

DELO



Leading by intelligent bonding technology



DELO – Your partner for the best connection

Already today we are thinking about your successful products of tomorrow. We support you in the product development process and offer you highly efficient adhesives especially tailored to your requirements.



DELO's profile _____ Page 4

Product groups _____

Photo-initiated curing acrylates –
DELO-PHOTOBOND _____ Page 10

Photo-initiated curing epoxy resins –
DELO-KATIOBOND _____ Page 12

Electronic adhesives –
DELO-MONOPOX,
DELO-MONOPOX AC _____ Page 14

One- and two-part epoxy resins –
DELO-MONOPOX, DELO-DUOPOX _____ Page 16

Anaerobic curing methacrylates –
DELO-ML _____ Page 18

Cyanoacrylates – DELO-CA _____ Page 19

Silicones – DELO-GUM _____ Page 20

Polyurethanes – DELO-PUR _____ Page 21

Dispensing systems _____

DELOMAT, DELO-XPRESS _____ Page 22

Light systems _____

DELOLUX, DELOLUXcontrol _____ Page 23

References _____ Page 24

PROFILE



DELO's Engineering and Technical Sales Departments constitute an important area for adhesive users: Here, customized solutions are developed and tested in close cooperation with the Product Management and R&D Departments.

Specialist for system solutions

We have 45 years of global experience in the field of industrial adhesives. That means know-how in a field promising commercial success once the fine instinct for the customer's wants and needs has become a matter of fact. Our team of more than 150 experts works on the fast and process-reliable solution for you. Our main target is to strengthen the innovational energy of our customers and to enable cost-savings. DELO's flexible structure allows short-term realization of individual customer requirements.



We are there for you and support you on the spot with our technical field service as well as our partners and representative offices – all over the world.



In the laboratories of the Engineering Department, original components are bonded and miscellaneous examinations are carried out. In this context, new and enhanced equipment, such as dispensing units and curing lamps, are tested and optimized.

Technical advice and support

We offer more than just adhesives:
Our technical sales engineers give advice on the spot and will be pleased to support you in the configuration of optimized production processes. The project management in our Engineering Department enables, for example, pre-treatment tests, laboratory experiments and measurings. A close cooperation with plant constructors or material suppliers is especially advantageous for our customers. Our partners and distributors stand for a globally optimized customer care. Ever since 2004 and 2005 we have been represented in the Benelux countries, Shanghai/China and Singapore by our own representative offices.

Everything from one source

The perfect solution means: adhesive, curing lamps, intensity control, dispensing equipment and implementation into processes. That is one contact person for five different lines of business who provides extensive system expertise and assists you with word and deed. Therefore, DELO's know-how has also been included into development and sales of devices for industrial serial processes for many years.



High-tech adhesives typically used in micro-electronics, for example, have to meet highest requirements. Therefore, every single raw material is tested precisely, just as the final product.



DELO's modern laboratories provide the best conditions for unique and innovative adhesives in line with the market requirements.

Quality

DELO stands for outstanding quality and is certified according to ISO 9001:2000. A high quality level is ensured by a continuous process of improvement. We develop for you on a daily basis. Detailed introductory tests, continuous monitoring and consistent enhancement are natural for us and guarantee first-class products. A complaint rate of < 0.6 % stands for satisfied and longtime customers.

Research and development

Our R&D quota of approx. 9 % is clearly above average in this industry sector. DELO gains 25 % of its turnover with products less than three years old. Our Research & Development Department is equipped with ultra-modern laboratories in order to answer tomorrow's questions. As a result, we can already support you in the planning phase of new projects: That means not only high efficiency and maximum flexibility, but also extraordinary solutions.

This is how we have managed it: with the innovative, light-activated adhesives DELO-KATIO-BOND we are the global leader.



DELO trainings and seminars offer insights into bonding technology and innovations for your application areas.



Satisfied customers: DELO has already been awarded several supplier prizes – e. g. the golden Quality Award by Philips Sound Solutions / Vienna.

Seminars and trainings

For an optimized production process in your company we offer numerous trainings and seminars in which DELO's adhesive experts, specialists from universities and institutes as well as experienced users from the industry impart concise expertise and valuable practical experience: basic skills as well as information about special bonding tasks in your company – on your premises or in the DELO training rooms and laboratories in Landsberg.

