

### Solutions for printed circuit boards

Innovative adhesives and sealants for effective production

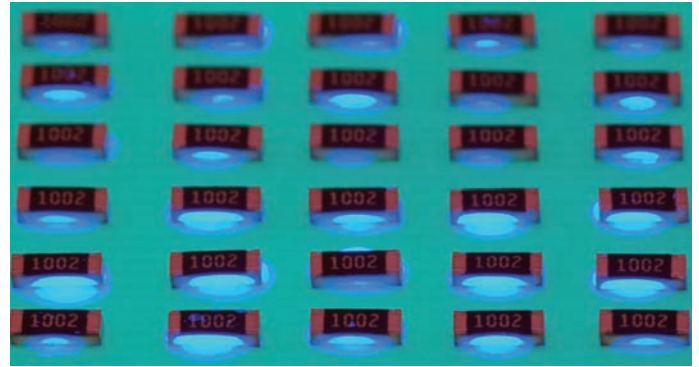
- Flip chip underfills
- Glob top sealing compounds
- Attaching components on PCBs
- Conformal coatings
- UV and/or thermally curing adhesives
- Leading UV curing equipment
- Complete solutions from a single source

## Flip Chip Underfills

Underfills are used for mechanical stabilization of flip chips. This is especially important when soldering ball grid array (BGA) chips.

| Adhesives      | Viscosity [mPas] | Coefficient of linear expansion [ppm/K] below Tg | Base  | Curing*    |
|----------------|------------------|--|-------|------------|
| Vitralit® 2655 | 200 – 400        | 94,0   | Epoxy | UV/thermal |
| Vitralit® 2667 | 3,000 – 5,000    | 27,0   | Epoxy | UV/thermal |

\*UV = 320 – 390 nm



## Glob Top Sealing Compounds

Sealing compounds and encapsulants based on epoxy resin are often used in electronics as so-called glob tops to protect electronic components. They protect components from

moisture, dust, dirt and solvents. Glob tops also protect sensitive components from mechanical strain and scratching.

### Opaque adhesives

| Adhesives         | Viscosity [mPas]  | Tg DSC [°C] | Curing*    | Temp. Resist. [°C] | Properties  |
|-------------------|-------------------|-------------|------------|--------------------|---|
| Vitralit® 1600 LV | 5,000 – 6,000     | 150         | UV/thermal | -40 to +180        | Suited for larger dies, high chemical resistance, high Tg, very high stability                    |
| Vitralit® 1650    | 6,000 – 9,000     | 30 – 40     | UV         | -40 to +180        | Suited for smaller dies, flexible, low water absorption, particle size max. 150 µm                |
| Vitralit® 1657    | 120,000 – 130,000 | 20 – 40     | UV         | -40 to +180        | Mounting larger components, low ion content, contains quartz fillers, thixotropic, flexible       |
| Vitralit® 1671    | 250,000 – 300,000 | 75 – 95     | UV/thermal | -40 to +180        | Stable dam compound, wet-on-wet application with filler material, ion-free                        |
| Vitralit® 1680    | 6,000 – 9,000     | 35 – 45     | UV         | -40 to +180        | Covering of small dies, flexible, low water absorption, particle size max. 12 µm, high ion purity |
| Vitralit® UD 5180 | 18,000 – 23,000   | 60 – 90     | UV/thermal | -40 to +200        | Especially for flexible circuit boards, very high adhesion to metals, jettable                    |

