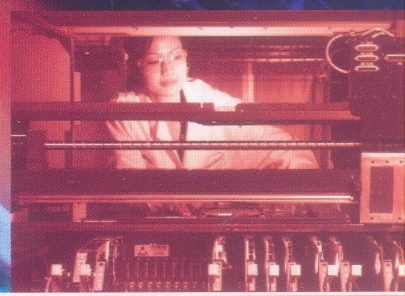




Multicore

Multicore® High-Performance Liquid Fluxes

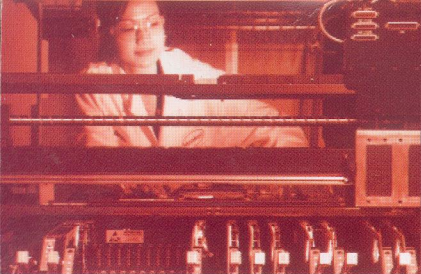
Advanced Wave Soldering Efficiency



Henkel



With a variety of formulations for various wave soldering processes, Multicore® brand high-performance liquid flux technology is compatible with dual-wave and lead-free processes, delivering outstanding results. From no-clean to low-residue to VOC-free, Multicore® brand fluxes deliver unique properties for individualized manufacturing needs.



Multicore® High Performance Liquid Fluxes

Advanced Wave Soldering Efficiency

Developing liquid flux solutions for modern lead-free and environmentally friendly processes take expertise and ingenuity – two characteristics found throughout the Henkel formulation teams. Through careful process analysis and a complete understanding of chemical interactions and manufacturing requirements, Henkel has developed a broad range of Multicore® brand liquid fluxes to suit a variety of applications.

Multicore® MF101™ is a high-activity, no-clean, VOC-free liquid flux designed for use on surfaces with low solderability such as oxidized copper. With sustained activity for a wide process window and a low solder balling formulation, **Multicore® MF101™** is ideal for high-yield dual-wave and Pb-free processes.

Developed specifically to complement lead-free wave soldering, **Multicore® MF 200™** allows for high-speed soldering on conventional leaded and surface-mount components. Its outstanding through-hole penetration allows for exceptional performance and the minimal

residues of the material reduce contamination to ATE probes.

Multicore® MF300™ delivers the ultimate in flux performance. The VOC-free, clear residue, resin-free and lead-free compatible, low solder balling formulation provides manufacturers with an environmentally sound, yet technically superior, liquid flux material.

For manufacturers that require a no-clean solution for difficult-to-solder surfaces, **Multicore® MFR301™** is the flux of choice. An IPA-based, rosin flux with lead-free compatibility, **Multicore® MFR301™** provides fast soldering with no bridges or icicles. Its sustained performance delivers a maximum process window and the no-clean formula helps manufacturers reduce operational costs.

Multicore® Hydro-X20™ provides an effective alternative for production environments where water cleaning is used. This material is a highly water-soluble flux and eliminates the need for CFC usage. **Multicore® Hydro-X20™** is odor-free, leaves boards very clean and, when used with dry film resists, leaves no solder balls.

Multicore® Liquid Fluxes	Description/Application	% Solids	Acid Value	IPC Class	Application
MF101™	High yield, sustained activity flux for dual wave and lead-free processes. Low solder balling formulation.	6.5 - 7.0	40	ROM0	Spray
MF200™	A general purpose, halide-free flux with sustained activity to extend flux life in dual wave and lead-free wave soldering applications. Suitable for spray flux application systems. Solvent-based flux may be thinned with IPA.	6.4	48.5	ROM0	Spray/Foam
MF300™	General purpose, VOC-free (water-based), no clean, halide-free and resin-free flux with special formulation to minimize solder balling. Compatible with lead-free processes.	4.6	37	ROM0	Spray/Foam
MFR301™	Higher solids, halide-free flux for better wetting on reduced solderability surfaces and to minimize bridging on complex geometries. Fully lead-free and dual wave compatible. Solvent-based flux may be thinned with IPA.	6.5	41	ROM0	Spray/Foam
Hydro-X20™	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	24	ORH1	Spray/Foam