Satisfied customers

We guarantee highest delivery reliability and the fastest possible global delivery. An independent survey certifies DELO downright satisfied customers. DELO has already been awarded several supplier prizes.

You can find more detailed information on the internet:

www.DELO.de





Our products lead you to success

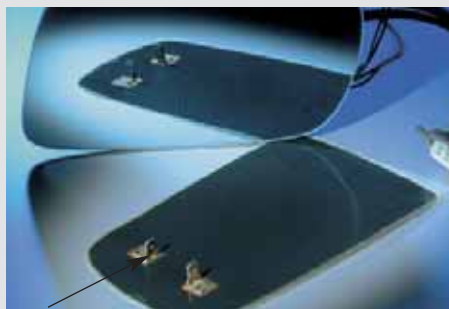
We set trends for the industry with our wide range of adhesives for extensive application areas – from mechanical engineering to high-tech applications in the smart card sector. We ensure an easy adhesive application by especially developed dispensing and light systems.

PRODUCT GROUPS



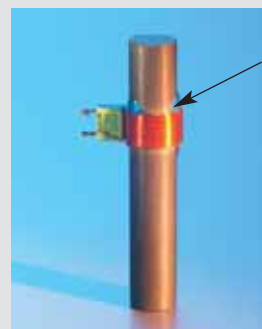
Bonding of various components and materials of loudspeakers for mobile phones

The loudspeakers' high quality is ensured by optimum acoustic properties. High output by shortest cycle times.



Coating electrical contacts of heaters for automobile exterior mirrors

Good adhesion of the adhesive on copper foils. Low unit costs by short cycle times.



Fixing of a coil on a ferrite core (adhesive colored blue in the illustration in order to indicate the bonding)

The short curing times are ideal for serial applications.

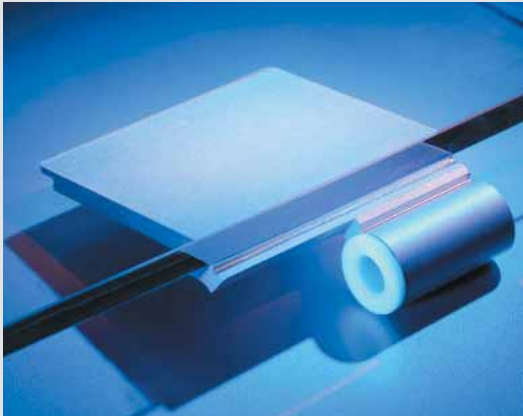
Photo-initiated curing acrylates – DELO-PHOTOBOND

DELO-PHOTOBOND adhesives are light-curing, one-part acrylates

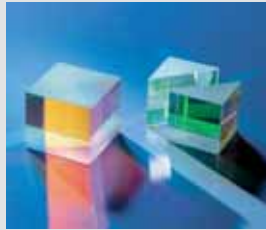
Application areas:

- Communication electronics
- Consumer electronics
- Automotive electronics
- Plastic and glass processing

Many years of experience as well as intensive research and development in the field of light-curing ensure our advance: Bonding of modern materials and changed production processes are enabled and supported by continuous enhancement of the DELO-PHOTOBOND products. Extremely short cycle times enabled by curing times of only a few seconds allow large production quantities. At the same time the high requirements on the bonded connection are met. This plays an important role, particularly in electronics.



Bonding of aluminium door hinges onto glass shower cabins
Boreholes or unsightly clamping fixtures are prevented.



Bonding of glass prisms for beamer optics
The refraction index of the adhesive is tailored to that of glass in order to maintain the optical properties.



Bonding of a glass plate onto the aluminium force transducer of bathroom scales
A high capacity for tension-equalization is required.

