LOCTITE®
TECHNOMELT®

BERGQUIST®

MATERIALS FOR POWER SUPPLIES AND CONVERTERS

HENKEL MATERIAL SOLUTIONS FOR UNINTERRUPTED POWER SUPPLY (UPS)

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UNINTERRUPTIBLE POWER SUPPLY (UPS) TECHNOLOGY

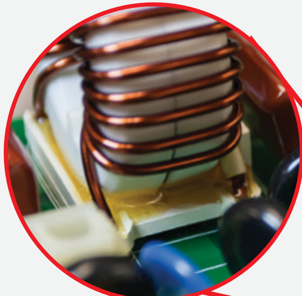
UPS systems, which are more efficient and intelligent than ever before, are designed to keep critical equipment running and offer protection from unclean power sources. As server space becomes more valuable, UPS designers are under pressure to make increasingly compact devices that can support higher power, provide efficiency, integrate additional functional features and reduce off-state power consumption. This improved performance and reduced size must be achieved while controlling UPS device cost to remain competitive. Realizing many of these goals is dependent upon materials performance and it's why UPS designers and manufacturers partner with Henkel for their electronic material requirements.

Industry-Leading Solutions

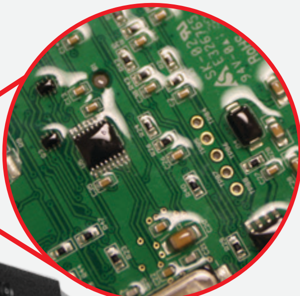
With an expansive range of materials to facilitate UPS function and dependability, Henkel's innovations are helping meet UPS price/performance expectations by pushing power density boundaries and reducing the total cost of ownership. Once UPS specialists partner with Henkel, they are fully supported by the company's broad global footprint, local access to technical assistance and unmatched R&D expertise.

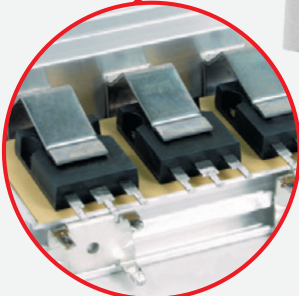
MATERIAL SOLUTIONS FOR UPS DEVICE

Thermally Conductive Adhesive

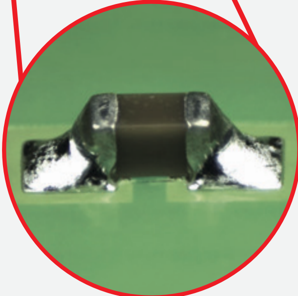


Conformal Coating





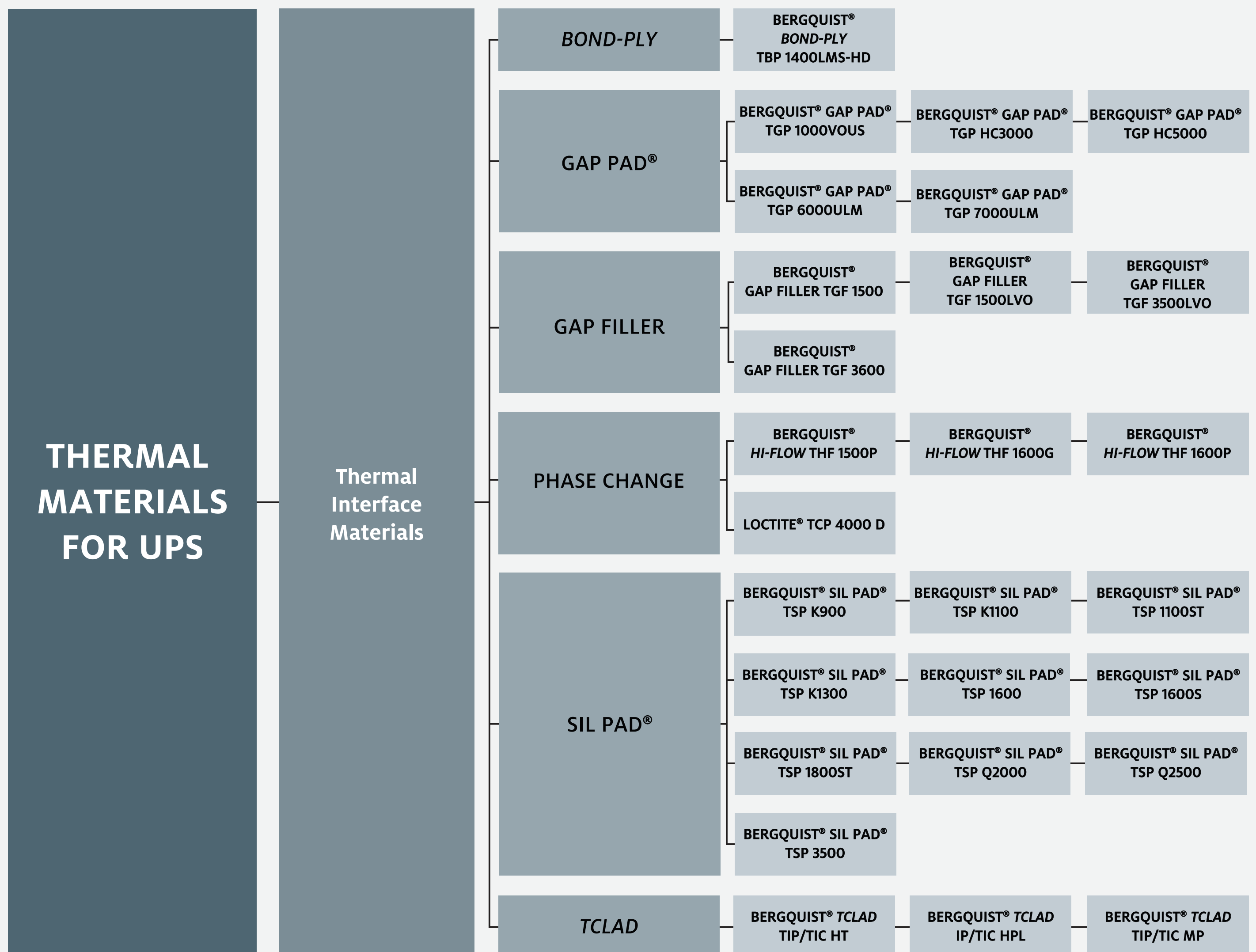
Thermally Conductive Adhesive



Solder Materials

Thermal Interface Materials

Henkel thermal interface materials (TIMs) provide safety agency recognized insulation while providing an efficient thermal path for the removal of heat. Without proper heat management, the lifetime and effectiveness of electronic components is compromised. Many of Henkel's TIMs have relative thermal indices (RTI) above 130°C which complies with safety agency standards, allowing significant reductions in testing time and cost and enabling faster commercialization for UPS designers. Higher-performing TIMs also support increased power density designs within more compact architectures to address server room space challenges.