### Black adhesives

| Adhesives          | Viscosity [mPas]  | Tg DSC [°C] | Curing*    | Temp. Resist. [°C] | Properties  |
|--------------------|-------------------|-------------|------------|--------------------|---|
| Vitralit® 1691     | 280,000 – 310,000 | 100 – 120   | UV/thermal | -40 to +180        | High ion purity   |
| Structalut® 5890   | 300,000 – 400,000 | 110 – 130   | thermal    | -40 to +180        | Excellent thermal conductivity, fast curing   |
| Structalut® 5891   | 300,000 – 400,000 | 110 – 130   | thermal    | -40 to +180        | Wet-on-wet application with filler material (e.g. St. 5894), very good edge stability and shock resistance                      |
| Structalut® 5891 T | high viscous      | 110 – 130   | thermal    | -40 to +180        | Stable dam material, wet-on-wet application with filler material (e.g. St. 5893), very good edge stability and shock resistance |
| Structalut® 5892   | 200,000 – 300,000 | 110 – 130   | thermal    | -40 to +180        | Short curing times, high shock resistance, dimensionally stable at high curing temperatures                                     |
| Structalut® 5893   | 6,000 – 10,000    | 110 – 130   | thermal    | -40 to +180        | Very good flow characteristics, wet-in-wet-application with dam material (e.g. St. 5891), high shock resistance                 |
| Structalut® 5894   | 45,000 – 55,000   | 110 – 130   | thermal    | -40 to +180        | High shock resistance   |
| Structalut® 8838   | 6,500 – 7,500     | 15 – 25     | thermal    | -40 to +200        | Flexible potting compound, fast curing, enhanced flow control, electronic grade adhesive, shock-resistant                       |

\*UV = 320 – 390 nm

## Attaching Components on PCBs

Before soldering, chips or SMDs (surface mounted devices) are often attached to the PCB (printed circuit board) with UV-curing adhesive. This allows, for example, several chips or other components to be glued onto on a circuit board within

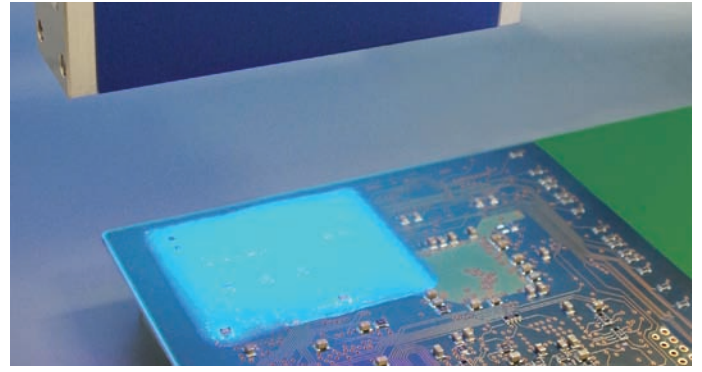
just a few seconds to prevent their falling or sliding out of position on the PCB. The secured chips can then be reflow-soldered in a single work step, which saves time and speeds up production.

| Adhesives        | Viscosity [mPas] | Curing  | Temp. Resist. [°C] | Shore Hardn. | Properties  |
|------------------|------------------|---------|--------------------|--------------|---|
| Structalut® 3060 | 30,000 – 40,000  | thermal | -40 bis +180       | D 35 – 45    | Fast curing, very high adhesion to hard to bond substrates, high flexibility      |
| Structalut® 5604 | 25,000 – 40,000  | thermal | -40 bis +180       | D 75 – 90    | Fast curing, red color  |
| Structalut® 5610 | 22,000 – 40,000  | thermal | -40 bis +180       | D 55 – 65    | Very fast curing even at low temperatures, high temperature resistance, red color |

## Conformal Coatings

A conformal coating is used to protect electronic components from environmental factors.

Adhesives used as conformal coatings are dual-curing: at their edges and visible surfaces they are cured with UV light; the shadowed areas – for example underneath components or chips – as well as deeper-lying regions are then post-cured by heat application.