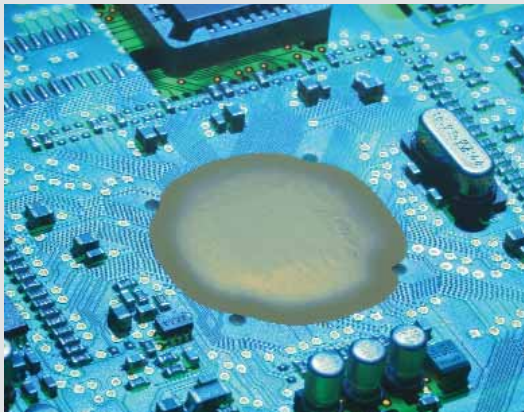
Bonding of glass materials represents a special challenge regarding the necessary adhesive properties. Humidity resistance and light fastness are indispensable for bonding glass in interior and exterior areas. We have developed products with clear advantages through intensive research and development.

Clarity, transparency, humidity resistance and yellowing stability are properties which distinguish DELO-PHOTOBOND glass adhesives from standard products on the market. Thus, they are suitable for optically demanding bondings.



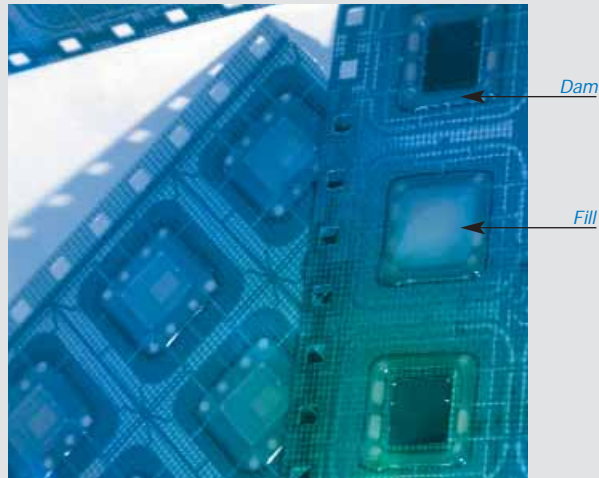
- Brochure "Radiation curing – Basics of photo-initiated curing adhesives"
- Brochure "Electronics and electrical engineering – Industrial adhesives and applications"
- Brochure "Electrical engineering – Adhesives for fixing coils and ferrites"
- Brochure "Bonding of plastics – Applications, requirements and pre-treatment"
- Brochure "Bonding of glass – Acrylate adhesives in different applications"

PRODUCT GROUPS



Chip encapsulation for short cycle times, for example, when manufacturing mass-produced articles

The adhesive is cured in seconds by UV-light. Extensive heat-curing is not necessary.



Dam&Fill® technology for smart card modules

The dam made of a high-viscous encapsulation compound is dispensed around the chip. Then, the low-viscous fill compound is applied within the dam. That protects the sensitive chips.

Photo-initiated curing epoxy resins – DELO-KATIOBOND

DELO-KATIOBOND products are one-part epoxy resins. Curing is triggered by UV or visible light.

Application areas:

- Micro-electronics
- Electronics and electrical engineering
- Smart card industry
- Automotive supplier industry
- Plastic processing

Fast and secure bonding, even of opaque components, is realized with the patented pre-activation method. DELO-KATIOBOND cures in seconds, enabling shortest cycle times in serial productions and fast further processing. Due to the wide range of elasticity – from hard to flexible – the special requirements of various materials can be met. An ideal customization to individual production processes is enabled by adjusting viscosity and flow behavior.



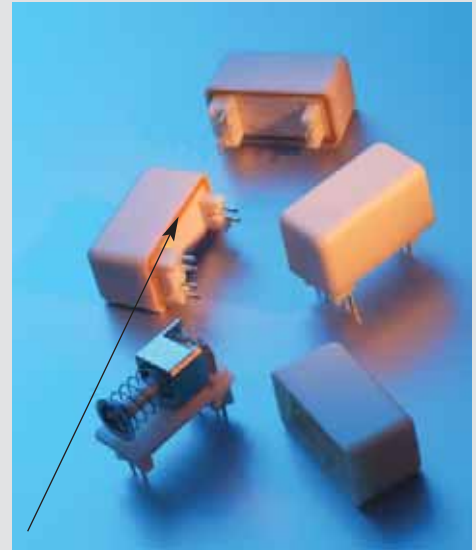
Fixing of soldered contacts of electronic components

The adhesive provides secure protection against unsoldering and strong vibrations.