			Flux Application		Pre-Heat		Alloy		Electrical Reliability					
Flux Technology	Rosin	Solids	Spray	Foam	IR	Convection	Selective Soldering	Lead-Free	IPC	Bellcore SIR	Bellcore Electro-migration	QPL/MIL	JIS	Halide-Free
Water-Based	Rosin-Free, No Clean	Low	●	●		●	●	●	●		●			●
	Rosin-Containing, No Clean	Low	●			●	●	●	●	●	●		●	●
Alcohol-Based	Rosin-Free, No Clean	Low	●	●	●	●	●	●	●		●			●
	Rosin-Containing, No Clean	Low	●	●	●	●	●	●	●		●			●
	Water Soluable	High		●	●	●	●	●	●			●		

**Across the Board,
Around the Globe.**



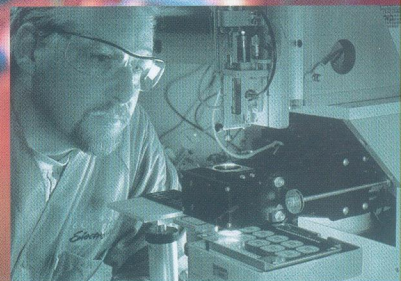
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Multicore



Multicore® WS300™

Pb-Free Water Wash Solder Paste



Multicore® WS300™ is a lead-free, high activity, water washable solder paste with superior cleaning characteristics and suitable for high speed, fine pitch printing applications. This unique material has a wide process window, long open and abandon times, and is highly resistant to humidity and slump. The Multicore® WS300™ high activity flux allows for excellent wetting to a wide range of surface finishes, delivering robust performance and process flexibility to manufacturers worldwide.



Multicore® WS300™

Pb-Free Water Wash Solder Paste

Testing Results

ANSI/J-STD-004 Testing

- Copper Mirror = H designation
- Halide Content = 1 designation
- Fluoride Testing = None Detected
- J-STD flux classification ORH1
- Passes SIR after cleaning ($2 \times 10^9 \Omega$ resistance)

ANSI/J-STD-005 Testing

- Hot and Cold slump – PASS
- Tack Time > 24 hours

Moisture Resistance

- No moisture uptake after six hours at 38°C/85%RH
- Pass J-STD-005 Slump after eight hour exposure to 25°C/95%RH

Bellcore (after cleaning)

- Passes SIR $5.2 \times 10^{10} \Omega$
- Passes ECM $7.6 \times 10^8 \Omega$

Cleanable up to 3 days after reflow

- Batch cleaning in deionized water
- No halides detected after cleaning with Ion Contamination Tester

Printing Characteristics

- Suitable for fine pitch (16 mil), high speed printing applications with type 3 powder (AGS)
- Wide printing process window
- Good printer open time and tack-life (4 hours)
- Extended between-print abandon time (4 hours)
- With refrigeration, 6 month stability

PRINTING FEATURES	
Features	Benefits
Wide Print Process Window • Print Speed = 1"/sec. – 4"/sec. • Print Pressure = 12 to 14 pounds	Easy drop-in replacement
> 4 Hour Abandon Time	Less scrap and waste on production lines. More cost effective product!

Reflow Characteristics

- Wide reflow process window
- No hot slump
- Good copper wetting
- No visible residue after cleaning with water
- Cleanable up to 3 days after reflow

VISCOSITY		
		97SC - Multicore® WS300™ AGS 89
Brookfield Viscosity/cp		490,000
Malcom Profile	Ti 10s ⁻¹	0.58 990

TACK TIME	
Tack-time profile Tack/gmm ⁻²	97SC - Multicore® WS300™ AGS 89
0 hours	0.8
7 hours	0.8
16 hours	0.6
24 hours	0.5

> 24 hours Tack Time

Validations

Multicore® WS300™ observations

- Best of Class Water Wash tested at Engent in Atlanta
- Multiple Customer approvals
- Replaces Multicore® WS12™ and WS22™
- A drop in replacement for SnPb WS200™
- Wetting Results Excellent