THERMAL INTERFACE MATERIALS FOR UPS

BOND-PLY

Product Name	Description	Key Attributes	Thermal Conductivity (W/m·k)	Dielectric Breakdown Voltage	Thickness (mm)	Recommended Cure	Flammability Rating
BERGQUIST® *BOND-PLY* TBP 1400LMS-HD	A thermally conductive, heat curable laminate material	• TO-220 Thermal performance: 2.3°C/W, initial pressure only lamination • Exceptional dielectric strength • Very low interfacial resistance • 200 psi adhesion strength • Continuous use of -60 – 180°C • Eliminates mechanical fasteners	1.4	5,000	0.254 – 0.457	30 min. at 125°C	UL 94V-0

GAP PAD®

Product Name	Description	Key Attributes	Thermal Conductivity (W/m·K)	Modulus at 25°C (kPa)	Dielectric Breakdown Voltage	Thickness (mm)	Flammability Rating
BERGQUIST® GAP PAD® TGP 1000VOUS	Thermally conductive gap filling material	• Highly conformable, low hardness • "Gel-like" modulus • Decreased strain • Puncture, shear and tear resistant • Electrically isolating	1.0	55	6,000 V at 500 µm	0.508 – 6.350	UL 94 V-0
BERGQUIST® GAP PAD® TGP HC3000	Thermally conductive gap filling material	• High-compliance, low compression stress • Fiberglass reinforced for shear and tear resistance • Low modulus	3.0	110	5,000 V at 500 µm	0.508 – 3.175	UL 94 V-0

GAP PAD® – CONTINUED

Product Name	Description	Key Attributes	Thermal Conductivity (W/m·K)	Modulus at 25°C (kPa)	Dielectric Breakdown Voltage	Thickness (mm)	Flammability Rating
BERGQUIST® GAP PAD® TGP HC5000	Thermally conductive gap filling material	• Highly conformable • Exceptional thermal performance • High-compliance, low compression stress • Fiberglass reinforced for shear and tear resistance • Low modulus	5.0	121	5,000 V at 500 µm	0.508 – 3.175	UL 94 V-0
BERGQUIST® GAP PAD® TGP 6000ULM	A high performance thermally conductive gap filling material with ultra low modulus	• Thermally conductive: 6.0 W/m·K • High-compliance, low compression stress • Ultra low modulus	6.0	41	5,000 V at 500 µm	1.524 – 3.175	UL 94 V-0
BERGQUIST® GAP PAD® TGP 7000ULM	A high performance thermally conductive gap filling material with ultra low modulus	• Thermally conductive: 7.0 W/m·K • Highly conformable, extremely low compression stress • Conforms and maintains structured integrity with minimum stress applied	7.0	28	5,000 V at 500 µm	1.016 – 3.175	UL 94 V-0

GAP FILLER

Product Name	Description	Key Attributes	Thermal Conductivity (W/m·k)	Viscosity at 25°C (cP)	Dielectric Strength (V/25 µm)	Recommended Cure	Flammability Rating
BERGQUIST® GAP FILLER TGF 1500	Two-part, high performance, thermally conductive liquid gap filling material	• Optimized shear thinning characteristics for ease of dispensing • Excellent slump resistance (stays in place) • Ultra-conforming with excellent wet-out for low stress interface applications • 100% solids – no cure by-products • Excellent low and high temperature mechanical and chemical stability	1.8	250,000	400	5 hr. at 25°C	UL 94 V-0
BERGQUIST® GAP FILLER TGF 1500LVO	A two-part, high performance, thermally conductive liquid gap filling material with significantly lower levels of silicone outgassing	• Thermal conductivity: 1.8 W/m·K • Low volatility for silicone sensitive applications • Ultra-conforming, with excellent wet-out • 100% solids — no cure by-products • Excellent low and high temperature mechanical and chemical stability	1.8	20,000	400	8 hr. at 25°C	UL 94 V-0
BERGQUIST® GAP FILLER TGF 3500LVO	Thermally conductive, low outgassing liquid gap filling material	• Low volatility for outgassing sensitive applications • Ultra-conforming with excellent wet-out for low stress interfaces on applications • 100% solids - no cure by-products • Ambient or accelerated cure schedules	3.5	45,000	275	24 hr. at 25°C	UL 94 V-0
BERGQUIST® GAP FILLER TGF 3600	Thermally conductive liquid gap filling material	• High thermal performance • Thixotropic nature makes it easy to dispense • Ultra-conforming material designed for fragile and low-stress applications • Ambient or accelerated cure schedules	3.6	150,000	275	15 hr. at 25°C	UL 94 V-0