Protection against vibration of soldered electronic components

DELO-KATIOBOND offers optimum vibration-damping and good adhesion on various component surfaces.



Reliable sealing of airbag sensor housings

*Easy, economical process by short cycle times.
Very high long-term resistance.*

The high ion purity of the products complies with the requirements of the micro-electronic sector to a great extent. Extremely good reliabilities of the components encapsulated can be achieved in connection with fillers. The DELO-KATIO-BOND products have proven this in serial productions for many years.

We are global market leader with DELO-KATIO-BOND. An additional reason for this is the extremely high stability of selected products against UV-light and high ambient temperatures – these are properties which distinguish us from our competitors.



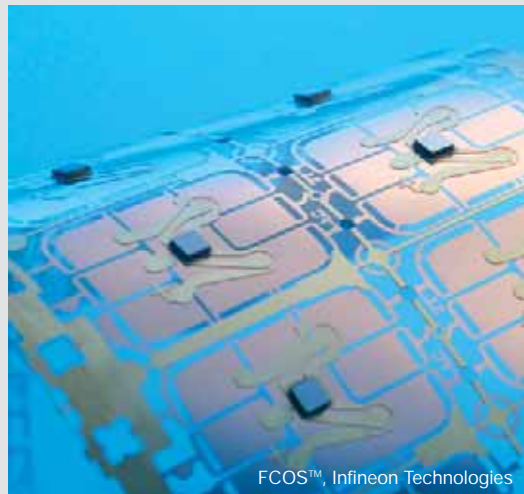
- Brochure "Radiation curing – Basics of photo-initiated curing adhesives"
- Brochure "Electronics and electrical engineering – Industrial adhesives and applications"
- Brochure "Smart Card, Smart Label – Adhesives for chip-card industry"
- Brochure "Chip encapsulation compounds – DELO-KATIOBOND, DELO-MONOPOX"
- Brochure "Bonding of plastics – Applications, requirements and pre-treatment"

PRODUCT GROUPS



Smart inlay – flip-chip bonding

The anisotropic conductive adhesive DELO-MONOPOX AC performs the task of electrical contacting and mechanical fixing.



Smart card module – flip-chip bonding

DELO-MONOPOX is used as non-conductive no-flow underfiller and maintains the electrical contact.

Electronic adhesives – DELO-MONOPOX, DELO-MONOPOX AC

DELO-MONOPOX are one-part, heat-curing epoxy resins.

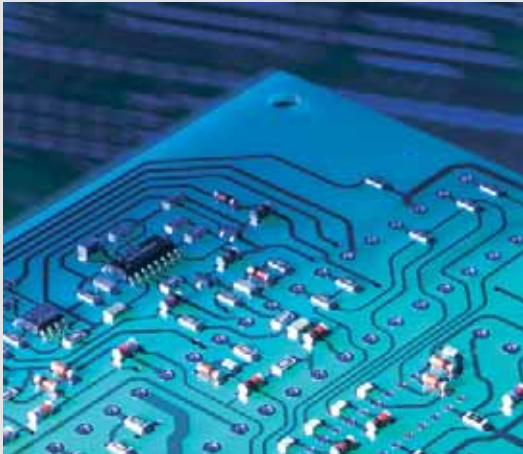
Anisotropic electrically conductive adhesives DELO-MONOPOX AC and non-conductive DELO-MONOPOX products were modified from the classic DELO-MONOPOX products especially for your electronic applications.

Application areas:

- Smart card technology
- Smart label
- Micro-electronics
- Automotive electronics

Electrically conductive adhesives have a continuously increasing significance in the industry.

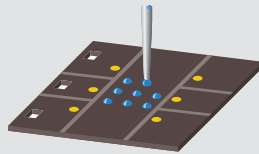
In highly automated processes, anisotropic electrically conductive adhesives DELO-MONOPOX AC enable a clear rationalization of the production in the smart card and smart label industry. For example, the flip-chip technology includes placing and contacting of the flip-chip in only one process step with DELO-MONOPOX AC. As a result, two process steps can be saved, compared to the chip-on-board technology.