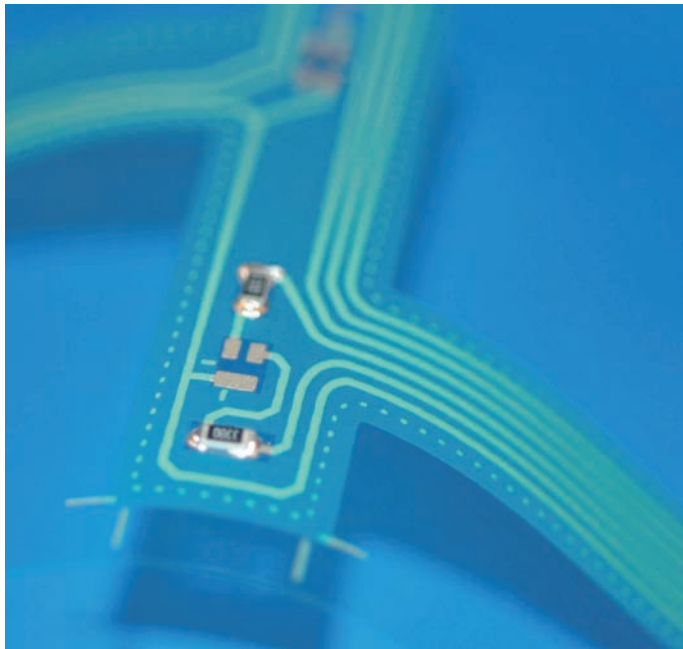
| Adhesives                | Viscosity [mPas]  | Curing*             | Temp. Resist. [°C] | Shore Hardn. | Properties   |
|--------------------------|-------------------|---------------------|--------------------|--------------|--|
| <b>Vitralit® 1671</b>    | 250,000 – 300,000 | UV/thermal          | –40 to +180        | D 80 – 90    | Stable, suitable as frame for selective coatings, low ion content  |
| <b>Vitralit® 2004 F</b>  | 60 – 100          | UV/thermal          | –40 to +180        | D 15 – 25    | Post-curing of shadowed areas, fluorescent, high chemical resistance, spray-coating possible, higher flow control due to low viscosity                   |
| <b>Vitralit® 2007 F</b>  | 200 – 400         | UV/thermal          | –40 to +180        | D 40 – 50    | Post-curing of shadowed areas, fluorescent, high chemical resistance, higher material stability on chip edges due to higher viscosity                    |
| <b>Vitralit® 2008</b>    | 160 – 300         | UV/thermal          | –40 to +180        | D 40 – 50    | Post-curing of shadowed areas, high chemical resistance, no bleeding, high mechanical resistance   |
| <b>Vitralit® 2009 F</b>  | 100 – 200         | UV/thermal          | –40 to +180        | D 40 – 50    | Post-curing of shadowed areas, fluorescent, high chemical resistance   |
| <b>Vitralit® 4451</b>    | 600 – 800         | UV                  | –40 to +130        | D 20 – 30    | Acrylate, fast curing, low shrinkage, elastic  |
| <b>Vitralit® UD 8050</b> | 9,500             | UV/VIS/<br>moisture | –40 to +130        | D 64         | Isocyanacrylate, fast moisture post-curing in shadowed areas, for versatile dispensing methods (jetting, dispenser, etc.), very high humidity resistance |

\*UV = 320 – 390 nm, VIS = 405 nm

## Conductive Adhesives

With its Elecolit® range Panacol offers a broad spectrum of electrically and/or thermally conductive adhesives.

Elecolit® adhesives are a smart solution for contemporary high-tech applications.



Conductive adhesives are usually thermally curing epoxy resin-based or UV-curing acrylate-based adhesives augmented with metallic or anorganic fillers.

Our Elecolit® product range includes:

- **Heat-curing 1-part adhesives**

Benefits: easy to apply by dispenser, screen printing or via needle transfer, no mixing necessary

- **2-part adhesives, curable at room temperature**

Benefits: long storage, curing at room temperature possible, while curing at elevated temperatures speeds up curing processes, low viscosity versions available.

Our electrically conductive Elecolit® adhesives are based on epoxy resin combining highest stability and reliability with high flexibility.

Our thermally conductive Elecolit® adhesives ensure thermal conductivity between 1.0 to 2.5 W/mK.

For more information on our electrical and thermal conductive products please refer to our „Conductive Adhesives“ brochure.



