

### Solutions for printed circuit boards

**Innovative adhesives and sealants for effective production**

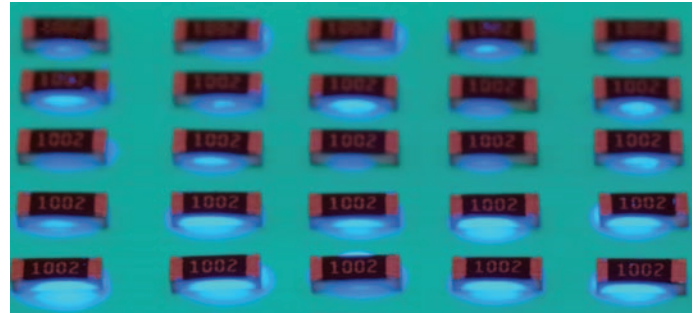
- Flip chip underfills
- Glob top sealing compounds
- Attaching components on PCBs
- Conformal coatings
- UV and/or thermally curing adhesives
- Leading UV curing equipment
- Complete solutions from a single source

## 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 compon., 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	Cover. of small dies, flexible, low water absorpt., part. 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	80,000 – 300,000	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

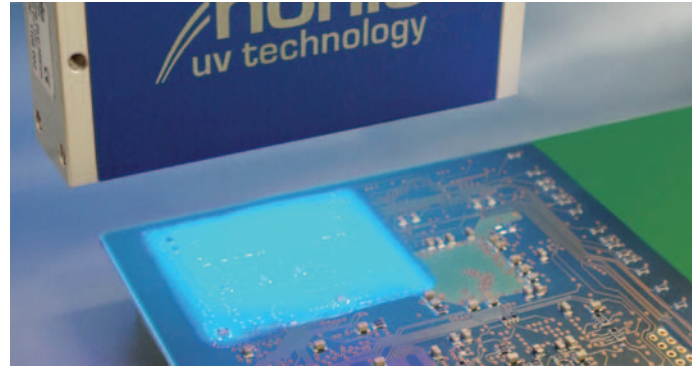
just a few seconds to prevent their falling or sliding out of position on the PCB. The secured chips can then be reflow-soldered in a single work step, which saves time and speeds up production.

Adhesives	Viscosity [mPas]	Curing	Temp. Resist. [°C]	Shore Hardn.	Properties
Structalut® 3060	30,000 – 40,000	thermal	-40 to +180	D 35 – 45	Fast curing, very high adhesion to hard to bond substrates, high flexibility
Structalut® 5604	25,000 – 40,000	thermal	-40 to +180	D 75 – 90	Fast curing, red color
Structalut® 5610	shear thinning	thermal	-40 to +180	D 55 – 65	Very fast curing even at low temperatures, high temperature resistance, red color
Vitralit® 6104 VT	80,000 – 90,000	UV, thermal postcuring	-40 to +200	D 45 – 60	Acrylate, highly resistant to thermal shock or vibrations, postcuring of shadowed areas possible
Vitralit® UV 2115	20,000 – 30,000	UV / VIS	-40 to +150	D 70 – 80	Acrylate-epoxy-hybrid, specially formulated to protect sensitive components against mechanical or climate influences, low shrinkage
Vitralit® UD 2018	shear thinning	UV, thermal postcuring	-40 to +150	D 55 – 65	Highly resistant against temperature shock, low shrinkage, low coefficient of thermal expansion