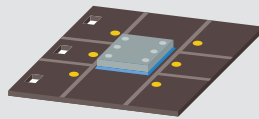
Fixing of SMD components during the shaft-soldering or reflow process

The adhesive is especially qualified for fixing melfs and glass SMD components.

Dispensing of the Die Attach adhesive onto the substrate



Positioning of the chip and adhesive curing



*Die Attach
Assembly of chip by means of the
chip-on-board technique with
DELO-MONOPOX*



Chip encapsulation in the automotive sector and for high-quality industrial products

Extremely good thermal and chemical resistance. Suitable for demanding industrial applications.

Non-conductive adhesives DELO-MONOPOX for the electronic sector are used for bonding flip-chips, as Die Attach and for fixing SMD components, for example. They are distinguished by extremely short curing times and highest reliability.

Special chip encapsulation compounds with an extremely good thermal and chemical resistance have been developed for the automotive sector and high-quality industrial products.

In the field of module manufacturing of smart cards, especially in connection with the UV-curing chip encapsulation compounds, Die Attach adhesives DELO-MONOPOX are available. They are very similar to the DELO-KATIOBOND Dam&Fill® products regarding their chemical composition. An excellent interplay between Die Attach and encapsulation compound is enabled.



- Brochure "Smart Card, Smart Label – Adhesives for chip-card industry"
- Brochure "Adhesives for flip-chip bonding – DELO-MONOPOX, DELO-MONOPOX AC"
- Brochure "Chip encapsulation compounds – DELO-KATIOBOND, DELO-MONOPOX"
- Brochure "Electronics and electrical engineering – Industrial adhesives and applications"
- Brochure "Assembly – Adhesives for fixing SMD components"

PRODUCT GROUPS



Magnesium bonding at suction pipe modules of motors with DELO-MONOPOX

This bonded connection contributes to light-weight construction in the automotive sector.



Fixing of india ink pins for scribes and plotters with DELO-MONOPOX

The adhesive is resistant to the special cleaning agents.



One- and two-part epoxy resins – DELO-MONOPOX, DELO-DUOPOX

The reactive resins DELO-MONOPOX cure at increased temperatures, whereas DELO-DUOPOX cure at room temperature.

Application areas:

- Mechanical engineering and construction
- Electronics
- Metal processing
- Automotive supplier industry
- Plastic processing

The “classics” among DELO adhesives – DELO-MONOPOX and DELO-DUOPOX – have proven to be efficient over several decades of use and have conquered miscellaneous application areas.

With the one-part DELO-MONOPOX adhesives and casting resins, we offer a long-term stable alternative to classic joining methods like riveting, welding or hard-soldering. Individual modifications, which cure extremely fast and were created for high-tech applications, have been developed for the customers from these DELO-MONOPOX products. They are used as Die Attach and no-flow underfillers for bonding flip-chips (refer to “Electronic adhesives”).



Easy and secure bonding of sieve fabrics into frames

DELO-MONOPOX and DELO-DUOPOX enable highest strength values, best temperature stability as well as easy and convenient processing.

Bonding of balustrade elements for exterior and interior areas

Adhesive application between two distance rings

DELO-DUOPOX enables high-strength, long-term stable bonding even under extreme climatic conditions.



The two-part DELO-DUOPOX adhesives, casting resins and fillers are distinguished by their extremely high reliability, especially with very large or temperature-sensitive components. In addition to the products which have already proven to be efficient, DELO offers innovative, customer-specific products with excellent thermal conductivity, for example.

DELO also ensures easy handling: The two-part products can be processed very easily with dispensing guns by means of the double chamber cartridge system DELO-AUTOMIX.



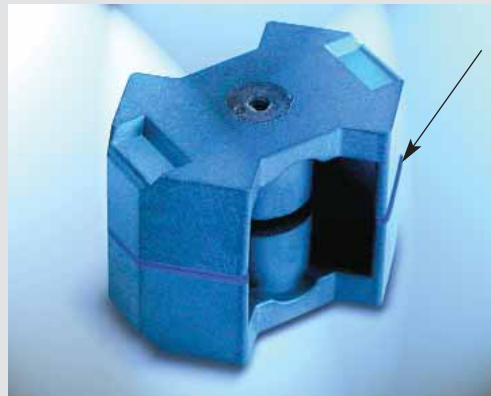
- Brochure "Bonding, Sealing, Casting – Standard adhesives and applications"
- Brochure "Electronics and electrical engineering – Industrial adhesives and applications"
- Brochure "Bonding of plastics – Applications, requirements and pre-treatment"

PRODUCT GROUPS



Securing of screws

Metallic screws are reliably secured with DELO-ML against self-loosening.



