

LOCTITE

FINGERPRINT SENSORS



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INTRODUCTION

As confidential transaction capabilities become integrated into mobile devices, security and reliability play an even more critical role in device development. The rollout of point-of-sale payment options on smartphones has accelerated the need for unique customer identification via fingerprint recognition. To facilitate this functionality, fingerprint sensors are now an integral part of the latest-generation mobile devices, and the market for these sensors is growing exponentially.

As a market leader in conductive and non-conductive adhesives and inks, Henkel is the ideal partner for fingerprint sensor manufacturers, delivering a full portfolio of material solutions for robust sensor development and production.





PRODUCT PORTFOLIO

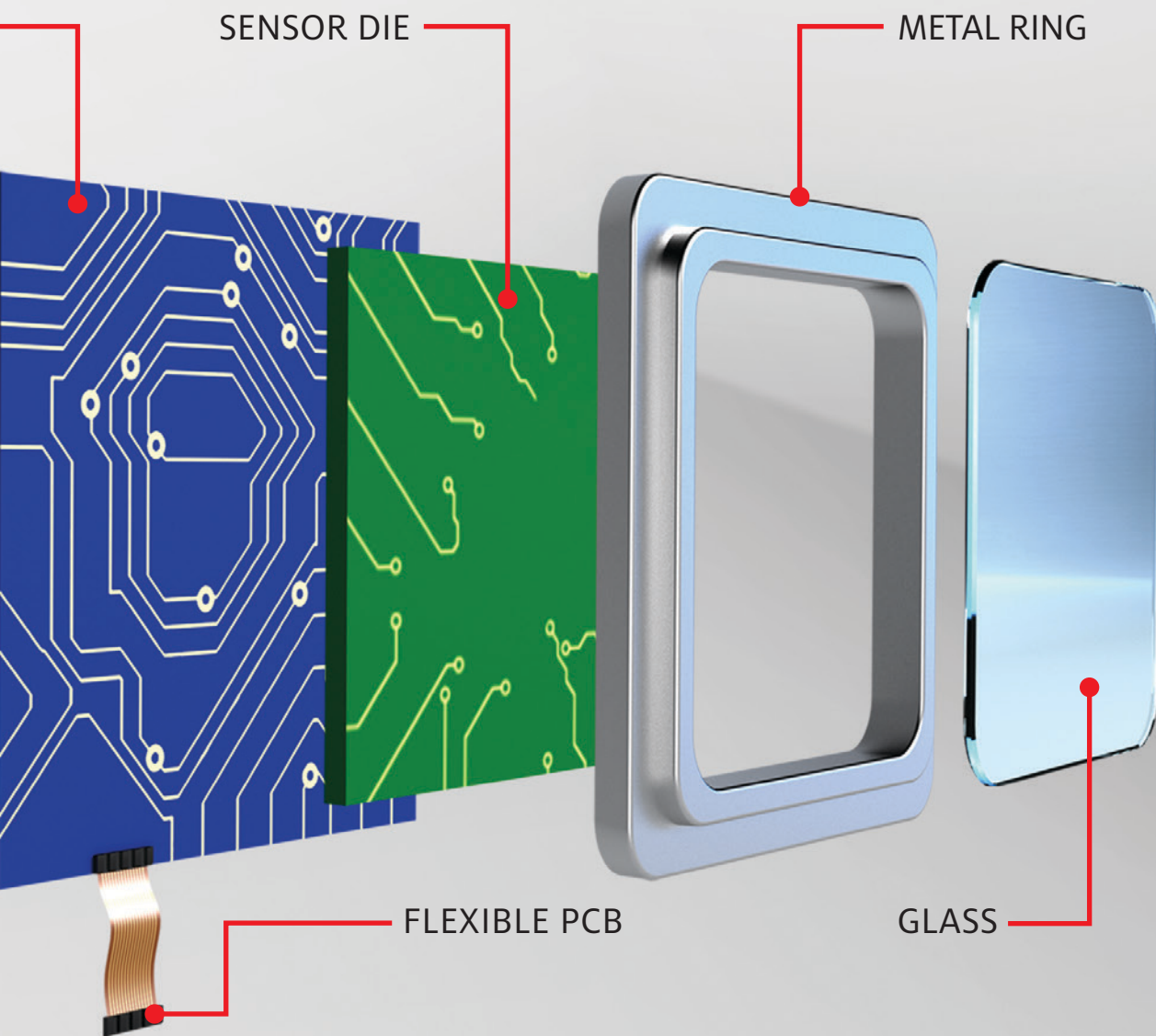
ADHESIVES FOR FINGERPRINT SENSORS	GLASS TO IC ATTACH	LOCTITE 3220	
		LOCTITE ABLESTIK ABP 6892	
		LOCTITE ABLESTIK QMI536NB	
		LOCTITE ABLESTIK ATB 120U	
	ELECTRICALLY CONDUCTIVE ADHESIVES	LOCTITE ABLESTIK 2030SC	
		LOCTITE ABLESTIK ABP 2032S	
		LOCTITE ABLESTIK CE 3103WLV	
	SENSOR DIE ATTACH MATERIALS	PASTE	LOCTITE ABLESTIK 2025J
			LOCTITE ABLESTIK 2035SC
		FILM	LOCTITE ABLESTIK ATB F125E
	UNDERFILLS	LOCTITE ECCOBOND FP4547	
		LOCTITE ECCOBOND UF 3808	
		LOCTITE ECCOBOND UF 8830	
	WIREBOND SEALING / ENCAPSULANTS	LOCTITE ABLESTIK QMI536NB	
		LOCTITE ECCOBOND FP4654	
		LOCTITE ECCOBOND UF 3811	
	REINFORCEMENT OF FPC	LOCTITE 3217	
		LOCTITE 3703	
		LOCTITE ECCOBOND XE 1218	
	RING ATTACH MATERIALS	LOCTITE ECCOBOND DS 3318LVT	
		LOCTITE PC 40-UMF	
	HARD COATING MATERIALS	LOCTITE ABLESTIK 8006NSB	
		LOCTITE ECCOBOND LM 8895	