THERMAL INTERFACE MATERIALS

PHASE CHANGE

Product Name	Description	Key Attributes	Thermal Conductivity (W/m·k)	Volume Resistivity (Ω-m)	Dielectric Breakdown Voltage	Thickness (mm)	Flammability Rating
BERGQUIST® *HI FLOW* THF 1500P	A thermally conductive phase change material, reinforced with a polyimide film that provides high dielectric strength and cut through resistance	• Thermal Impedance: 0.20°C-in²/W (at 25 psi) • 150°C high temperature reliability • Natural tack one side for ease of assembly • Exceptional thermal performance in an insulated pad	1.5	1 x 10^{12}	5,000	0.114 – 0.140	UL 94V-0
BERGQUIST® *HI FLOW* THF 1600G	Consists of a thermally conductive 55°C phase change compound coated on a fiberglass web. Is designed as a thermal interface material between a computer processor and a heat sink.	• Thermal impedance: 0.20°C-in² /W (at 25 psi) • Will not drip or run like grease • Phase change compound coated on a fiberglass carrier	1.6	1 x 10^{8}	300	0.127	UL 94V-0
BERGQUIST® *HI FLOW* THF 1600P	A thermally conductive 55°C phase change compound coated on a thermally conductive polyimide film	• Thermal impedance: 0.13°C-in²/W (at 25 psi) • Field-proven polyimide film with excellent dielectric performance and cut-through resistance • Outstanding thermal performance in an insulated pad	1.6	1 x 10^{12}	5,000	0.102 – 0.127	UL 94V-0
LOCTITE® TCP 4000 D	Non-silicone, reworkable phase-change material supplied as a paste that can be stenciled, needle-dispensed or screen-printed onto a heat sink, base plate or other surfaces	• Reworkable • Highly efficient thermal transfer • Thixotropic above phase change temperature	3.4	1 x 10^{9}	N/A	0.025 – 0.250	–

SIL PAD®

Product Name	Description	Key Attributes	Thermal Conductivity (W/m·k)	Hardness	Dielectric Breakdown Voltage	Thickness (mm)	Flammability Rating
BERGQUIST® SIL PAD® TSP K900	A specially developed film that withstands high voltages and requires no thermal grease	• Thermal impedance: 0.48°C-in² /W (at 50 psi) • Withstands high voltages • High dielectric strength • Very durable	0.9	90 (Shore 00)	6,000	0.152	UL 94 VTM-0
BERGQUIST® SIL PAD® TSP K1100	A medium performance film coated with silicone elastomer to provide a strong dielectric barrier	• Thermal impedance: 0.49°C-in² /W (at 50 psi) • Physically strong dielectric barrier against cut-through • Medium performance film	1.1	90 (Shore 00)	6,000	0.152	UL 94 VTM-0
BERGQUIST® SIL PAD® TSP 1100ST	A fiberglass-reinforced that is inherently tacky on both sides for easy handling in high volume assemblies	• Inherent tack on both sides for exceptional thermal performance and easy placement • Re-positionable for higher utilization, ease of use and assembly error reduction • Exceptional thermal performance even at a low mounting pressure	1.1	85 (Shore 00)	5,000	0.305	UL 94 V-O

Product Name	Description	Key Attributes	Thermal Conductivity (W/m·k)	Hardness	Dielectric Breakdown Voltage	Thickness (mm)	Flammability Rating
BERGQUIST® SIL PAD® TSP K1300	A high performance insulator to replace ceramic insulators such as Beryllium Oxide, Boron Nitride, and Alumina	• Thermal impedance: 0.41°C-in^2 /W (at 50 psi) • Tough dielectric barrier against cut-through • High performance film • Designed to replace ceramic insulators	1.3	90 (Shore 00)	6,000	0.152	UL 94 VTM-0
BERGQUIST® SIL PAD® TSP 1600	A highly compliant pad that provides high thermal performance and electrical isolation at low mounting pressures	• Thermal impedance: 0.45°C-in^2 /W (at 50 psi) • High value material • Smooth and highly compliant surface • Electrically isolating	1.6	91 (Shore A)	3,000	0.127	UL 94 V-0
BERGQUIST® SIL PAD® TSP 1600S	A thermally conductive insulation material that provides high thermal performance and electrical isolation at low mounting pressures	• Thermal impedance: 0.61°C-in^2/W (at 50 psi) • Electrically isolating • Low mounting pressures • Smooth and highly compliant surface • General-purpose thermal interface material solution	1.6	92 (Shore A)	5,500	0.229	UL 94 V-0
BERGQUIST® SIL PAD® TSP 1800ST	A fiberglass-reinforced material that is tacky on both sides for high volume assemblies	• Thermal impedance: 0.23°C-in^2/W (at 50 psi) • Naturally tacky on both sides • Pad is reposition-able • Excellent thermal performance • Auto-placement and dispensable	1.8	75 (Shore 00)	3,000	0.203	UL 94 V-0