Fast and reliable bonding of ferrite cores (adhesive colored blue in the illustration to indicate the bonding)

DELO-ML enables high mechanical strengths and, therefore, a long service life of the ferrite cores.



High-strength bonding of a rotor onto a shaft

The connection is long-term stable and has high strengths even at high temperatures.

Anaerobic curing methacrylates – DELO-ML

DELO-ML are one-part adhesives. Their curing proceeds by exclusion of oxygen, i. e. anaerobic, and under metal influence.

Application areas:

- Mechanical engineering
- Metal processing
- Electronics and electrical engineering

DELO-ML has proven to be efficient over several decades of use, mainly for securing screws, sealing threads or surfaces and shaft-hub-connections.

DELO covers miscellaneous application areas with its wide range of ML adhesives. Products with DVGW authorizations which can be used in gas-operated installations have been developed. Light-curing DELO-ML adhesives, which cure very fast and enable fast further processing, complete the range.



- Brochure "Bonding, Sealing, Casting – Standard adhesives and applications"
- Brochure "Electronics and electrical engineering – Industrial adhesives and applications"
- Brochure "Electrical engineering – Adhesives for fixing coils and ferrites"
- Flyer "Adhesive DELO-ML"



Fast fixing of a logo cap onto a screwed connection

Chemical resistance and resistance in dishwashers are the special requirements on the adhesive.



Fixing of a diode in the housing of an optical converter after adjustment

Fast curing enables short cycle times.



Cyanoacrylates – DELO-CA

DELO-CA adhesives are one-part, cold-curing cyanoacrylates curing very fast under the influence of humidity.

Application areas:

- Plastic processing
- Electronics and electrical engineering

High-strength bonding and fixing in seconds – this is indispensable for increasingly accelerating production processes. The variety of property profiles of DELO-CA provides the customer with tailor-made product types for miscellaneous materials. Easy handling and trouble-free dispensing facilitate processing. We also offer a DELO-CA variant with a low outgassing behavior.



- Brochure "Bonding, Sealing, Casting – Standard adhesives and applications"

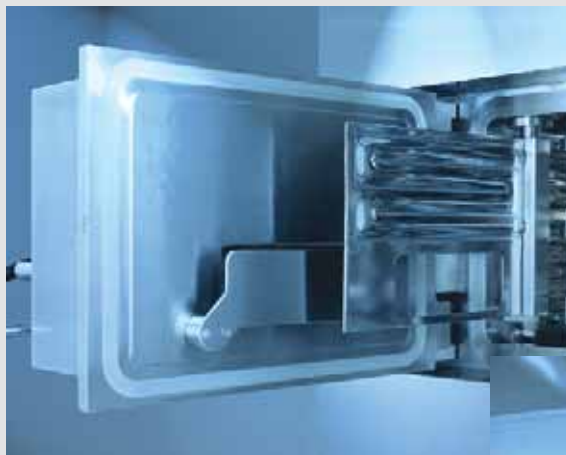
PRODUCT GROUPS



viaSonic

Fixing and sealing of a printed circuit board in a housing (filling-level meter for gas containers)

DELO-GUM interlaces oxime and offers an optimum protection against environmental influences.



Bonding of individual silicone profiles for sealings of dry freezers

DELO-GUM is soft and elastic and even resistant to temperatures below zero.



Silicones – DELO-GUM

DELO-GUM are one- or two-part adhesives and sealants on the basis of silicone rubber and cure at room temperature.

Application areas:

- Electronics and electrical engineering
- Mechanical engineering and tool construction
- Glass processing
- Automotive supplier industry

DELO-GUM products have already proven to be efficient and provide clearly better adhesive properties than silicones normally used in households or the sanitary sector. For example, DELO offers especially modified silicones tailored to the requirements on the electronic market. The DELO adhesives and sealants are suitable for permanently elastic, highly flexible connections and show an extremely good resistance to chemicals as well as outstanding weathering and aging resistance.



