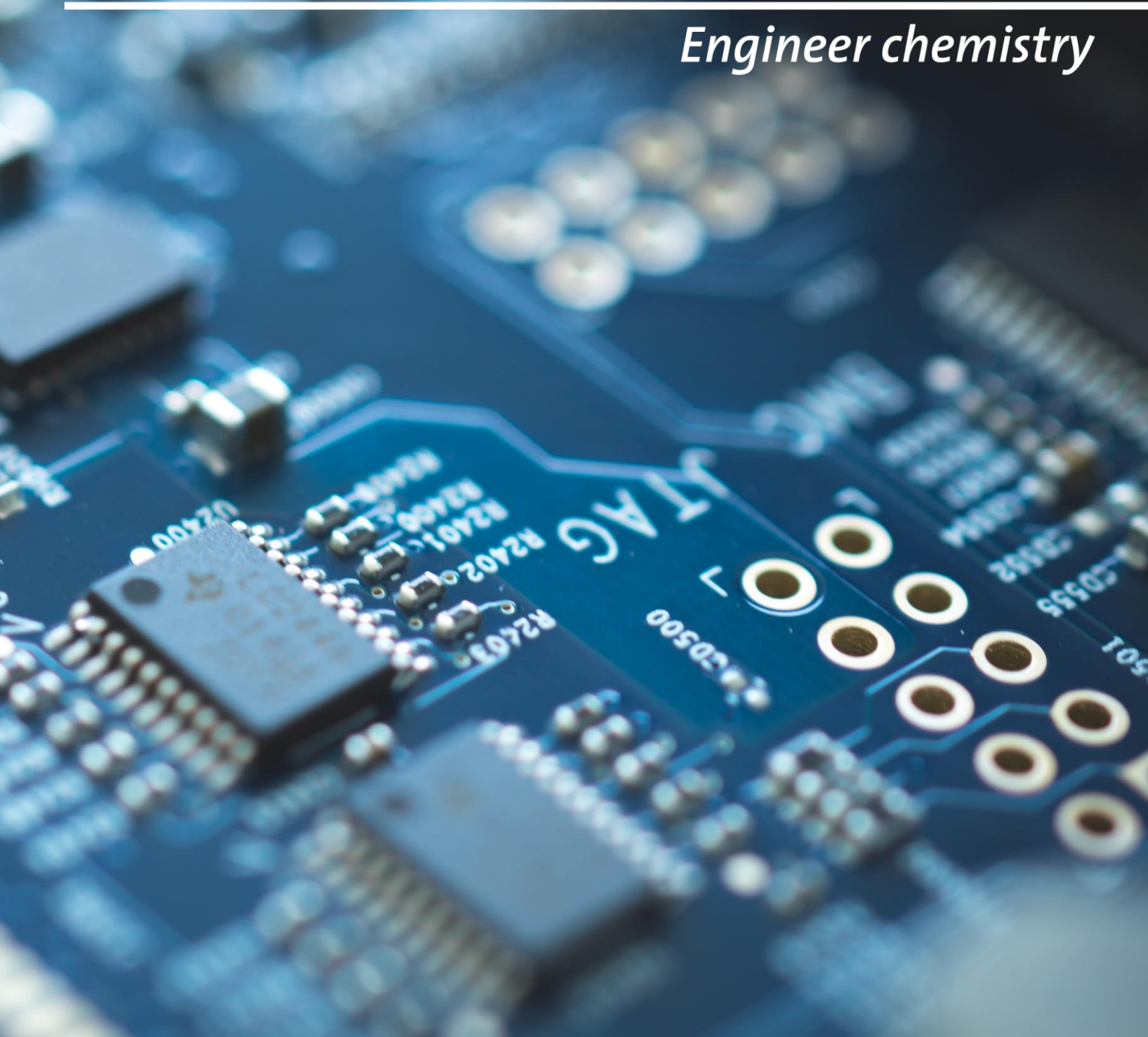


BODO MÖLLER CHEMIE

Engineer chemistry



Circuit board protection

Conformal Coatings

Conformal coatings are used to protect electronic components from environmental factors such as moisture, dust, chemicals and temperature fluctuations. Henkel's Conformal Coatings protect printed circuit boards and substrates from thermal shock, moisture, corrosive liquids and other adverse environmental conditions, ensuring long product life cycles for exposed applications in the marine, automotive, medical and consumer electronics markets. With exceptionally fast cure capability and 100 percent solvent-free formulations, Henkel's printed circuit board protective coatings offer fast processing and are environmentally friendly.

Product line

The LOCTITE® Conformal Coating product range includes a number of different chemical systems and application options. These include sprayable products for PCB applications, which are applied using aerosol containers and provide efficient and cost-effective PCB protection. In addition, the conformal coatings can of course also be applied by dipping or brushing.

