

# Henkel Solutions Medical Electronics



**Ablestik**

**Acheson**

**Hysol**

**LOCTITE**

**Multicore**

# MEDICAL ELECTRONICS MARKET SOLUTIONS

## OVERVIEW

Accurate diagnostics, improved alternative treatments and patient monitoring are all critical needs of the medical electronics industry. But, none of this is possible without the high-reliability medical devices used to facilitate these objectives. Henkel's advanced semiconductor packaging and assembly materials are delivering the solutions needed to address the demanding requirements of next-generation medical electronics.

There's no doubt that improving access to patients' data has enabled medical professionals to provide personalized care and has expanded early intervention programs for the treatment of chronic conditions. Technologies such as implantable medical devices and patient monitoring sensors that make this type of patient care possible now require a form factor that is only achieved through advanced electronic devices, materials and assembly methods. Henkel's technical expertise, low-risk partnership proposition, innovation philosophy, world-class global support infrastructure and history as a leading formulator of market-leading materials ensure that we will enable the future advancement of the medical electronics industry.



**Ablestik**

**Acheson**

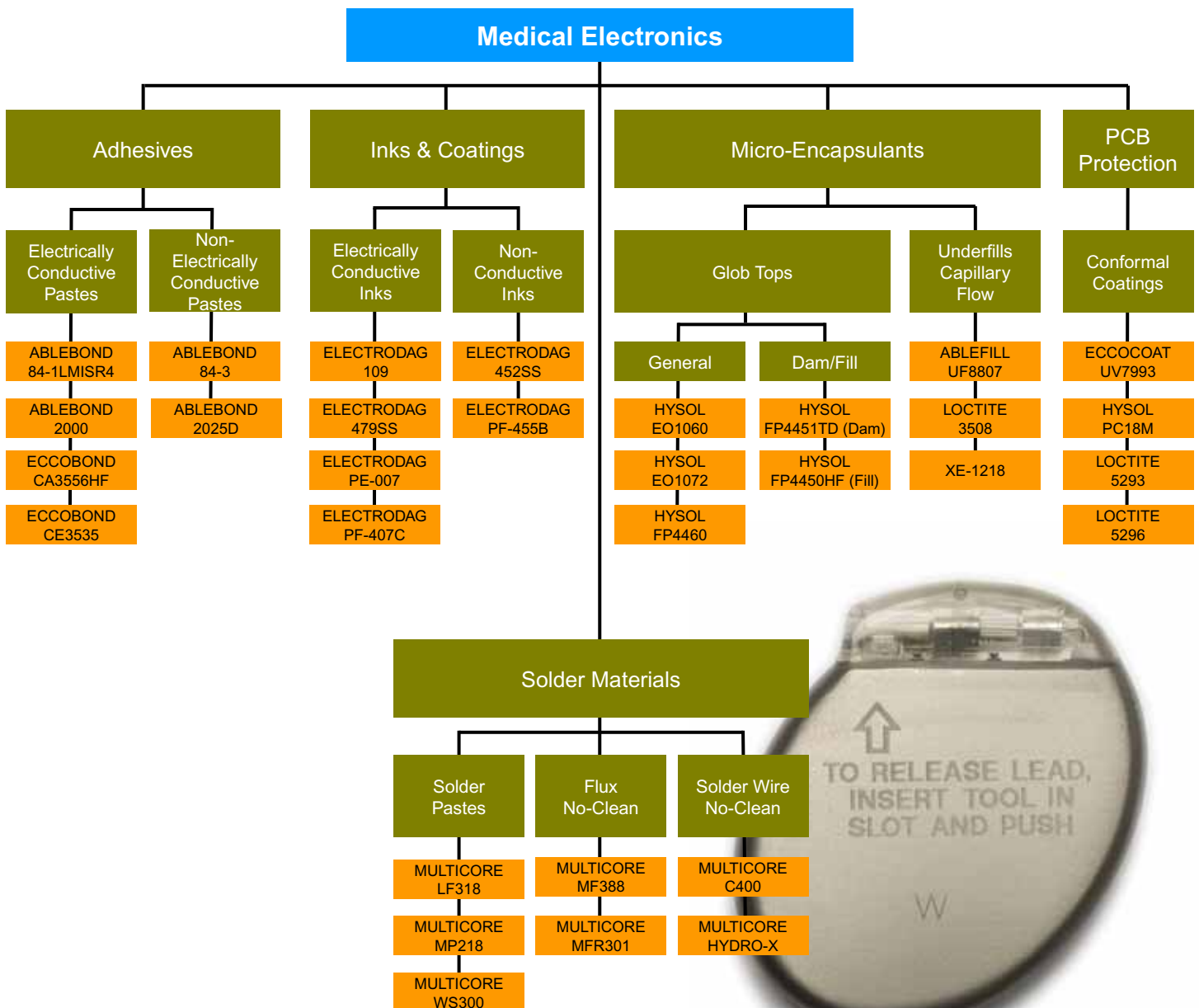
**Hysol**

**LOCTITE**

**Multicore**

# ASSEMBLY & MICROCIRCUIT MARKET SOLUTIONS

## MEDICAL ELECTRONICS



Adhesives • Inks & Coatings • Micro-Encapsulants • PCB Protection • Solder Materials

# MEDICAL ELECTRONICS MARKET SOLUTIONS

## ADHESIVES

### ADHESIVES: ELECTRICALLY CONDUCTIVE PASTES

PRODUCT	DESCRIPTION	CURE TYPE	SHELF LIFE	CURE SCHEDULE	VOLUME RESISTIVITY OHM•cm
ABLEBOND 84-1LMISR4	Conductive adhesive for semi-conductor packaging applications. Ideal for small components or high speed dispense manufacturing.	Heat	12 months @ -40°C	60 min. @ 175°C	0.0001