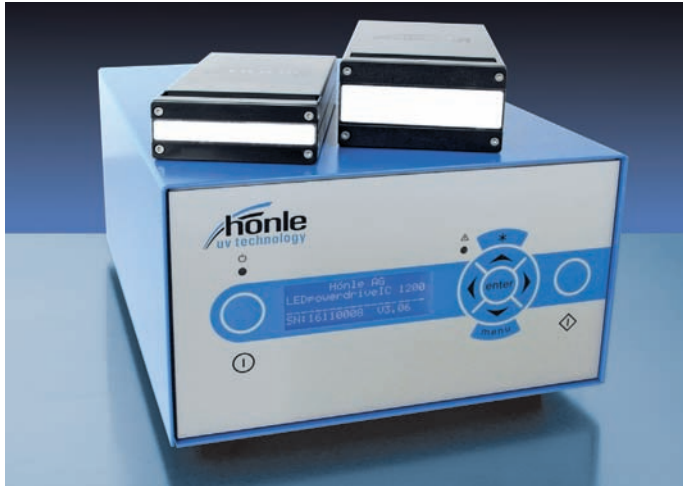
# Perfect Curing of Adhesives and Sealing Compounds with High Performance UV Equipment by Hönle

## Hönle UV Lamps

The curing of Vitralit® products can be best optimized with Hönle UV equipment.

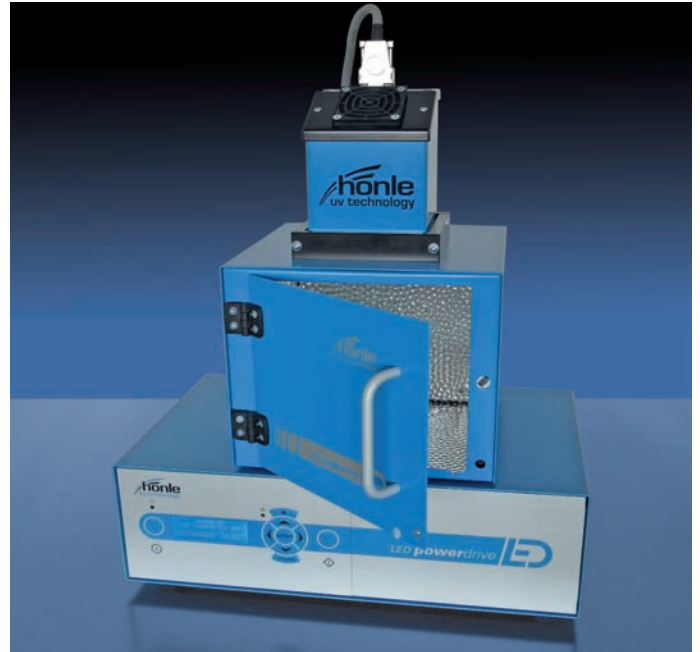
Hönle provides custom-made products adjusted to the individual requirements:

- UV point sources
- UV flood lamps
- UV curing chambers



## Hönle UV LED Lamps

In addition to conventional UV curing technology with gas discharge lamps Hönle is also a leading supplier of UV-LED systems.



You can find further information about our product groups in our special product data sheets.

For our comprehensive range of accessories for each product series, please ask for detailed information sheets.

|                    |           |                |          |             |              |                |                          |
|--------------------|-----------|----------------|----------|-------------|--------------|----------------|--------------------------|
| <b>hönle group</b> |           | Collage        | Enrobage | Remplissage | Dosage       | Equipements UV | Hot bar soldering        |
|                    |           |                |          |             |              |                |                          |
| aladin             | eleco-efd | eltosch grafix | hönle    | panacol     | printconcept | raesch         | uv-technik speziallampen |



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Téléphone: +33 /1/ 47 92 41 80, Fax: +33 /1/ 47 92 22 72. [www.eleco-produits.fr](http://www.eleco-produits.fr)

Toutes les données techniques d'utilisation des produits dépendent des applications spécifiques et peuvent différer des informations de cette brochure. Nous nous réservons le droit de modifier nos données techniques.  
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