	NO	YES	YES	NO	NO
SAV1	Sn50.0/Pb48.5/Cu1.5	183 - 215	NO	NO	YES	NO	NO

\*Available Upon Request.

Solder Powder Particle Size Distribution

LOCTITE MULTICORE POWDER DESCRIPTION	POWDER SIZE (MICRONS)	IPC J-STD-006 DESIGNATION
BAS	53 - 75	Type 2
AGS	25 - 45	Type 3
DAP	20 - 38	Type 4
KBP	10 - 25	Type 5
LAW	5 - 15	Type 6

Halogen-free and Halide-free Comparison Chart

	HALOGEN-FREE		HALIDE-FREE	
Drivers for Classification	REACH Non-Government Organization (NGOs)		High reliability solder interconnects with international standards	
Definition	No international halogens added to flux Complies with international standards (see below)		No flux corrosivity or dendritic growth detection Specific requirements to give ROL0 classification	
Test Procedures	New O <sub>2</sub> bond on flux Ion Chromatography on flux		Well established quantitative halide test performed by Ion Chromatography (IC)	
International Standards	JPCA-ES-01-1999	Bromine <900 ppm Chlorine <900 ppm	Copper Mirror	No penetration
			Silver Chromate	No discoloration
			Fluoride test	No color change
	IEC 61249-2-21	Bromine 900 ppm max. Chlorine 900 ppm max. Total halogens 1,500 ppm max	Chloride and Bromide	<0.005%
			Flux corrosion	No pitting No color change
	IPC-401B	Bromine 900 ppm max. Chlorine 900 ppm max. Total halogens 1,500 ppm max	Surface Insulation Resistance (SIR)	No discoloration No dendritic growth No corrosion >10 <sup>9</sup> Ω

Flux Identification, Materials of Composition, Activity Levels

FLUX MATERIALS OF COMPOSITION	FLUX ACTIVITY LEVELS (% HALIDE) FLUX TYPE		FLUX DESIGNATOR
	Low (0%)	L0	ROL0
Rosin (RO)	Low (<0.5%)	L1	ROL1
	Moderate (0%)	M0	ROM0
	Moderate (0.5-2.0%)	M1	ROH0
	High (0%)	H0	ROH0
	High (>2.0%)	H1	ROH1
	Low (0%)	L0	RELO
Resin (RE)	Low (<0.5%)	L1	REL1
	Moderate (0%)	M0	REM0
	Moderate (0.5-2.0%)	M1	REM1
	High (0%)	H0	REH0
	High (>2.0%)	H1	REH1
	Low (0%)	L0	INL0
Organic (OR)	Low (<0.5%)	L1	ORL1
	Moderate (0%)	M0	ORM0
	Moderate (0.5-2.0%)	M1	ORM1
	High (0%)	H0	ORH0
	High (>2.0%)	H1	ORH1
	Low (0%)	L0	INL0
Inorganic (IN)	Low (<0.5%)	L1	INL1
	Moderate (0%)	M0	INM0
	Moderate (0.5-2.0%)	M1	INM1
	High (0%)	H0	INH0
	High (>2.0%)	H1	INH1
	Low (0%)	L0	INL0

The 0 and 1 indicate absence and presence of halides, respectively.  
L = Low or no flux/flux residue activity.    M = Moderate flux/flux residue activity.    H = High flux/flux residue activity.