ABLEBOND 2000	Electrically conductive die attach adhesive designed for Pb-free and Array BGA packaging. This product is able to withstand the high reflow temperatures necessary for Pb-free solders @ 260°C. It is suitable for die sizes up to 12.7 mm x 12.7 mm.	Heat	12 months @ -40°C	30 min. ramp to 175°C; Hold 15 min.@ 175°C	0.0005
ECCOBOND CA3556HF	One-component, highly flexible, conductive adhesive for applications with large CTE mismatches between substrates. Snap cure capability.	Heat	5 months @ -40°C	60 sec @ 110 °C	0.0025
ECCOBOND CE3535	One-component epoxy adhesive providing high mechanical strength; stable contact resistance on copper and 100% tin. Pb-free alternative to solder.	Heat	4 months @ -40°C	60 min. @ 150°C	0.0003

### ADHESIVES: NON-ELECTRICALLY CONDUCTIVE PASTES

PRODUCT	DESCRIPTION	CURE TYPE	SHELF LIFE	CURE SCHEDULE	VOLUME RESISTIVITY OHM•cm
ABLEBOND 84-3	Electrically insulative, one-component, solvent-free product for die attach applications. Ideal for either auto-dispense or screen printing.	Heat	12 months @ -40°C	1 hr. @ 150°C	3.5 x 10 <sup>13</sup>
ABLEBOND 2025D	A hybrid chemistry die attach adhesive designed for PBGA, FlexBGA and for stacking BGA packages.	Heat	12 months @ -40°C	30 min. ramp to 175°C; Hold 15 min.@ 175°C	1.2 x 10 <sup>13</sup>

# ASSEMBLY & MICROCIRCUIT MARKET SOLUTIONS

## INKS & COATINGS

### INKS & COATINGS: ELECTRICALLY CONDUCTIVE INKS

PRODUCT	DESCRIPTION	APPLICATION	CURE SCHEDULE	SHEET RESISTANCE - OHM/SQUARE/25 $\mu$
ELECTRODAG 109	Carbon ink for flexographic/rotogravure printing on plastic film (PET, PVC) and paper substrates.	Bio and medical sensors.	1 min. @ 120°C	<30
ELECTRODAG 479SS	Screen printable silver ink for PET film.	Conductive traces in membrane touch switches and other flexible circuitry.	15 min. @ 95°C	<0.020
ELECTRODAG PE-007	Silver/silver chloride ink for flexographic/rotogravure printing on plastic film.	Bio and medical sensors.	2 min. @ 110°C	<0.100
ELECTRODAG PF-407C	Screen printable carbon ink for plastic film and paper substrates.	Membrane touch switches and keyboards. Bio and medical sensors.	15 min. @ 120°C	<15