THERMAL INTERFACE MATERIALS

SIL PAD® – CONTINUED

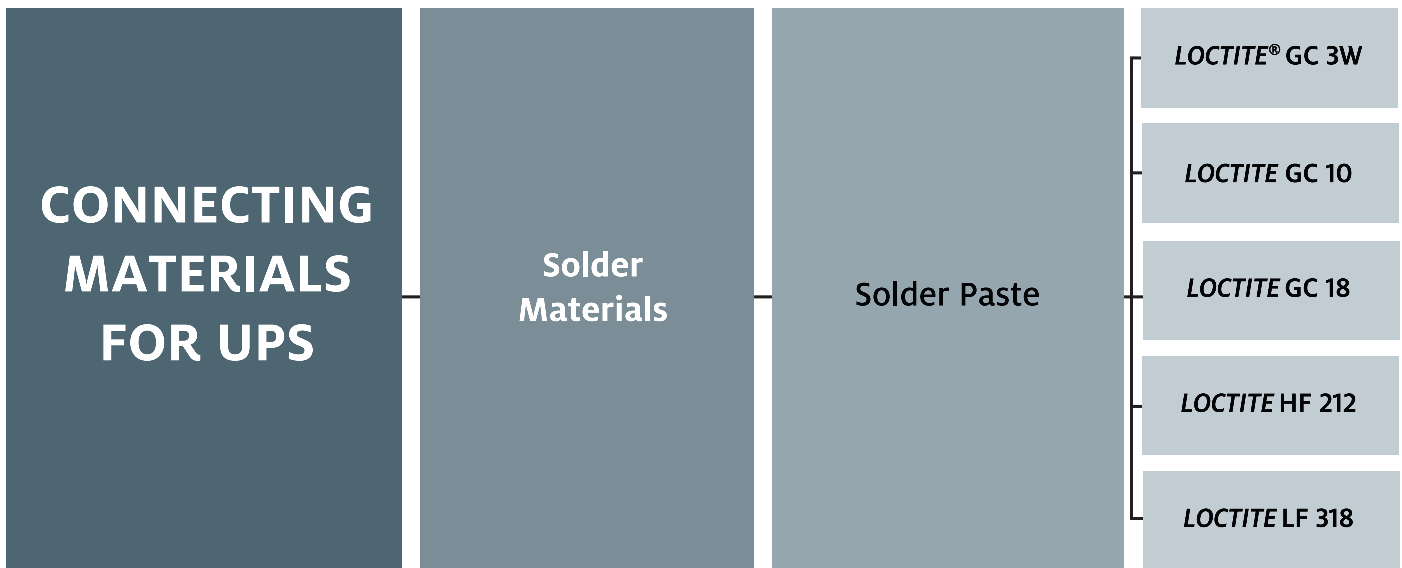
Product Name	Description	Key Attributes	Thermal Conductivity (W/m·k)	Hardness	Dielectric Breakdown Voltage	Thickness (mm)	Flammability Rating
BERGQUIST® SIL PAD® TSP Q2000	A fiberglass-reinforced grease replacement that withstands processing stresses without losing physical integrity and provides ease of handling during application	• Thermal impedance: 0.35°C-in²/W (at 50 psi) • Eliminates processing constraints typically associated with grease • Conforms to surface textures • Easy handling • May be installed prior to soldering and cleaning without worry	2.0	86 (Shore A)	Non-Insulating	0.127	UL 94 V-0
BERGQUIST® SIL PAD® TSP Q2500	Aluminum foil coated on both sides with thermally/electrically conductive rubber for applications needing maximum heat transfer but not requiring electrical isolation	• Thermal impedance: 0.22°C-in²/W (at 50 psi) • Maximum heat transfer • Aluminum foil coated both sides • Designed to replace thermal grease	2.5	93 (Shore A)	Non-Insulating	0.152	UL 94 V-0
BERGQUIST® SIL PAD® TSP Q3500	A high performance, thermally conductive insulator	• Thermal impedance 0.33°C-in2/W (at 50 psi) • Optimal heat transfer • High thermal conductivity 3.5 W/m-K	3.5	90 (Shore A)	4000 V	0.254 – 0.508	UL 94 V-0

TCLAD

Product Name	Description	Permittivity (Dielectric Constant)	Thickness (mm)	Dielectric Breakdown Voltage	Thermal Conductivity (W/m·k)	Glass Transition (°C)
BERGQUIST® *TCLAD* TIP/TIC MP	Industry-proven dielectric for a multitude of applications including LED, power conversion, heat-rails, solid state relays and motor drives.	6	0.076	5,000	7.5	90
BERGQUIST® *TCLAD* IP/TIC HT	Dielectric resistant to degradation from high temperature exposure. Features high dielectric breakdown characteristics.	7	0.076 - 0.152	8,500 / 11,000	4.1	150
BERGQUIST® *TCLAD* TIP/TIC HPL	Dielectric, specifically formulated for high-power lighting LED applications with demanding thermal performance requirements.	6	0.038	8,500	2.4	185

RELIABLE INTERCONNECTS

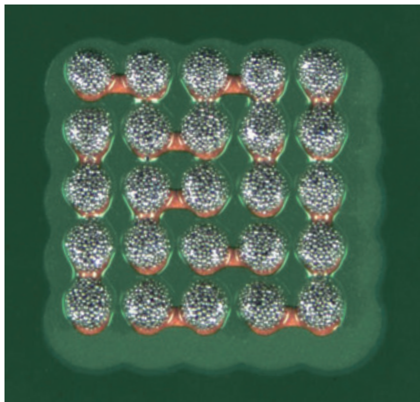
UPS systems provide protection and backup for critical equipment across several industries, while enabling proper function through ongoing power consistency even during power surges and intermittent power supply. Accurate electrical function of UPS technologies is essential for optimum performance, which is why Henkel's solder materials are the interconnect solutions of choice. A broad range of solder formulations provide on-the-line stability, wide process windows and low defect rates for proven in-field reliability.



SOLDER MATERIALS

SOLDER PASTES

Product Name	Description	Key Benefits	Alloy	Particle Size Distribution	IPC J-STE-004B Classification	Optimal Shelf-Life	Reflow Atmosphere
LOCTITE® GC 3W	Pb-free, Water washable, halogen free, temperature stable solder paste	• Water washable Pb-free solder paste • Halogen-free, first ever room temperature stable • High humidity resistance, good printability, solderability and easily cleaned flux residue	• SAC305	• Type 3 • Type 4	ORM0	6 months at 26.5°C	Air and Nitrogen
LOCTITE GC 10	Pb-free, halogen-free, no-clean, RoHS-compliant solder paste with excellent resistance in high humidity	• First-ever room temperature stable • Halogen-free, innovative new no clean, Pb-free solder paste • Exceptional fine pitch printing, abandon time, stencil life • Extremely wide reflow process window	• SAC305	• Type 3 • Type 4 • Type 5	ROL0	1 year at 26.5°C	Designed for air; suitable with nitrogen
LOCTITE GC 18	2nd Generation temperature stable solder paste designed for improved void control especially under QFN's	Formulated to achieve low voiding on QFN packages • Excellent stability at room temperature • 12 month shelf-life 0°C to 25°C, Up to 1 month at ≤ 40°C • Suitable for fine pitch, high speed printing up to 150 mm/s (6"/s) • Excellent resistance to humidity • Good fine pitch coalescence in air and nitrogen • Colorless residues for easy post-reflow inspection	• SAC305	• Type 3 • Type 4	ROL0	12 months up to 26.5C	Air and Nitrogen
LOCTITE HF 212	Pb-free, halogen-free, high tack, low voiding solder paste with excellent fine pitch coalescence and extended stencil life and abandon time	• Halogen-free, traditional no clean, Pb-free solder paste • Designed for medium-large size boards • Excellent abandon time and stencil work life • Excellent fine pitch printing and wide reflow process window	• 90iSC • SAC0307 • SAC305 • SAC387	• Type 3 • Type 4 • Type 4.5 (4A) • Type 5	ROL0	6 months at 0°C – 10°C	Air and Nitrogen
LOCTITE LF 318	Pb-free, halide-free, no-clean solder paste with pin-testable flux exhibits excellent humidity resistance and able to resist component movement during high-speed placement	• Halide-free, traditional no clean, Pb-free solder paste • Excellent humidity resistance and a broad process window for both printing and reflow	• 90iSC • SAC305 • SAC387	• Type 3 • Type 4	ROL0	6 months at 0°C – 10°C	Air and Nitrogen