Periodic Table of Elements

<div>Atomic #</div> <div>Symbol</div> <div>Name</div> <div>Atomic mass</div> <div>Mg Magnesium 24.99</div>																		<div>Nonmetals</div> <div>Poor metals</div> <div>Metalloids</div> <div>Halogens</div> <div>Noble gases</div> <div>Transition metals</div> <div>Alkali metals</div> <div>Alkaline earth metals</div>																		<div>2</div> <div>He</div> <div>Helium 4.01</div>									
<div>1</div> <div>H</div> <div>Hydrogen 1.01</div>		<div>3</div> <div>Li</div> <div>Lithium 6.94</div>		<div>4</div> <div>Be</div> <div>Beryllium 9.01</div>		<div>11</div> <div>Na</div> <div>Sodium 22.99</div>		<div>12</div> <div>Mg</div> <div>Magnesium 24.31</div>		<div>19</div> <div>K</div> <div>Potassium 39.10</div>		<div>20</div> <div>Ca</div> <div>Calcium 40.08</div>		<div>21</div> <div>Sc</div> <div>Scandium 44.96</div>		<div>22</div> <div>Ti</div> <div>Titanium 47.97</div>		<div>23</div> <div>V</div> <div>Vanadium 50.94</div>		<div>24</div> <div>Cr</div> <div>Chromium 51.99</div>		<div>25</div> <div>Mn</div> <div>Manganese 54.94</div>		<div>26</div> <div>Fe</div> <div>Iron 55.85</div>		<div>27</div> <div>Co</div> <div>Cobalt 58.93</div>		<div>28</div> <div>Ni</div> <div>Nickel 58.69</div>		<div>29</div> <div>Cu</div> <div>Copper 63.55</div>		<div>30</div> <div>Zn</div> <div>Zinc 65.38</div>		<div>31</div> <div>Ga</div> <div>Gallium 69.72</div>		<div>32</div> <div>Ge</div> <div>Germanium 72.64</div>		<div>33</div> <div>As</div> <div>Arsenic 74.92</div>		<div>34</div> <div>Se</div> <div>Selenium 78.96</div>		<div>35</div> <div>Br</div> <div>Bromine 79.91</div>		<div>36</div> <div>Kr</div> <div>Krypton 83.79</div>	
<div>37</div> <div>Rb</div> <div>Rubidium 85.47</div>		<div>38</div> <div>Sr</div> <div>Strontium 87.62</div>		<div>39</div> <div>Y</div> <div>Yttrium 88.91</div>		<div>40</div> <div>Zr</div> <div>Zirconium 91.22</div>		<div>41</div> <div>Nb</div> <div>Niob 92.91</div>		<div>42</div> <div>Mo</div> <div>Molybdenum 95.96</div>		<div>43</div> <div>Tc</div> <div>Technetium (97.91)</div>		<div>44</div> <div>Ru</div> <div>Ruthenium 101.07</div>		<div>45</div> <div>Rh</div> <div>Rhodium 102.91</div>		<div>46</div> <div>Pd</div> <div>Palladium 106.42</div>		<div>47</div> <div>Ag</div> <div>Silver 107.87</div>		<div>48</div> <div>Cd</div> <div>Cadmium 112.41</div>		<div>49</div> <div>In</div> <div>Indium 114.82</div>		<div>50</div> <div>Sn</div> <div>Tin 118.71</div>		<div>51</div> <div>Sb</div> <div>Antimony 121.76</div>		<div>52</div> <div>Te</div> <div>Tellurium 127.6</div>		<div>53</div> <div>I</div> <div>Iodine 126.91</div>		<div>54</div> <div>Xe</div> <div>Xenon 131.29</div>											
<div>55</div> <div>Cs</div> <div>Caesium 132.91</div>		<div>56</div> <div>Ba</div> <div>Barium 137.33</div>		<div>57-71</div>		<div>72</div> <div>Hf</div> <div>Hafnium 178.49</div>		<div>73</div> <div>Ta</div> <div>Tantalum 180.95</div>		<div>74</div> <div>W</div> <div>Tungsten 183.84</div>		<div>75</div> <div>Re</div> <div>Rhenium 186.21</div>		<div>76</div> <div>Os</div> <div>Osmium 190.23</div>		<div>77</div> <div>Ir</div> <div>Iridium 192.22</div>		<div>78</div> <div>Pt</div> <div>Platinum 195.08</div>		<div>79</div> <div>Au</div> <div>Gold 196.97</div>		<div>80</div> <div>Hg</div> <div>Mercury 200.59</div>		<div>81</div> <div>Tl</div> <div>Thallium 204.38</div>		<div>82</div> <div>Pb</div> <div>Lead 207.2</div>		<div>83</div> <div>Bi</div> <div>Bismuth 208.98</div>		<div>84</div> <div>Po</div> <div>Polonium (209.98)</div>		<div>85</div> <div>At</div> <div>Astatine (209.98)</div>		<div>86</div> <div>Rn</div> <div>Radon (222.02)</div>											
<div>87</div> <div>Fr</div> <div>Francium (223)</div>		<div>88</div> <div>Ra</div> <div>Radium (226)</div>		<div>89-103</div>		<div>104</div> <div>Rf</div> <div>Rutherfordium (261)</div>		<div>105</div> <div>Db</div> <div>Dubnium (262)</div>		<div>106</div> <div>Sg</div> <div>Seaborgium (266)</div>		<div>107</div> <div>Bh</div> <div>Bohrium (264)</div>		<div>108</div> <div>Hs</div> <div>Hassium (277)</div>		<div>109</div> <div>Mt</div> <div>Meitnerium (268)</div>		<div>110</div> <div>Ds</div> <div>Darmstadtium (271)</div>		<div>111</div> <div>Rg</div> <div>Roentgenium (272)</div>		<div>112</div> <div>Cn</div> <div>Copernicium (285)</div>		<div>113</div> <div>Uut</div> <div>Ununtrium (284)</div>		<div>114</div> <div>Uuq</div> <div>Ununquadium (289)</div>		<div>115</div> <div>Uup</div> <div>Ununpentium (288)</div>		<div>116</div> <div>Uuh</div> <div>Ununhexium (292)</div>		<div>117</div> <div>Uus</div> <div>Ununseptium (294)</div>		<div>118</div> <div>Uuo</div> <div>Ununoctium (294)</div>											
<div>Lanthanoids</div>		<div>57</div> <div>La</div> <div>Lanthanum 138.91</div>		<div>58</div> <div>Ce</div> <div>Cerium 140.12</div>		<div>59</div> <div>Pr</div> <div>Praseodymium 140.91</div>		<div>60</div> <div>Nd</div> <div>Neodymium 144.24</div>		<div>61</div> <div>Pm</div> <div>Promethium (145)</div>		<div>62</div> <div>Sm</div> <div>Samarium 150.36</div>		<div>63</div> <div>Eu</div> <div>Europium 151.96</div>		<div>64</div> <div>Gd</div> <div>Gadolinium 157.25</div>		<div>65</div> <div>Tb</div> <div>Terbium 158.92</div>		<div>66</div> <div>Dy</div> <div>Dysprosium 162.50</div>		<div>67</div> <div>Ho</div> <div>Holmium 164.93</div>		<div>68</div> <div>Er</div> <div>Erbium 157.26</div>		<div>69</div> <div>Tm</div> <div>Thulium 168.93</div>		<div>70</div> <div>Yb</div> <div>Ytterbium 173.05</div>		<div>71</div> <div>Lu</div> <div>Lutetium 174.97</div>															
<div>Actinoids</div>		<div>89</div> <div>Ac</div> <div>Actinium (227)</div>		<div>90</div> <div>Th</div> <div>Thorium 232.04</div>		<div>91</div> <div>Pa</div> <div>Protactinium 231.04</div>		<div>92</div> <div>U</div> <div>Uranium 238.02</div>		<div>93</div> <div>Np</div> <div>Neptunium (237)</div>		<div>94</div> <div>Pu</div> <div>Plutonium (244)</div>		<div>95</div> <div>Am</div> <div>Americium (243)</div>		<div>96</div> <div>Cm</div> <div>Curium (247)</div>		<div>97</div> <div>Bk</div> <div>Berkelium (247)</div>		<div>98</div> <div>Cf</div> <div>Californium (251)</div>		<div>99</div> <div>Es</div> <div>Einsteinium (252)</div>		<div>100</div> <div>Fm</div> <div>Fermium (257)</div>		<div>101</div> <div>Md</div> <div>Mendelevium (258)</div>		<div>102</div> <div>No</div> <div>Nobelium (259)</div>		<div>103</div> <div>Lr</div> <div>Lawrencium (262)</div>															





