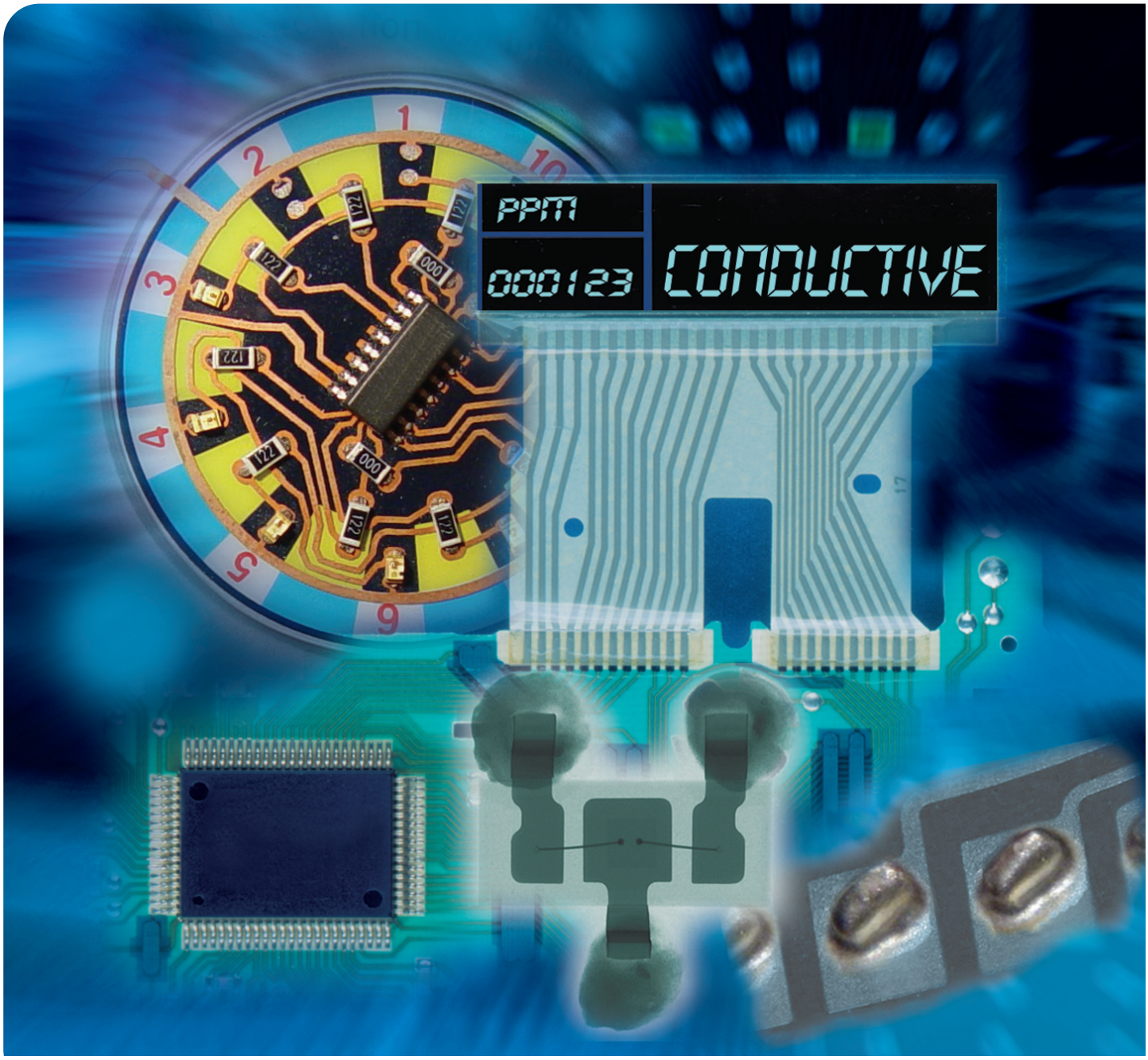
hönle group

panacol adhesives & more



Elecolit®
Electrically and Thermally Conductive Adhesives

- TCA: thermally conductive adhesives
- ICA: isotropically conductive adhesives
- ACA: anisotropically conductive adhesives
- 1-part and 2-part epoxies
- Suitable for manual production and automated production lines
- Application with dispenser, screen printing and pin transfer possible
- UV-curing or curable at room and/or high temperature
- Easy to process

Elecolit® Conductive Adhesives – Always the Right Connection

Elecolit® is our brand of electrically and thermally conductive adhesives.