ADHESIVES IN ACTION



SUBSTRATE

CONTROLLER DIE

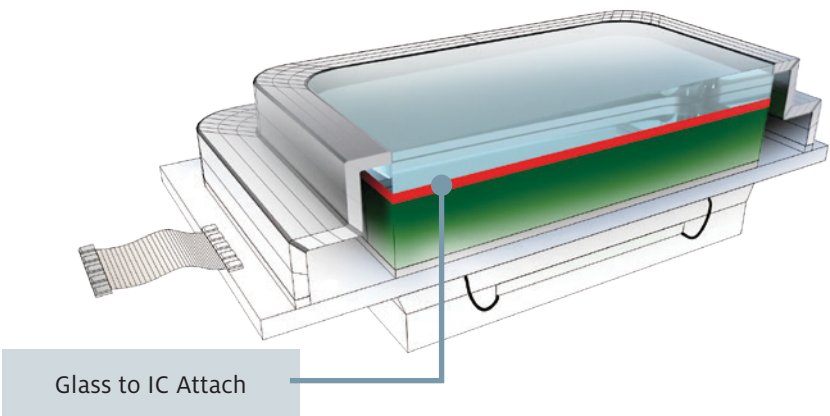


GLASS TO IC ATTACH

ADHESIVE TO ATTACH GLASS TO SENSOR DIE

Key Material Properties

- High adhesion
- Low-temperature cure
- Low-moisture absorption
- Thin bond line control