### INKS & COATINGS: NON-CONDUCTIVE INKS

PRODUCT	DESCRIPTION	APPLICATION	CURE SCHEDULE	SHEET RESISTANCE - OHM/SQUARE/25 $\mu$
ELECTRODAG 452SS	Screen printable, UV-curable dielectric ink for plastic film and paper substrates. Excellent flexibility.	Tail coating membrane touch switches and PC desktop/notebook keyboards.	UV @ 0.5 Joule/cm <sup>2</sup>	<2 x 10 <sup>9</sup>
ELECTRODAG PF-455B	Screen printable, UV-curable dielectric ink for plastic film. Excellent humidity resistance.	Crossover dielectric in membrane touch switches and PC desktop/notebook keyboards.	UV @ 0.5 Joule/cm <sup>2</sup>	<2 x 10 <sup>9</sup>



# MEDICAL ELECTRONICS MARKET SOLUTIONS

## MICRO-ENCAPSULANTS

### MICRO-ENCAPSULANTS: GLOB TOPS: GENERAL

PRODUCT	DESCRIPTION	POT LIFE @ 25°C	CURE SCHEDULE	T <sub>g</sub> °C
HYSOL EO1062	High glob formulation with low CTE and low ionic content. Ideal for more harsh environment applications.	25 days	4 - 6 hrs. @ 125°C	125
HYSOL EO1072	One-component, high performance epoxy encapsulant with high T <sub>g</sub> and low extractable ionics. Short cure cycle.	30 days	5 min. @ 140°C	135
HYSOL FP4460	High purity, low stress glob top semiconductor encapsulant with excellent moisture resistance and working life.	2 days	3 hrs. @ 150°C	171

### MICRO-ENCAPSULANTS: GLOB TOPS: DAM AND FILL

PRODUCT	DESCRIPTION	CURE SCHEDULE	VISCOSITY (cPs)	T <sub>g</sub> °C
HYSOL FP4451TD (Dam)	Industry standard material for dam applications in BGAs. Low ionics. Ideal for tall and narrow dam dimensions.	30 min. @ 125°C or 90 min. @ 165°C	300,000	150
HYSOL FP4450HF (Fill)	High flow, industry standard fill material. Also for use in cavity down BGA applications. Good for use in fine wire and low alpha applications.	30 min. @ 125°C or 90 min. @ 165°C	32,000	160

### MICRO-ENCAPSULANTS: UNDERFILL-FLIP CHIP-ON-FLEX AND FLIP CHIP-ON-BOARD

PRODUCT	DESCRIPTION	POT LIFE @ 25°C	VISCOSITY (cPs)	T <sub>g</sub> °C
ABLEFILL UF8807	One-component, high flow liquid underfill encapsulant with superior moisture resistance.	8 hrs.	17,000	130

# ASSEMBLY & MICROCIRCUIT MARKET SOLUTIONS

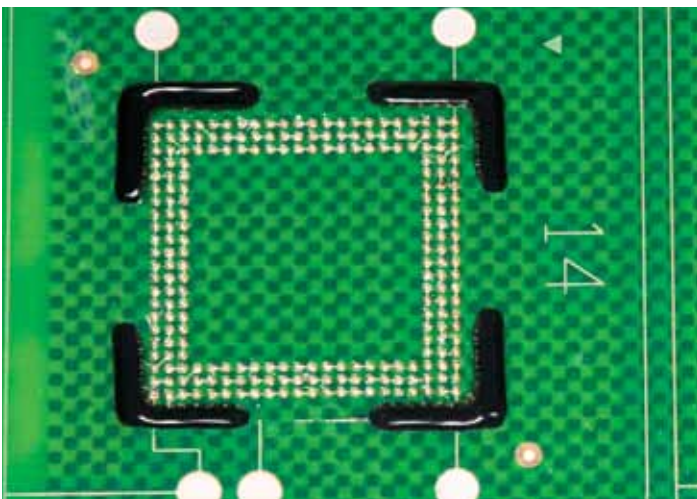
## MICRO-ENCAPSULANTS

### MICRO-ENCAPSULANTS: CORNERBOND™

PRODUCT	DESCRIPTION	POT LIFE @ 25°C	VISCOSITY (cPs)	T <sub>g</sub> °C
LOCTITE 3508	Lead-free, one-component epoxy corner bond adhesive. Applied pre-reflow and allows self-alignment of SMT components during reflow operation. Used for lead-free applications.	30 days	50,000	115