The products of the Elecolit®-series are an innovative solution for many applications.

Elecolit® conductive adhesives are synthetic resins filled with metallic or inorganic filler materials.

The Portfolio Comprises:
- ICA isotropically conductive adhesives
- TCA thermally conductive adhesives
- ACA anisotropically conductive adhesives

1-Part Products
Benefits: simple processing with dispenser, screen printing or needle transfer – no mixing required.

2-Part Products
Benefits: long shelf life, curing at room temperature possible, very short curing times possible at higher temperatures, low-viscosity settings possible.

Electrically Conductive

Our electrically conductive products contain metallic fillers such as silver or graphite. The more filler material the product contains, the higher is its conductivity.

Applications
- Die bonding
- Antennae contacting
- Flip-chips
- Anisotropically conductive connections
- HF shielding
- 3D-MID

Advantages As Compared to Other Techniques:
- Lead- and solvent-free
- Curing at low temperatures < 120 °C
- Easily incorporated into existing assembly processes
- High flexibility at temperature shock
- High thermal stability
- No bleeding

Electrically Conductive Adhesives

Elecolit®	3012	3043	3653	3655	3661	3025	3036
Typical Applications	**Chips & Electrical/Electronic Components**	**Antenna Printing, Ceramic Fuses**	**Flexible Component Bonds**	**Die-Attach, Semi Conductor, Part Assembling**	**Bonding Components on Flex PCB, Die-attach**	**Suitable for Heat Sensitive Parts**	**Suitable for Heat Sensitive Parts**
Base	1-part Epoxy	1-part Epoxy	1-part Epoxy	1-part Epoxy	1-part Epoxy	2-part Epoxy	2-part Epoxy
Viscosity (mPas)	Pasty	4,000 – 5,000	8,000 – 10,000	5,000 – 15,000	20,000 – 40,000	Pasty	Pasty
Curing	10 min at 150 °C	10 min at 150 °C	5 min at 150 °C	30 min at 150 °C 60 min at 120 °C	10 min at 150 °C 6 h at 80 °C	24 h at RT 15 min at 120 °C	24 h at RT 15 min at 120 °C
Temp. Resist. (°C)	–40 to +200	–40 to +180	–40 to +180	–40 to +180	–40 to +180	–40 to +150	–40 to +150
Contact Resistance ohms x cm	0.013	0.015	0.005	0.0003	0.005	0.05	0.1
Special Properties	**Dispenser, Screen Printing, Very Good Conductivity, Excellent Gap Filling Properties**	**Very low Viscosity, Easy to Dispense, Fine Grade Fillers Ag <10µm, Low Ionic Content**	**Highly Flexible, Temperature-, Vibration- and Impact-Resistant, Easy to Dispense**	**Easy to Dispense, Fine Grade Fillers (<10µm), High Thermal Conductivity, High Electrical Conductivity**	**Temperature-, Vibration- and Impact-Resistant, Long Pot-Life: 14 Days**	**Curing at RT Possible, Short Production Time at High Temperatures, Dispensable, Screen Printable**	**Curing at RT Possible, Short Production Time at High Temperatures, Dispensable, Screen Printable**