Glass to IC Attach			
LOCTITE 3220	LOCTITE ABLESTIK ABP 6892	LOCTITE ABLESTIK QMI536NB	LOCTITE ABLESTIK ATB 120U

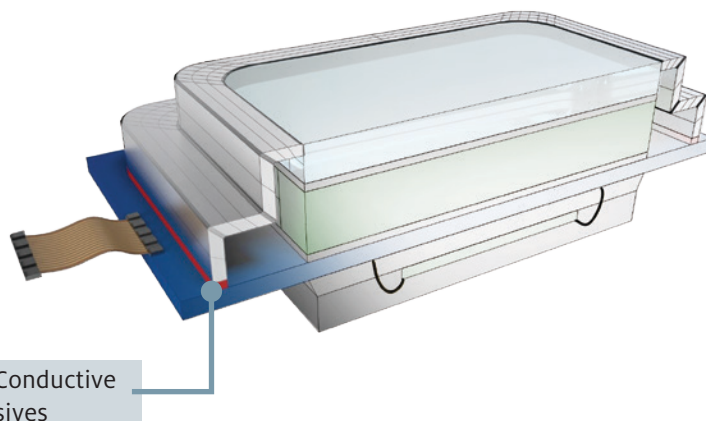
Properties		Units	LOCTITE 3220	LOCTITE ABLESTIK ABP 6892	LOCTITE ABLESTIK QMI536NB	LOCTITE ABLESTIK ATB 120U
Appearance			Black	Clear	White	Transparent
Cure Type			Heat	Heat	Heat	Heat
Viscosity		mPa.s	2,500	4,100	10,000	-
Glass Transition Temperature (T _g)		°C	26	-24.6	-30	75
Modulus @ 25°C		N / mm ²	550	176	300	875
CTE	below	ppm / °C	61	111	80	62
	above		171	191	150	238
Recommended Cure			10 min. @ 80°C	60 min. @ 80°C	30 min. @ 150°C	30 min. @ 120°C
Alternative Cure			-	30 min. @ 130°C	60 min. @ 80°C	30 min. @ 90°C

ELECTRICALLY CONDUCTIVE ADHESIVES

SOLDER ALTERNATIVE TO ATTACH METAL RING TO METAL PLATE

Key Material Properties

- Good electrical connection
- Low-temperature cure
- Fast cure
- High adhesion



Electrically Conductive Adhesives

LOCTITE ABLESTIK 2030SC

LOCTITE ABLESTIK ABP 2032S

LOCTITE ECCOBOND CE 3103WLV

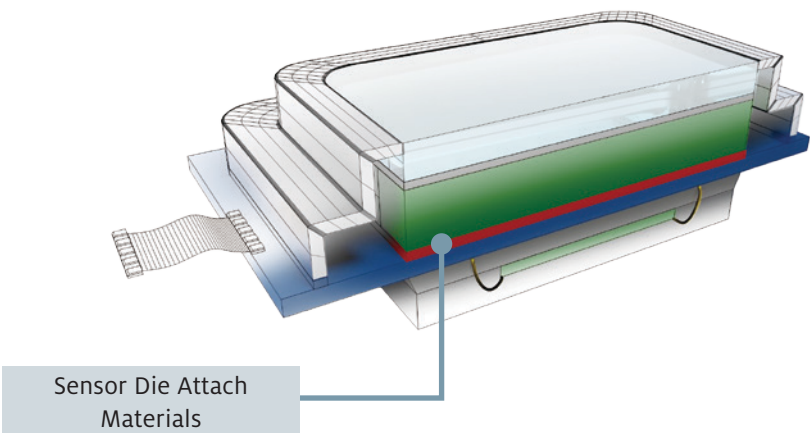
Properties		Units	LOCTITE ABLESTIK 2030SC	LOCTITE ABLESTIK ABP 2032S	LOCTITE ECCOBOND CE 3103WLV
Appearance			Silver	Silver	Silver
Viscosity (Brookfield CP51 / 5 rpm)		mPa.s	11,600	11,000	15,000
Glass Transition Temperature (T_g)		°C	29	110	114
Modulus @ 25°C		N / mm ²	3,300	4,600	4,500
CTE	below	ppm / °C	45	54	45
	above		130	162	225
Recommended Cure			90 sec. @ 110°C	60 min. @ 80°C	10 min. @ 120°C
Alternative Cure			30 min. @ 80°C	-	110 min. @ 80°C