### MICRO-ENCAPSULANTS: UNDERFILL-FLIP CHIP-ON-FLEX AND FLIP CHIP-ON-BOARD

PRODUCT	DESCRIPTION	POT LIFE @ 25°C	VISCOSITY (cPs)	T <sub>g</sub> °C
XE1218	Reworkable, snap cure, void-free, fast-flowing underfill which also provides excellent adhesion and reliability benefits.	10 days	1,100	60

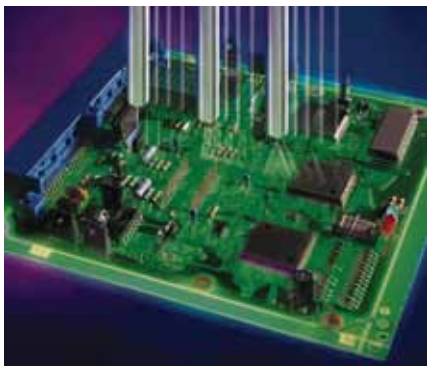


# MEDICAL ELECTRONICS MARKET SOLUTIONS

## PCB PROTECTION

### PCB PROTECTION: CONFORMAL COATINGS

PRODUCT	DESCRIPTION	RESIN TYPE	VISCOSITY (cPs)	CURE SCHEDULE
ECCOCOAT UV7993	Solvent-free, 100% solids, one-component, dual UV cure and secondary moisture cure conformal coating providing excellent protection against moisture and other harsh environments.	Urethane Acrylate One-Component	120	5 sec. UV + 4 days @ RT
HYSOL PC18M	Flexible solvent-based, one-component urethane coating. Provides good thermal shock resistance. MIL-I-46058C.	Urethane One-Component	350	2 hrs. @ 60°C
LOCTITE 5293	Repairable, solvent-free, medium viscosity, UV/moisture cure silicone suited to brush, dip and selective coating.	Silicone One-Component	600	20 sec. @ 70 mW/cm <sup>2</sup> + 72 hrs. RT
LOCTITE 5296	Heat cure silicone can be applied with brush, dip or spray. High reliability for automotive. Clear.	Silicone One-Component	200	Heat 7 min. @ 125°C



# ASSEMBLY & MICROCIRCUIT MARKET SOLUTIONS

## SOLDER MATERIALS

### SOLDER MATERIALS: SOLDER PASTE

PRODUCT	DESCRIPTION	ALLOY	% METAL LOADING	TACK g/mm2	PRINT SPEED (mm/s)	IPC/J-STD-004 CLASSIFICATION
MULTICORE LF318	A halide-free, no-clean, Pb-free solder paste that has excellent humidity resistance and a broad process window for both reflow and printing.	96SC (SAC387) 97SC (SAC305)	88.5% and 89.0%	1.8 AGS (Type 3 powder) 2.3 DAP (Type 4 powder)	25 - 150	ROLO
MULTICORE MP218	High activity, soft residue, colorless, halide-free, no-clean solder paste that displays outstanding resistance to high temperature and humidity environments.	Sn62/Sn63/63S4 (Anti-Tombstoning)	89.5	1.6	25 - 150	ROLO
MULTICORE WS300	A lead-free water washable solder paste for printing and reflow in air or nitrogen atmospheres where process yield is critical.	96SC (SAC387) 97SC (SAC305)	89	0.8	25 - 100	ORH1