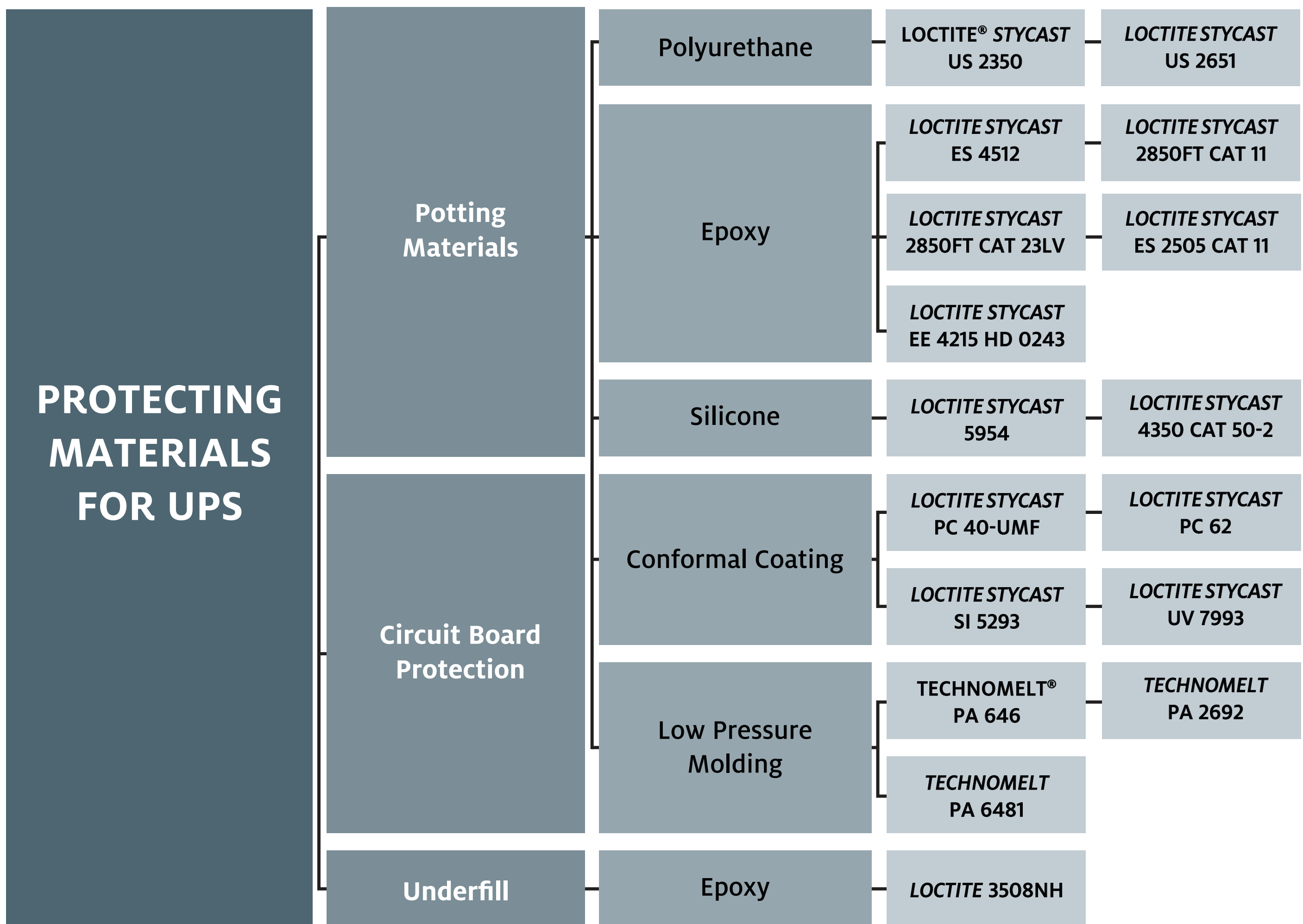


SOLDER POWDER PARTICLE SIZE

POWDER DESCRIPTION	HENKEL DESCRIPTION	PARTICLE SIZE DISTRIBUTION (µm)
Type 2.5 (2A)	AAS	38 – 53
Type 3	AGS	20 – 45
Type 3C	ACP	15 – 45
Type 4	DAP	25 – 38
Type 4.5 (4A)	DAP+	20 – 32
Type 5	KBP	10 – 25
Type 6	LAW	5 – 15

PCB AND COMPONENT PROTECTION

Regardless of the environmental conditions, uninterruptible power supplies must work when needed. Even in the most challenging of conditions, robust protection of the PCB and electrical components will help safeguard UPS functionality. LOCTITE® and TECHNOMELT® brand circuit board protection materials deliver critical defense against harsh environments and electrically harmful conditions. Henkel's conformal coatings keep electronic circuits shielded from dust, moisture, and other contaminants; *TECHNOMELT* low pressure molding materials provide a fast, non-damaging solution for electronic encapsulation; and a wide variety of potting material chemistries including silicone, epoxy and polyurethane offer processing flexibility and maximum protection. With environmental consciousness as a priority, Henkel's materials development efforts focus on formulation of halogen-free, SVHC-free, solvent-free and low-VOC products.