SENSOR DIE ATTACH MATERIALS

SENSOR DIE ATTACH TO FR4, CERAMIC OR PCB

Key Material Properties

- High adhesion
- Low-temperature cure
- Low warpage



Sensor Die Attach Materials		
Paste		Film
LOCTITE ABLESTIK 2025J	LOCTITE ABLESTIK 2035SC	LOCTITE ABLESTIK ATB F125E

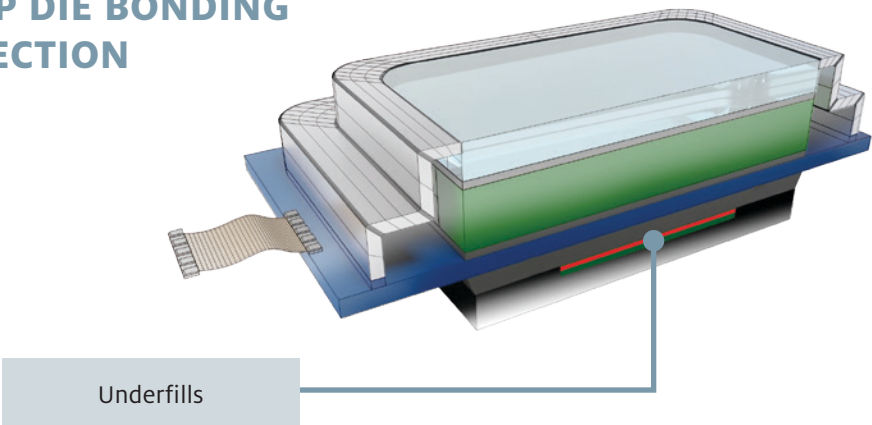
Properties		Units	LOCTITE ABLESTIK 2025J	LOCTITE ABLESTIK 2035SC	LOCTITE ABLESTIK ATB F125E
Type			Paste	Paste	Film
Viscosity (Brookfield CP51 / 5 rpm)		mPa.s	12,900	11,000	-
Thickness		µm	-	-	25
Glass Transition Temperature (T _g)		°C	22	120	215
Modulus @ 25°C		N / mm ²	320	2,500	5,256
CTE	below	ppm / °C	45	54	37
	above		135	128	83
Recommended Cure			30 min. ramp to 175°C + 15 min. @ 175°C	90 sec. @ 110°C	30 min. ramp + 1 hr. @ 130°C
Alternative Cure			-	30 min. @ 80°C	-

UNDERFILLS

REINFORCEMENT OF FLIP-CHIP DIE BONDING AND RIGID SUBSTRATE CONNECTION

Key Material Properties

- Good flow ability
- Flexible product to accommodate stress
- High adhesion
- High reliability