Electrically Conductive Adhesives

Elecolit®	323	325	336		327	342	414
Typical Applications	**Component Bonding/ Electronics**	**Heat-Sensitive Components**	**Heat-Sensitive Components**		**High-Temperature Range**	**Electrically Conductive Contacts, HF Shielding**	**Flexible Conductive Paths on Film**
Base	2-part Epoxy	2-part Epoxy	2-part Epoxy		1-part Polyimide	1-part Acrylate	1-part Polyester
Viscosity (mPas)	45,000	Paste-like	Paste-like		8,500	1,000 – 2,000	20,000 – 25,000
Curing	4 min at 150 °C	5 min at 150 °C	5 min at 150 °C		1 h at 150 °C	10 min at 120 °C	5 min at 150 °C
Temp. Resist. (°C)	–60 to +175	–40 to +150	–40 to +150		–40 to +275	–40 to +150	–55 to +200
Contact Resistance ohms x cm	0.0002	0.0005	0.001		0.0001	0.001	0.0005
Special Properties	**Pot Life 96 hours, Cures at Low Temperatures, Suitable for Semiconductors, Easily Dispensed**	**Fast Curing at High Temper., Dispensers, Printing and Screen Printing, Very Good Conductivity**	**Cures at Room and Low Temperatures, Dispenser, Printing and Screen Printing, Inexpensive**		**High Electrical & Thermal Conductivity, Good Adhesion to Gold, Aluminium, Tantal, Germanium and Ceramics**	**Latex-like Film, Low Mechanical Strength, Good Adhesion to Many Substrates, Curing at Room Temp. Possible**	**Extremely Flexible, Very Good Conductivity, Can be Folded or Coiled, Abrasion-Proof**

Thermally Conductive

The highest thermal conductivity can be achieved with metallic fillers, which are not only thermally but also electrically conductive. If only thermal conductivity is needed, non-metallic filled products should be utilized.

Applications

Applications that release heat energy:

- Bonding of power modules
- Bonding of heat sinks

Advantages As Compared to Other Techniques:

- Simultaneous dissipation of high thermal energy and mechanical fixation in contrast to pastes
- Solvent-free
- Fast curing
- High purity and low ionic content
- 1-part, easy processing

Processing

Elecolit® products are versatile and reliable, even under extreme conditions.

- Suitable for manual production and automated production lines
- Processing with dispenser, screen printing and pin transfer

Certified Quality

Our adhesives do not contain heavy metals and comply with RoHS, WEEE and REACH directives.

Customized Solutions for Unique Applications

Panacol provides innovative solutions for your needs:
All adhesives can be individually tailored and tuned to your special requirements.

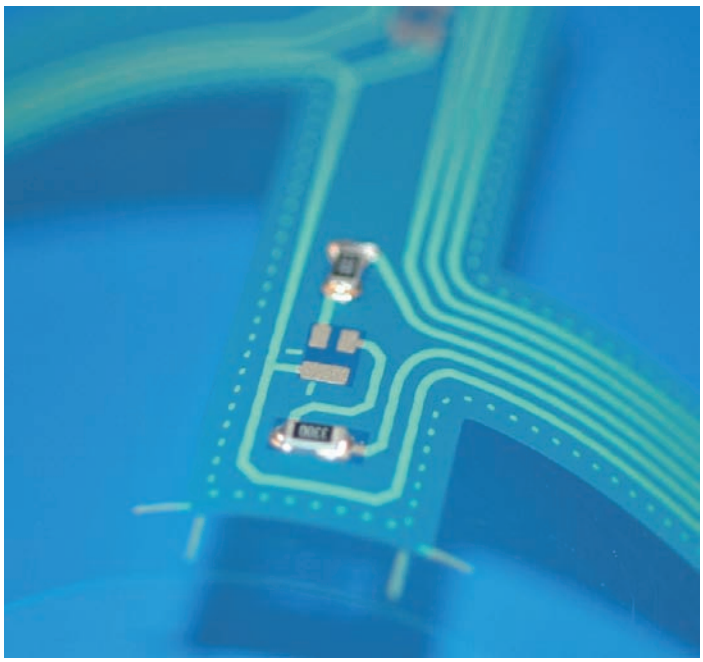
For further information please contact us at **info@panacol.de**.

Thermally Conductive Adhesives

Elecolit®	6601	6603	6604			6616	6207
Typical Applications	**Heat Sinks, Sensors**	**Bonding Magnets and Heat Sinks**	**Sensors for Measuring Instruments**			**Sealant for Curing at Room Temperature**	**Capsule and Sealant**
Base	1-part Epoxy	1-part Epoxy	1-part Epoxy			2-part Epoxy	2-part Epoxy
Viscosity (mPas)	12,000 – 20,000	95,000 – 115,000	110,000 – 140,000			Pasty	9,000 – 12,000
Curing	20 min at 150 °C	20 min at 150 °C	10 min at 150 °C			2 h at 80 °C	2 h at 65 °C
Temp. Resist. (°C)	–40 to +200	–40 to +200	–40 to +200			–50 to +150	–55 to +110
Heat Conductivity (W/mK)	1.05	1.3	1.05			1.01	0.9
Special Properties	**Very Good Adhesion to Metals, Excellent Flow Behaviour, High Strength, Good Dispensability**	**Slightly Flexible, Impact- and Temperature-Resistant, High Viscosity**	**Low Heat Expansion, No Influence on Transmitted Signals, High Viscosity**			**Pot Life 45 min, Flexible at Low Temperatures, Vibration- and Impact-Resistant, Visco-Plastic**	**Low Viscosity, Flame-Retardant, Low Shrinkage, Pot Life 2 hours, UL 94 V0**