POTTING

Product Name	Alternate Cure	Viscosity cP at 25°C	Pot Life at 25°C	Hardness	Thermal Conductivity W/m·k	Temperature Range	Shelf Life
Polyurethane							
LOCTITE STYCAST US 2350	2 hr. at 60°C	2,400	45 min.	85A	0.510	-65°C – 125°C	1 year
LOCTITE STYCAST US 2651	16 hr. at 25°C	1,000	10 min.	15A	0.180	-65°C – 125°C	1 year
Epoxy							
LOCTITE STYCAST ES 4512	36 – 48 at 25°C (Recommended Cure) 3 hr. at 60°C (Alternate cure)	19,000	200 g mass 60 min.	88D	0.644	-40°C – 125°C	1 year
LOCTITE STYCAST 2850FT / CAT 11	8 – 16 hr. at 80°C 2 – 4 hr. at 100°C 30 – 60 min. at 120°C	64,000	100 g mass at 25°C for 1 hr.	96D	1.280	-55°C – 125°C	1 year
LOCTITE STYCAST 2850FT / CAT 23lv	16 – 24 hr. at 25°C 4 – 6 hr. at 25°C 2 – 4 hr. at 65°C	5,600	100 g mass at 25°C for 1 hr.	92D	1.100	65°C – 105°C	1 year
LOCTITE STYCAST ES 2505 / CAT 11	4 hr. at 100°C (w/CAT 11)	5,000	> 4 hr.	72D	0.820	-55°C – 155°C	1 year
LOCTITE STYCAST EE 4215 / HD 0243	2 hr. at 80°C + 2hr. at 150°C	20,000 to 30,000	7 – 8 hr.	80 – 85D	0.480	-40°C – 180°C	6 months

Product Name	Description	Color	Cure Schedule	Application	Storage Temperature	Shelf Life
Silicone						
LOCTITE STYCAST 5954	Two-part, highly filled, addition-cure, thermally conductive silicone. High thermal conductivity. Noncorrosive.	Red	4 hr. at 65°C	Encapsulant	25°C	6 months at 25°C
LOCTITE STYCAST 4350/CAT 50-2	RTV condensation cure, silicone rubber potting compound is designed for potting and encapsulation	Red	16 – 24 hr. at 25 °C 2 – 4 hr. at 65°C	Potting or Encapsulant	25°C	152 days at 25°C

CONFORMAL COATING

Product Name	Description	Key Attributes	Viscosity at 25°C	Operating Temperature (°C)	Volume Resistivity (Ω·cm)	Color	Recommended Cure
LOCTITE STYCAST PC 40-UMF	Urethane conformal coating	• One component • VOC-free • Conforms to IPC-CC-830 requirements	250	-40 – 135	3.50×10^{16}	Clear	10 sec. at 300 – 600 mW/cm² + 2 – 3 days at atmospheric moisture
LOCTITE STYCAST PC 62	Rapid drying acrylic for circuit board protection applications	• Fluorescent under UV light • Provides environmental and mechanical protection • Toluene-free alternative • Superior toughness and abrasion resistance • Easily removable with soldering iron or suitable solvent	50	-40 – 125	1.04×10^{16}	Colorless	24 hr. at 25°C

CONFORMAL COATING – CONTINUED

Product Name	Description	Key Attributes	Viscosity at 25°C	Operating Temperature (°C)	Volume Resistivity (Ω·cm)	Color	Recommended Cure
LOCTITE SI 5293	Silicone conformal coating	• One component • Exhibits positive fluorescence under UV light • Repairable • Solvent-free • Designed for severe temperature environments and high-reliability automotive applications	400 – 800	-40 – 200	1.00×10^{14}	Transparent amber to yellow	20 – 40 sec. per side at 70 mW/cm^2 + 72 hr. at 50% relative humidity
LOCTITE STYCAST UV 7993	Urethane conformal coating	• One component • Solvent-free • Good moisture resistance • Excellent chemical resistance	120	-40 – 130	2.20×10^{16}	Translucent Yellow	5 sec. at 400 – 700 mW/cm^2 + 100 hr. at 50% relative humidity

LOW PRESSURE MOLDING

Product Name	Description	Key Attributes	Color	Operating Temperature (°C)	Shore Hardness
TECHNOMELT PA 646	Moldable polyamide	• Ideal for applications where strength and hardness are needed • Good adhesion for high-temperature applications	Black	-40 – 125°C	92A
TECHNOMELT PA 2692	Moldable polyamide	• Suitable for high-humidity applications • Formulated for very low water vapor transmission	Amber	-40 – 150°C	88A
TECHNOMELT PA 6481	Moldable polyamide	• Used for molding applications • This material is formulated with improved UV stability • Especially suitable for outdoor applications.	Black	-40 – 130°C	93A