Underfills		
LOCTITE ECCOBOND FP4547	LOCTITE ECCOBOND UF 3808	LOCTITE ECCOBOND UF 8830

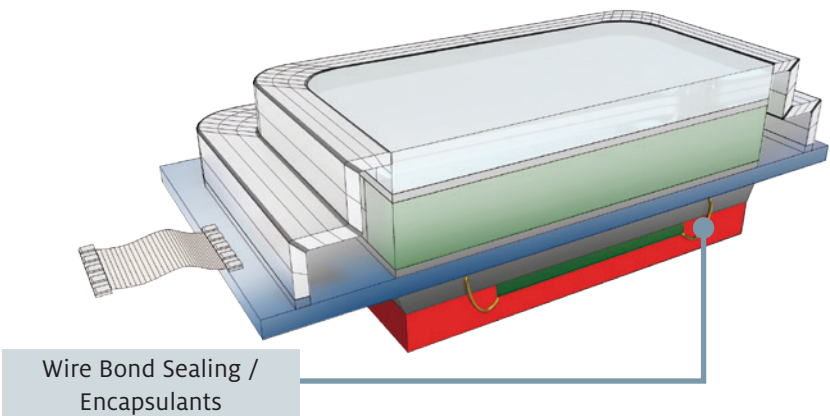
Properties		Units	LOCTITE ECCOBOND FP4547	LOCTITE ECCOBOND UF 3808	LOCTITE ECCOBOND UF 8830
Viscosity		mPa.s	18,000	360	12,000
Glass Transition Temperature (T _g)		°C	135	113	92
Modulus @ 25°C		N / mm ²	11,000	2,610	5,800
CTE	below	ppm / °C	21	55	31
	above		80	171	120
Recommended Cure			30 min. @ 165°C	≥ 8 min. @ 130°C	2 hr. @ 150°C

WIRE BOND SEALING / ENCAPSULANTS

PROTECTIVE ADHESIVE FOR WIRE BONDING

Key Material Properties

- Low-temperature cure
- Suitable modulus
- Pass reliability



Wire Bond Sealing / Encapsulants		
LOCTITE ABLESTIK QM1536NB	LOCTITE ECCOBOND FP4654	LOCTITE ECCOBOND UF 3811

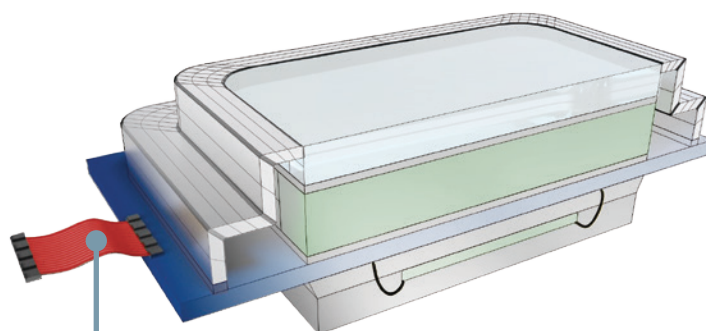
Properties		Units	LOCTITE ABLESTIK QM1536NB	LOCTITE ECCOBOND FP4654	LOCTITE ECCOBOND UF 3811
Viscosity (Brookfield CP51 / 5 rpm)		mPa.s	10,000	32,000	354
Glass Transition Temperature (T _g)		°C	-30	146	124
Modulus @ 25°C		N / mm ²	300	16,900	2,445
CTE	below	ppm / °C	80	13	61
	above		150	53	190
Recommended Cure			30 min. @ 150°C	90 min. @ 165°C	60 min. @ 100°C