Bodo Möller Chemie recommends:

- **LOCTITE® STYCAST PC 88**
(fast drying, toluene free)
- **LOCTITE® 5293**
(VOC conform, high temperature resistance)
- **LOCTITE® STYCAST UV7993**
(100% VOC-free, UV-curable)

Conformal Coatings

Acrylic

- High resistance to moisture and chemicals
- Fast drying
- Free from chlorinated solvents and other chlorofluorocarbons

Polyurethane

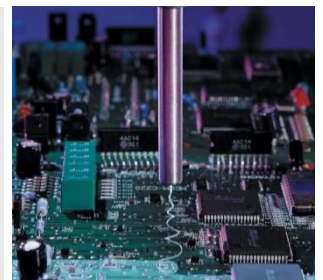
- Solvent-free one-component coatings
- Effective against moisture and corrosion
- Cures at room temperature or under UV light
- Excellent for heavy duty applications

Silicone

- For sensitive printed circuit board components exposed to high loads
- Solvent-free coatings
- UV light curing
- 100 % solids
- Available as single component materials

Benefits of Henkel Conformal Coatings:

- Solvent free system
- Use at high temperatures and adverse environmental conditions
- Various curing options (UV, temperature, humidity)
- Complete protection against chemical and corrosive agents



Process flow

PCB cleaning

Masking

Coating

Cure

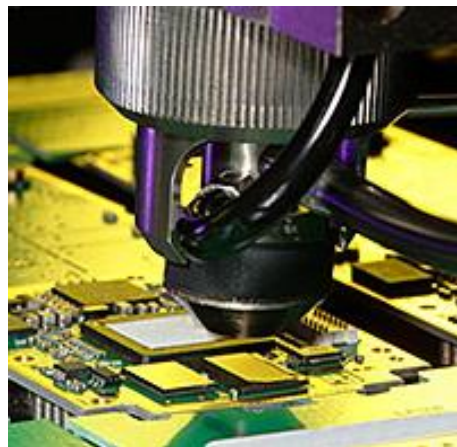
De-Masking/
Rework

Testing

Underfill-Materials

Underfill materials are used to mechanically reinforce the solder joints that connect an electronic component to a printed circuit board. The material reinforces the component by capillary action on the board. This helps prevent mechanical fatigue and extends the life of the assembly. Among other applications, underfills are used to manufacture sensitive electronic housings for the automotive and electronics industries.

Henkel Adhesive Technologies has developed a range of underfill materials, each offering a specific property requirement. These materials have been specifically developed to provide manufacturers with a reliable and high quality product. The use of Henkel underfill solutions in the manufacture of CSPs, BGAs, WLCSPs and other components can improve the performance and lifetime of a manufacturer's products

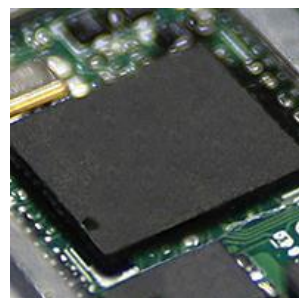


Underfill segments	Benefits
Underfill CSP	Increasing mechanical strength and ensuring that CSPs meet mechanical impact and bending requirements.
Underfill BGA	Strengthening of solder joints, increasing resistance to vibration and thermal shock.
Underfill WLCSP	Improve impact behavior, increase thermal cycle conductivity of WLCSPs.
Underfill LGA	Increase mechanical strength and reliability
Underfill Partial	Improved reinforcement on the part of corner or edge bond underfills

Underfills	Underfill, reworkable	LOCTITE® ECCOBOND UF3811 / UF3831	Relatively high Tg and improved TC under service conditions p to 100-120°C.
	Underfill, non-reworkable	LOCTITE® ECCOBOND E1216M	Excellent flowability with lower CTE and higher Tg than recyclable UF. Without reportable REACH SVHCs and not CMR classified
	Underfill, not reworkable, extremely resistant	LOCTITE® ECCOBOND FP4531/E1172A / UF1173	Fast cure, very high Tg and very low CTE for highest thermal reliability

Benefits of Henkel Underfill materials:

- High curing speed
- Good flowability
- High reliability
- Good reworkability
- Excellent SIR performance



Chip-on-Board- encapsulants (COB)

Henkel Adhesive Technologies' LOCTITE® and LOCTITE® ECCOBOND COB encapsulants are primarily used to provide protection against external influences and to increase the mechanical strength of wired components.

Henkel Adhesive Technologies' high-purity encapsulants provide unmatched performance for a wide range of products, including transistors, system-in-package (SIP) devices, ASICs and chip-on-board applications. Cycle time and cost can be reduced by using LOCTITE® ECCOBOND Glob Tops. These materials for chip-on-board applications are designed to cure quickly and can be easily implemented in high-speed manufacturing operations.

Available systems:

Resins	Properties
Epoxy	<ul style="list-style-type: none">▪ Excellent mechanical, thermal and chemical stability▪ Rigid to flexible systems possible▪ Slow curing
Acrylate	<ul style="list-style-type: none">▪ For fast curing in high throughput applications▪ Rigid to flexible systems possible▪ Limited thermal stability
Silicone	<ul style="list-style-type: none">▪ High thermal stability and flexibility▪ Low adhesion force



Bodo Möller Chemie recommends:

DAM/FILL

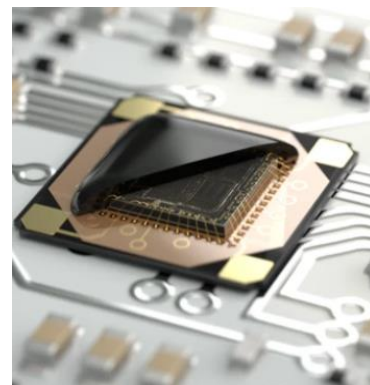
- **ECCOBOND 7010C**
DAM/FILL (CMR/SVHC-free)

Glob Top

- **ECCOBOND FP4460**
(thermally curing)
- **ECCOBOND UV 9052**
(UV curing)

Benefits of Henkel COB encapsulations:

- Protection of particularly sensitive components against scratching or chemical exposure
- CMR/SVHC-free products
- Excellent mechanical and chemical stability
- Good adhesion
- Fast cure / snap cure systems
- Material mechanics from flexible to hard



Have we piqued your interest? Our specialist will be happy to advise you:

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