– Tested on the following finished boards:

HASL
Au/Ni Gold Nickel
Immersion Silver (Ag)

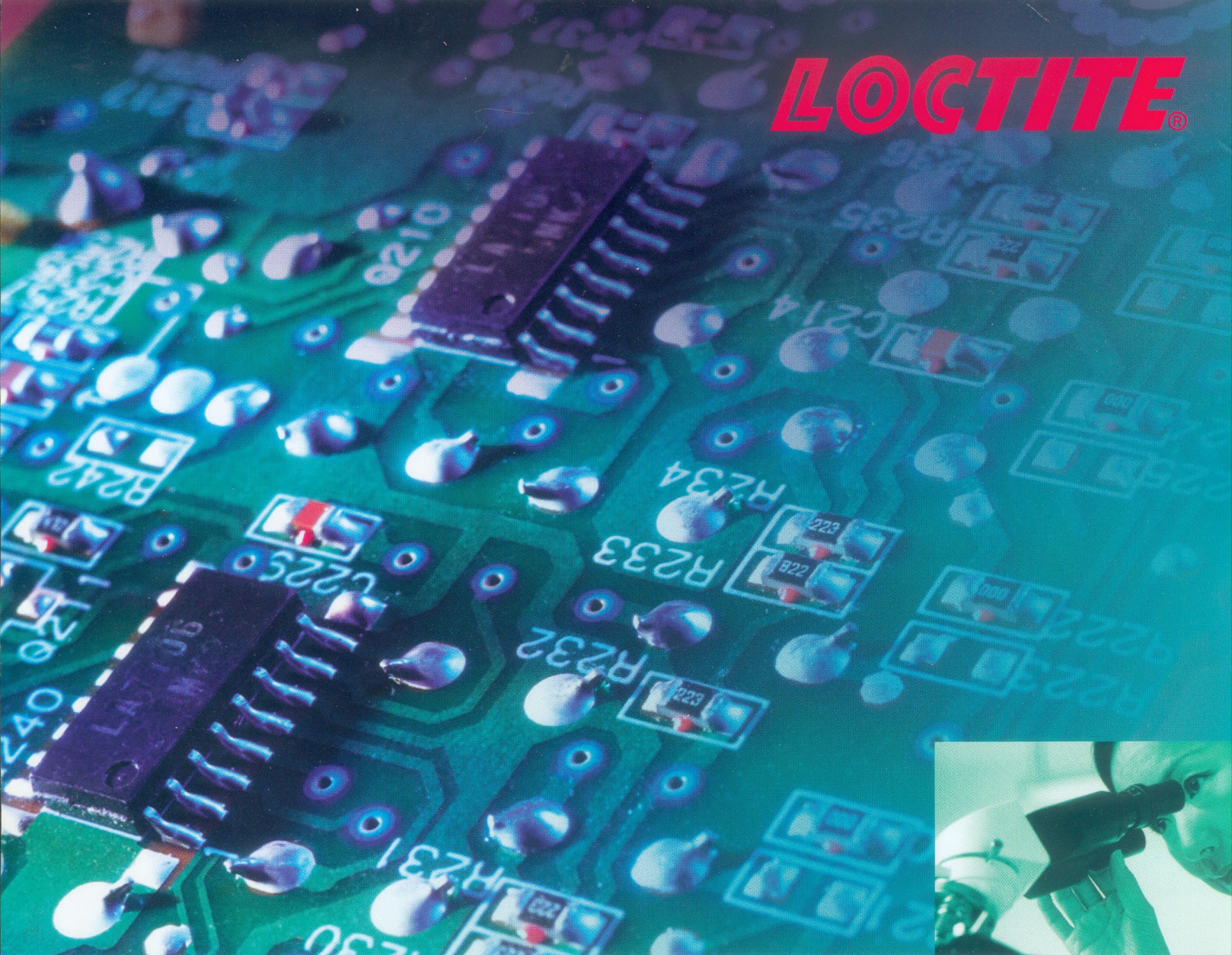
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LOCTITE®

Chipbonder® Surface Mount Adhesive

Technology that Sticks



Henkel



From pioneering beginnings as the first commercially available adhesive for the Surface Mount Technology market, Loctite® Chipbonder® is today's adhesive of choice for assembly specialists worldwide. For mixed-technology and double-sided SMT applications, Chipbonder® is the name to trust.