REINFORCEMENT OF FPC

REINFORCEMENT OF FLEXIBLE PCB AND RIGID SUBSTRATE CONNECTION

Key Material Properties

- Flexible product to accommodate stress
- High adhesion



Reinforcement of FPC

Reinforcement of FPC

LOCTITE 3217

LOCTITE 3703

LOCTITE ECCOBOND XE 1218

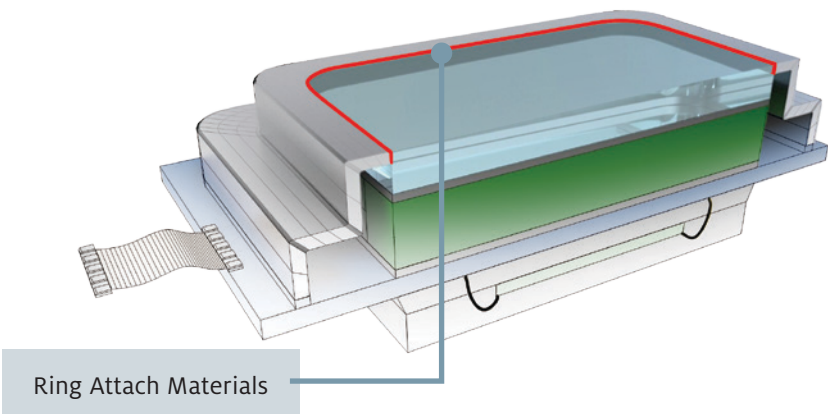
Properties	Units	LOCTITE 3217	LOCTITE 3703	LOCTITE ECCOBOND XE 1218
Appearance		Amber	White	Black
Cure Type		Dual Cure	UV	Heat Cure
Chemical Type		Acrylate Epoxy	Acrylate Urethane	Epoxy
Viscosity	mPa.s	37,600 Cone PK @ 20 S ⁻¹	18,000 Brookfield @ 20 rpm	1,118 Casson vis @ 25°C
Modulus @ RT	N / mm ²	330	490	400
Recommended Cure		1 sec. @ 100 mW / cm ² +30 min. @ 60°C or 20 min. @ 80°C	80 sec. @ 30 mW / cm ²	35 min. @ 90°C

RING ATTACH MATERIALS

RING ATTACH TO GLASS

Key Material Properties

- Good adhesion
- UV or low-temperature cure
- Good gap fill capability
- Low bleed



Ring Attach Materials	
LOCTITE ECCOBOND DS 3318LVT	LOCTITE PC 40-UMF

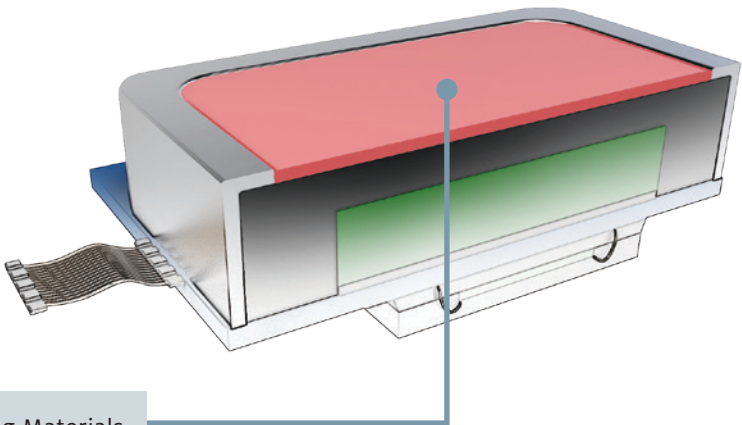
Properties	Units	LOCTITE ECCOBOND DS 3318LVT	LOCTITE PC 40-UMF
Appearance		Clear	Clear
Viscosity	mPa.s	142	250
Glass Transition Temperature (T _g)	°C	96	94
Modulus @ RT	N / mm ²	408	1,493
Recommended Cure		15 sec. @ 100 mW / cm ²	10 sec. @ 600 mW / cm ² + RT cure

HARD COATING MATERIALS

REPLACE GLASS / HARD FILM

Key Material Properties

- Hard hardness > 5H
- Water-resistant
- Passes sweat or salt test
- Gloss finish
- Void-free
- Scratch-resistant
- Chemical-resistant
- UV-light resistant



Hard Coating Materials

Hard Coating Materials	
LOCTITE ABLESTIK 8006NSB	LOCTITE ECCOBOND LM 8895

Properties		Units	LOCTITE ABLESTIK 8006NSB	LOCTITE ECCOBOND LM 8895
Viscosity Brookfield @ 20 rpm		cP	52,000	12,000
Glass Transition Temperature (T _g)		°C	158	29
CTE	below	ppm / °C	45	26
	above		134	231
Modulus @ RT		N / mm ²	4,376	4,194
Recommended Cure			2 hr. @ 160°C / 30 min. @ 175°C	60 min. @ 150°C

AMERICAS

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