## AMERICAS

### HEADQUARTERS:

#### UNITED STATES

Henkel Electronic Materials LLC  
14000 Jamboree Road  
Irvine, CA 92606  
USA  
Tel: +1.714.368.8000  
Tel: +1.800.562.8483  
Customer Support: +1.888.943.6535  
Fax: +1.714.368.2265

Henkel Electronic Materials LLC  
20021 Susana Road  
Rancho Dominguez, CA 90221  
USA  
Tel: +1.310.764.4600  
Fax: +1.310.605.2274

#### BRAZIL

Henkel Brazil  
Av. Prof. Vernon Kriebler, 91  
06690-250 Itapevi,  
Sao Paulo, Brazil  
Tel: +55.11.3205.7000

## EUROPE

#### BELGIUM

Henkel Electronics Materials (Belgium)  
N.V. Nijverheidsstraat 7 B-2260  
Westerlo, Belgium  
Tel: +32.1457.5611  
Fax: +32.1458.5530

## ASIA-PACIFIC

#### CHINA

No. 332 Meigui South Road  
WaiGaoQiao Free Trade Zone  
Shanghai 200131, P.R. China  
Tel: +86.21.3898.4800  
Fax: +86.21.5048.4169

Henkel Huawei Electronics CO. LTD  
Songtiao Industrial Park Lianyungang  
Jiangsu Province 222006 China  
Tel: +86.518.8515.5336  
Fax: +86.518.8515.3801

#### JAPAN

Henkel Japan Ltd.  
27-7, Shin Isogo-cho  
Isogo-ku Yokohama, 235-0017  
Japan  
Tel: +81.45.758.1900

#### KOREA

Henkel Technologies (Korea) Ltd.  
6th Floor  
Dae Ryung Techno Town II  
569-21 Gasan-dong,  
Geumcheon-gu, Seoul 153-771  
Korea  
Tel: +82.2.6675.8000

#### MALAYSIA

Henkel (Malaysia) Sdn. Bhd  
Lot 62049, Jalan Portland,  
Tasek Industrial Estate,  
31400 Ipoh, Perak, Malaysia  
Tel : +605-5476811  
Fax: +605-5471868

#### TAIWAN

Henkel Taiwan Ltd  
Room A4, 19F-1, No.6, Sihwei 3rd Rd,  
Lingya Dist., Kaohsiung, Taiwan  
Tel: 886-7-335-7970  
Fax: 886-7-335-1057

Across the Board,  
Around the Globe.  
[www.henkel.com/electronics](http://www.henkel.com/electronics)