Henkel

Loctite® Chipbonder® products are particularly well-suited for applications where very high speed dispensing, high dot profiles, superior wet strength and high electrical specifications are required. Like all Henkel products, Loctite® Chipbonder® Adhesives are available in a variety of formulations to meet customer-specific requirements.

Low-Temperature and Screen Printable

Loctite® 3629™ Chipbonder® Adhesive delivers a low-temperature cure with very fast and highly reliable characteristics. This innovative material provides energy savings from reduced temperature curing and is compatible with modern lead-free processes. With robust properties, Loctite® 3629™ Chipbonder® Adhesive has been optimized for high-speed printing processes and is qualified for use with DEK® ProFlow® printing and the MPM® Rheopump.

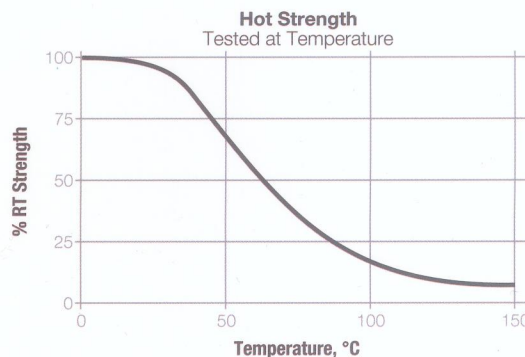
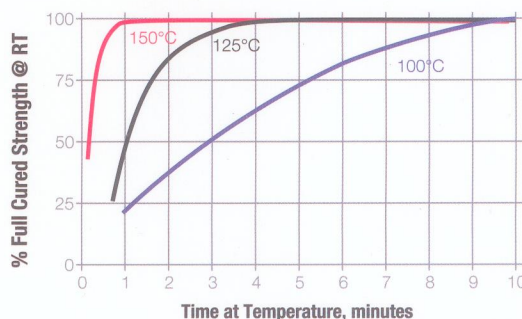
Dispensing

Loctite® 3609™, Loctite® 3627™ and Loctite® 3629™ Chipbonder® Adhesives have all been formulated to address unique manufacturing requirements, including lead-free processing, high-speed dispensing and high-humidity applications. Material viscosity has also been optimized for superior dispense performance.

Ultra High-Speed Dispensing

Recognizing that some operations require dispense speeds beyond the mainstream, Henkel has developed Loctite® 3621™ Chipbonder® Adhesive for applications that require ultra fast capability. For speeds greater than 35,000 dots per hour, lead-free capable Loctite® 3621™ Chipbonder® Adhesive is the premiere material.

PRODUCT CHARACTERISTICS	
Technology	Epoxy
Chemical Type	Epoxy
Appearance (uncured)	Dark red viscous gel ^{LMS}
Components	One component – requires no mixing
Cure	Heat Cure
Application	Surface Mount Adhesive
Key Substrates	Electronic components to printed circuit boards
Other Application Areas	Small Parts Bonding
Dispense Method	Syringe
Dispense Speed	Medium 15,000-25,000 dph
Wet Strength	High
Dot Profile	Peaked
Operating Temperature	-54°C to +150°C



CHEMICAL/SOLVENT RESISTANCE				
Environment	°C	% of initial strength		
		100 hr.	500 hr.	1000 hr.
Air	22	100	100	95
Air	150	85	70	70
Heat/Humidity 98% RH	40	110	110	100
Freon® 113	22	100	100	100
Terpene	22	100	100	100

Aged under conditions indicated and tested at 22°C.

**Across the Board,
Around the Globe.**



www.henkel.com/electronics

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