Anisotropically Conductive Adhesives

Elecolit®	3063	3064	3065
Typical Applications	**Flexible Circuits**	**Flexible Circuits**	**Display/ Touch Panel**
Base	1-part UV Acrylate	1-part UV Acrylate	1-part UV Acrylate
Viscosity	Thixotropic	Thixotropic	Thixotropic
Curing	15 sec/2000mW/cm² + 1,5 N/cm²	15 sec/2000mW/cm² + 1,5 N/cm²	15 sec/2000mW/cm² + 1,5 N/cm²
Temp. Resist. (°C)	–40 to +150	–40 to +150	–50 to +150
Special Properties	**Anisotropic, UV-Curing, for Transparent Film with Printed Conductive Paths, Highly Flexible**	**Anisotropic, UV-Curing, for Transparent Film with Printed Conductive Paths, Highly Flexible, Alternative to El 3063**	**Anisotropic, UV- and Heat Curing, for Transparent Film with Printed Conductive Paths, Highly Flexible, Dual Curable for Larger Connector Sizes**



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

Dr. Hönle AG is one of the world's leading suppliers of industrial UV technology. Innovative Hönle UV systems have been applied worldwide – as gas discharge lamps and also as LED versions.

Hönle und Panacol attach great importance to joint research and development. They have combined their knowledge and extensive experience, which has led to comprehensive high-tech solutions for bonding applications.

Hönle UV-LED Curing Technology for Anisotropic Conductive Adhesives

UV-LED lamps by Hönle are the perfect choice for UV curing anisotropic conductive adhesives. The spectrum of our LED devices is accurately adjusted to the absorption of Elecolit®-products by Panacol.

The result is a fast and safe curing. By using LEDs there's only low heat impact on the substrate, which prevents from thermal damage. According to the size of the substrate either a point source or a flood unit is applied.

bluepoint LED eco

The point source bluepoint LED eco has been developed for all applications requiring a most intensive UV irradiation. Thanks to its high intensity and the capability to program complete process sequences, e.g. exposure series with different intensities and holding times, it is possible to realize very short cycle and machine throughput times, especially in fully automated production lines.

bluepoint LED eco

LED Powerline

LED Powerline is a high-performance array with all advantages of LED technology: LEDs have an extremely long lasting lifetime and do not require heating up or cooling phases.

LED Powerline is available in wavelengths of 365/385/395/405nm. This variety allows an exact adjustment of the wavelength to the respective application.

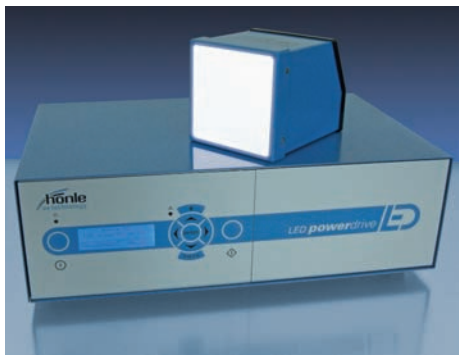
The LED array is available in different lengths from 80mm – in 40mm-steps variable – up to a length of > 1m.

New is a LED Powerline version with focusing lenses. They allow highest intensities, even if – due to the component architecture – only a larger distance between LED unit and curing spot is possible.

LED Powerline

LED Spot 100

LED Spot 100 has been developed for all applications requiring a highly intensive UV irradiance over a large area, which can optionally be enlarged by connecting several LED Spots 100 without any gaps.



LED Spot 100

The arrangement of the LEDs as well as an electronic power control guarantees a homogenous irradiation.

The recognition of LED-malfunction and a comprehensive monitoring function provide very high process stability.

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