### SOLDER MATERIALS: FLUX NO-CLEAN

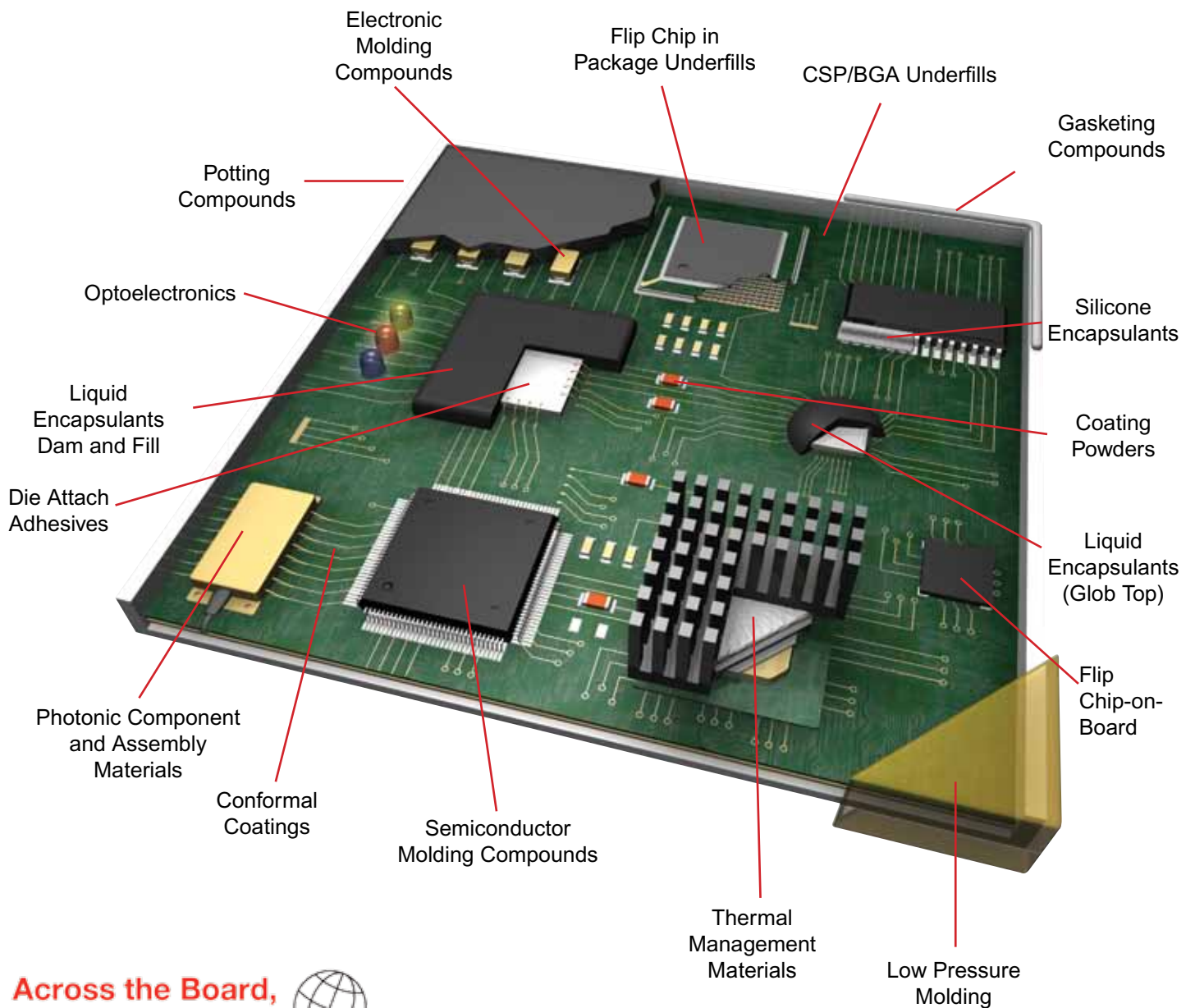
PRODUCT	DESCRIPTION	SOLIDS CONTENT (%)	ACID VALUE (MG KOH/G)	IPC/J-STD-004 CLASSIFICATION	APPLICATION
MULTICORE MF388	Sustained activity in high preheats for dual wave and lead-free processes. High PTH fill, low residues. High reliability. Solvent-based flux may be thinned with IPA.	3.5	20	ROLO	Spray
MULTICORE 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.	6.0	40	ROM0	Spray/Foam

### SOLDER MATERIALS: SOLDER WIRE: NO CLEAN

PRODUCT	DESCRIPTION	IPC/J-STD-004 CLASSIFICATION	ALLOY OPTIONS (TIN-LEAD)	ALLOY OPTIONS (LEAD-FREE)
MULTICORE C400	Halide-free, no-clean, clear residue, increased flux content for improved wetting.	ROLO	SN62 60/40 63/37	SAC305 (97SC) SAC387 (96SC) 99C
MULTICORE HYDRO-X	High activity, water-washable flux with excellent wetting on difficult substrates.	ORH1	SN62 60/40 63/37	SAC305 (97SC) SAC387 (96SC) 99C

# ELECTRONICS ASSEMBLY MARKET SOLUTIONS

## ACROSS THE BOARD



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

# ELECTRONICS ASSEMBLY MARKET SOLUTIONS

## MEDICAL ELECTRONICS

### NOTES

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# Henkel - Your partner worldwide

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