## 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.



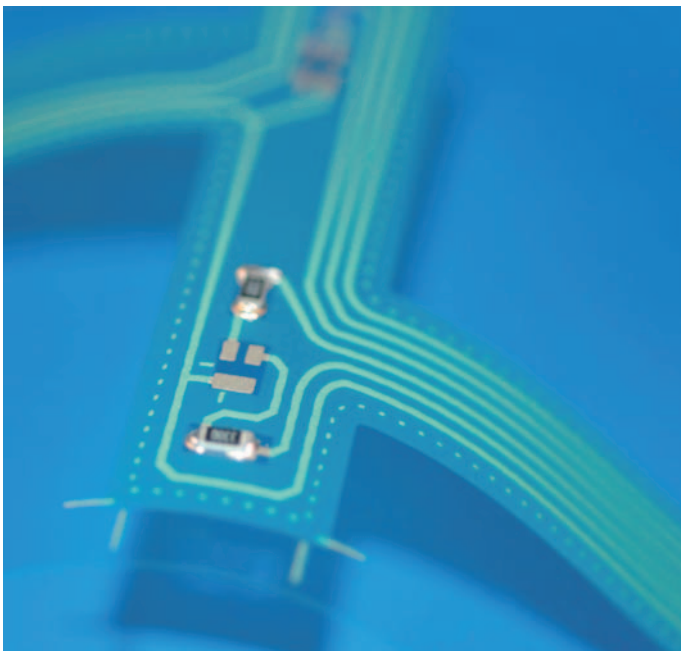
Adhesives	Viscosity [mPas]	Curing*	Temp. Resist. [°C]	Shore Hardn.	Properties
<b>Vitralit® 1671</b>	250,000 – 300,000	UV/thermal	–40 to +180	D 80 – 90	Stable, suitable as frame for selective coatings, low ion content
<b>Vitralit® 2004 F</b>	60 – 100	UV/thermal	–40 to +180	D 15 – 25	Post-curing of shadowed 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® 2028</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>	shear thinning	UV/VIS/ 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.

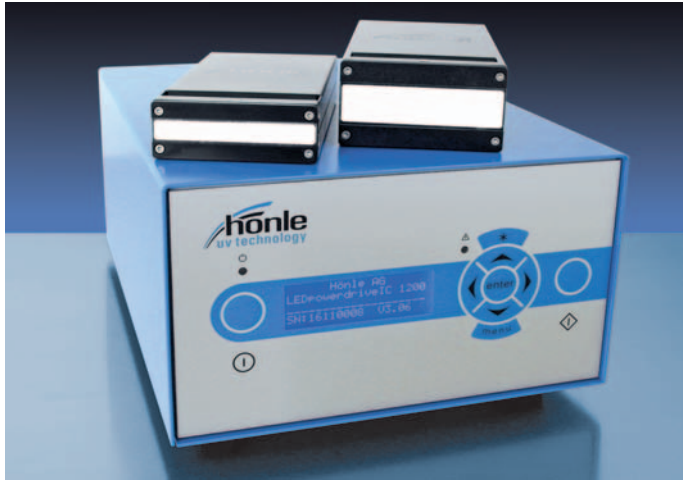
# Perfect Curing of Adhesives and Sealing Compounds with High Performance UV Equipment by Hönle

## Hönle UV Lamps

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

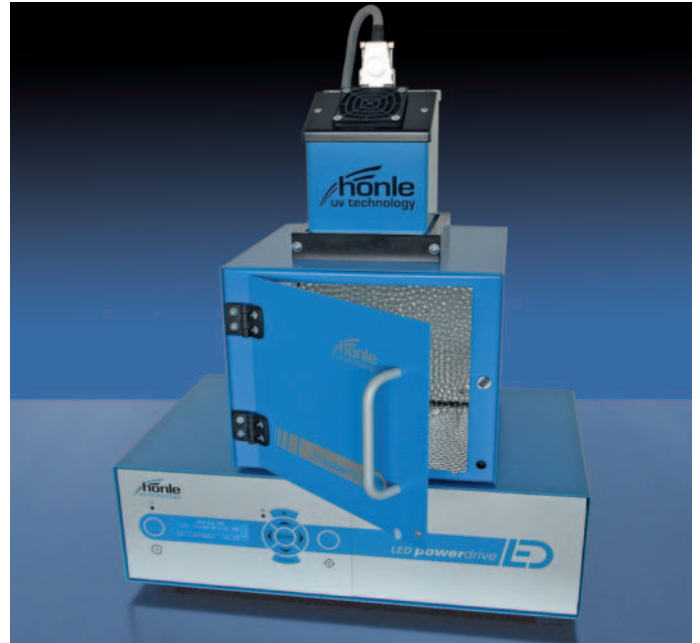
Hönle provides custom-made products adjusted to the individual requirements:

- 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.

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## hönle group

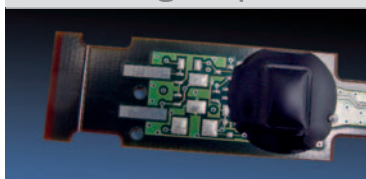
Engineered Adhesives

UV Adhesives

Conductive Adhesives

Potting

Curing



aladin    eleco panacol-efd    eltosch grafix    hönle    panacol    printconcept    raesch    uv-technik speziallampen



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