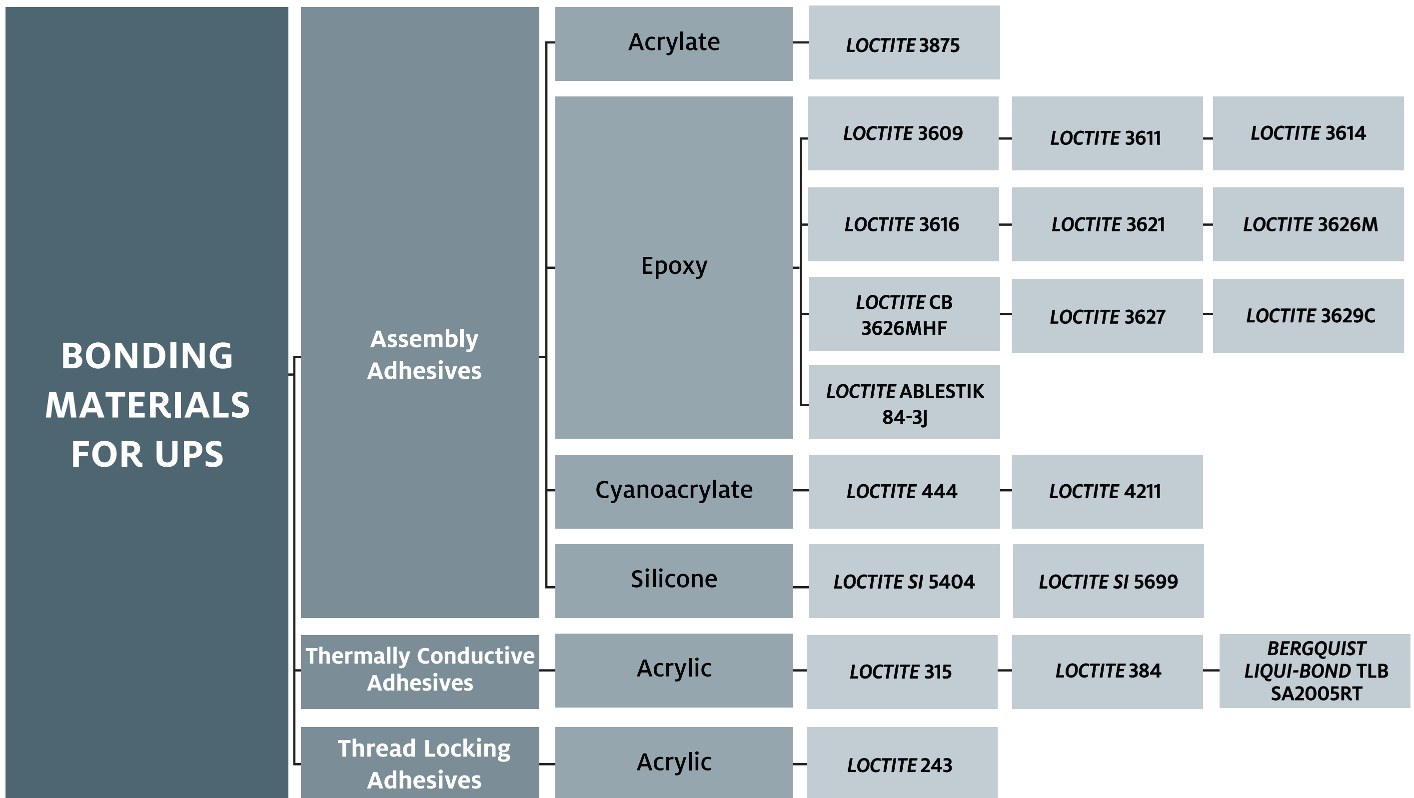
UNDERFILLS

CORNERBOND Underfills

Product Name	Description	Key Attributes	Viscosity at 25°C (cP)	Glass Transition Temperature, T_g (°C)	Coefficient of Thermal Expansion, CTE (ppm/°C)		Pot Life	Recommended Cure
					Below T_g	Above T_g		
LOCTITE 3508NH	Reworkable cornerfill designed to cure during pb-free reflow while allowing self-alignment of IC components	• One component • Reflow curable • Eliminates post-reflow dispense and cure steps • Reworkable • Halogen-free	70,000	118	65	175	30 days at 25 °C	Cure during Pb-free solder reflow profile at 245°C

STREAMLINED STRUCTURAL INTEGRITY

LOCTITE® adhesives facilitate lower processing costs and reduced device footprints by providing reliable, strong bonding solutions that eliminate manufacturing steps and do away with mechanical hardware such as screws or clips. Our portfolio of staking adhesives ensure that large and heavy components will stay in place during manufacturing and throughout product life by reducing strain on interconnects. A multitude of adhesive and sealant solutions offer adaptable and customizable bonding technologies to meet customer process and product requirements. From *LOCTITE CHIPBONDER* and *LOCTITE ECCOBOND* adhesives for mixed- and double-sided SMT applications to BERGQUIST® *BOND-PLY* materials for structural adhesion of components and PCBs to heat sinks, Henkel's range of bonding solutions ensures all parts are securely connected for long-lasting product integrity and processes are optimized for maximum efficiency.



ASSEMBLY ADHESIVES

Product Name	Description	Chemistry	Color	Cure Speed	Application	Storage Temp
Acrylate						
LOCTITE 3875	Bead-on-bead, thermally conductive adhesive is designed to thermally couple and structurally bond heats sinks to heat dissipating electronic components	Acrylate	Part A - Pale Yellow Part B - Pale Blue	24 – 72 hr. at 23°C , 50% RH	Thermal management	Optimal Storage (PART A): -20 °C Alternative Storage (PART A): 2 – 8 °C Optimal Storage (PART B): 2 – 8 °C
Epoxy						
LOCTITE 3609	Designed for the bonding of surface mounted devices to printed circuit boards prior to wave soldering	Epoxy	Dark, red viscous gel	90 – 120 sec. at 150°C	Surface mount adhesive	2 – 8°C
LOCTITE 3611	Designed for bonding of surface mounted devices to printed circuit boards prior to wave soldering	Epoxy	Red viscous gel	90 – 120 sec. at 150°C	Surface mount adhesive	2 – 8°C
LOCTITE 3614	Designed for the bonding of surface mounted devices to printed circuit boards prior to wave soldering	Epoxy	Red viscous gel	90 – 120 sec. at 150°C	Surface mount adhesive	2 – 8°C
LOCTITE 3616	Designed for the bonding of surface mounted devices to printed circuit boards prior to wave soldering	Epoxy	Red viscous pastel	90 – 120 sec. at 150°C	Surface mount adhesive	2 – 8°C
LOCTITE 3621	Designed for the bonding of surface mounted devices to printed circuit boards prior to wave soldering	Epoxy	Red viscous gel	90 – 120 sec. at 150°C	Surface mount adhesive	2 – 8°C
LOCTITE 3626M	Designed for bonding of surface mounted devices to printed circuit boards prior to wave soldering	Epoxy	Red gel-like material	minimum 120 sec. at 130°C or 90 sec. at 150°C at the bondline	Surface mount adhesive	2 – 8°C
LOCTITE CB 3626MHF	Designed for bonding of surface mounted devices to printed circuit boards prior to wave soldering	Epoxy	Red gel-like material	30 min. at 150°C	Component assembly, NCA, surface mount adhesive	2 – 8°C

ASSEMBLY ADHESIVES – CONTINUED

Product Name	Description	Chemistry	Color	Cure Speed	Application	Storage Temp
Epoxy						
LOCTITE 3627	Designed for the bonding of surface mounted devices to printed circuit boards prior to wave soldering	Epoxy	Red gel-like material	90 – 120 sec. at 150°C	Surface mount adhesive	2 – 8°C
LOCTITE 3629C	Epoxy is formulated for bonding surface mounted devices to printed circuit boards prior to wave soldering	Epoxy	Red	150 sec. at 120°C or 90 sec. at 150°C at the bondline	Surface mount adhesive	2 – 8°C
LOCTITE ABLESTIK 84-3J	Adhesive is designed for die attach applications as well as component attach	Epoxy	Blue	1 hr. at 150°C 2 hr. at 125°C	Die Attach	-40 °C

Product Name	Description	Chemistry	Color	Cure Speed	Viscosity cP at 25°C
Cyanoacrylate					
LOCTITE 444	Single part, fast curing medium viscosity cyanoacrylate adhesive formulated for electronics applications	Ethyl Cyanoacrylate	Clear	30 sec. fixture / 24 hr. full	700
LOCTITE 4211	Single part, fast curing high viscosity cyanoacrylate adhesive	Ethyl Cyanoacrylate	Black	60 sec. fixture / 24 hr. full	2,500

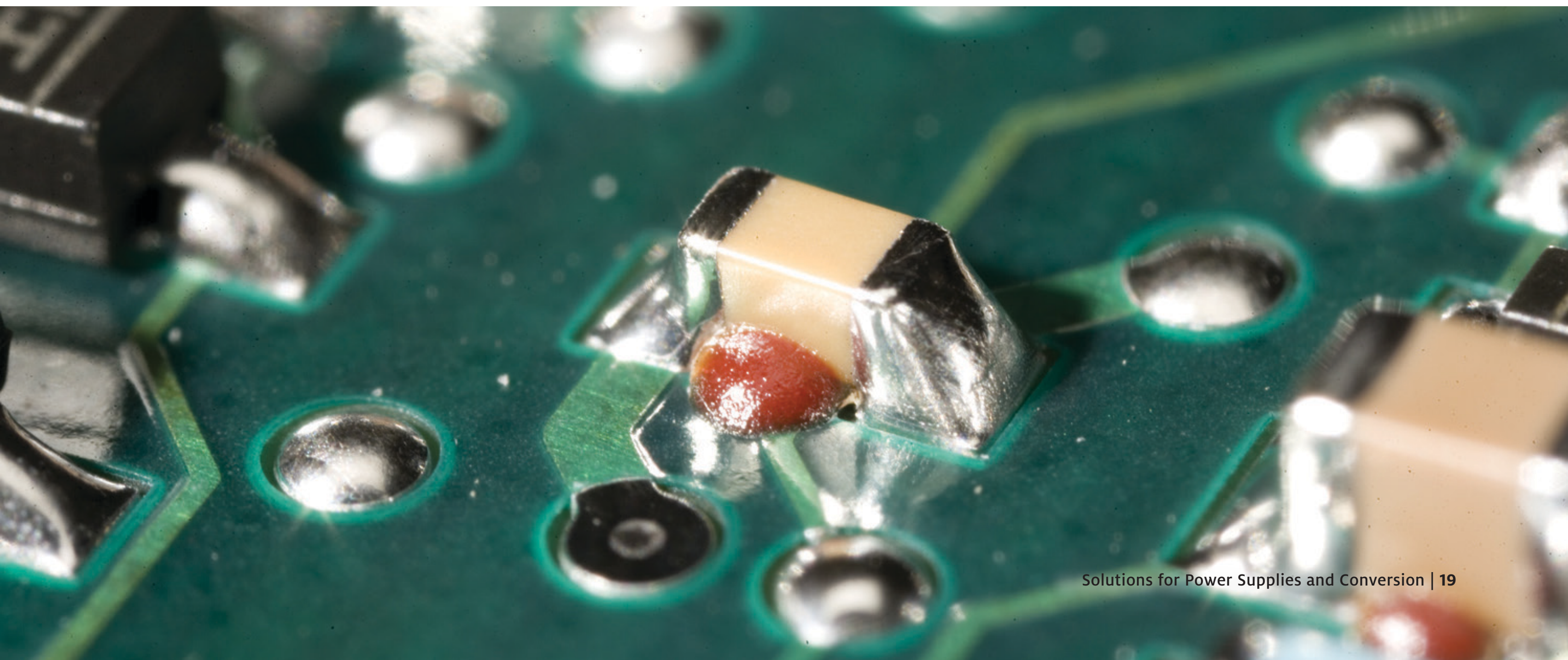
Product Name	Description	Chemistry	Color	Cure Speed	Application	Storage Temp
Silicone						
LOCTITE SI 5404	Designed to bond metallic heat sinks, ceramic chips and circuit board substrates	Silicone	White to gray pastel	1 hr. at 150 °C	Bonding	2 – 8°C
LOCTITE SI 5699	Designed primarily for flange sealing with excellent oil resistance on rigid flange sealing for example on transmissions and cast metal housings.	Oxime silicone	Grey Paste	Cured for 1 week at 25 °C / 50±5 % RH	Sealing	8 – 21°C

THERMALLY CONDUCTIVE ADHESIVES

Product Name	Description	CURE TYPE	Thermal Conductivity (W/m·k)	Volume Resistivity (Ω-m)	Cure Schedule	Shelf Life
Acrylic						
LOCTITE 315	A self-shimming, thermally-conductive, one-part adhesive for bonding electrical components to heat sinks with an insulating gap	Activator (7387)	0.81	1.3×10^{12}	24 – 72 hr. at 20°C	9 months at 5°C
LOCTITE 384	Repairable, room-temperature, curing adhesive utilized for parts subject to disassembly	Activator (7387)	0.76	1.3×10^{12}	24 – 72 hr. at 20°C	9 months at 5°C
BERGQUIST® *LIQUI-BOND* TLB SA2005RT	A two-part, high performance silicone thermal adhesive	Two-Part	2.00	1.0×10^{13}	7 days at 25°C or 1 hr. at 85°C	6 months at 5 – 25°C

THREAD LOCKING ADHESIVES

Product Name	Description	Chemistry	Color	Cure Speed	Viscosity cP at 25°C
Acrylic					
LOCTITE 243	General purpose threadlocker of medium bond strength. This threadlocker secures and seal bolts, nuts and studs to prevent loosening due to vibration.	Acrylic	Blue	24 hr.	1,300 – 3,000



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