- Brochure "Electronics and electrical engineering – Industrial adhesives and applications"



Bonding of grip covers to the handles of pliers

DELO-PUR equalizes stresses and bridges gaps.



Bonding of corner connections into magnet frames

A high mechanical stability is achieved.



Bonding of camera housings in the automotive sector

Waterproof sealing even at high temperature changes.

Polyurethanes – DELO-PUR

DELO-PUR are two-part, cold-curing polyurethanes.

Application areas:

- Electronics and electrical engineering
- Mechanical engineering
- Tool and aggregate construction
- Plastic processing

DELO-PUR has even conquered application areas with larger bonding gaps due to its special properties. The opportunities for individual design are as versatile as our customers' requirements: For example, the customized development of highly transparent or increasingly heat-conductive DELO-PUR products provides the user with new and efficient project solutions – especially in the electronic sector.



- Brochure "Bonding, Sealing, Casting – Standard adhesives and applications"
- Brochure "Bonding of plastics – Applications, requirements and pre-treatment"

DISPENSING SYSTEMS



DELO – Your partner for system solutions:

Individual combination of different system components enables the customer reliable processes.

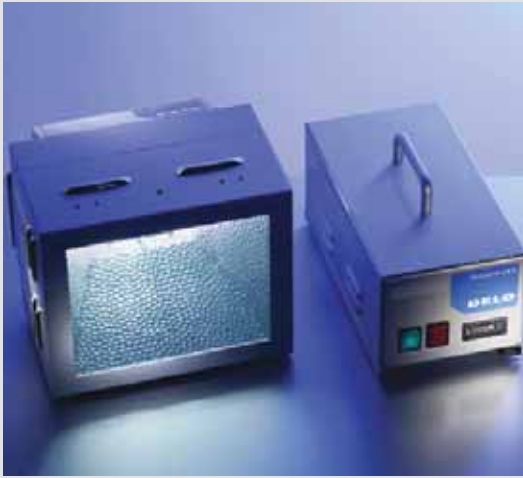
*Illustration: photo-initiated curing adhesive,
dispensing unit DELOMAT 400, curing lamp DELOLUX 04*

Dispensing systems – DELOMAT, DELO-XPRESS

We offer the customer the perfect solution: DELO dispensing units DELOMAT as well as pressure tanks and dispensing guns DELO-XPRESS – exactly tailored to the high-tech adhesives – have been developed with much expertise and enable optimized production processes. The user benefits from an economical adhesive processing, which can be flexibly integrated into processes.



- Brochure “Equipment – Dispensing units and systems for adhesives”



Area lamp DELOLUX 03 S

DELO light systems

Optimized for secure curing of the photo-initiated curing adhesives
DELO-PHOTOBOND and DELO-KATIOBOND

Point lamp DELOLUX 04



Light systems – DELOLUX, DELOLUXcontrol

Light-curing adhesives are cured with lamps which generate a 100- to 1,000-fold intensity of normal daylight. Our Dispensing & Curing Systems Department has developed and tested a lamp range of the DELOLUX series tailored to the adhesives by applying many years of experience. The area and point lamps can be integrated into the production process in various ways and enable optimum processing of the high-quality adhesives.

In order to check the necessary lamp intensity, the user can monitor the radiation intensity of the DELOLUX lamps by means of the measuring device DELOLUXcontrol.



- Brochure "Equipment – Curing lamps and light systems for adhesives"
- Brochure "Curing lamp – DELOLUX 03 S"
- Brochure "Radiation curing – Basics of photo-initiated curing adhesives"
- Flyer "Measuring device – DELOLUXcontrol"

REFERENCES

Abstract of our customer list

ABM Greiffenberger Antriebstechnik GmbH
Amphenol-Tuchel-Electronics GmbH
Barun Electronics Co., Ltd.
BSH Bosch und Siemens Hausgeräte GmbH
ChangFeng Smart Card Co., Ltd.
Cherry Mikroschalter GmbH
Conti Temic microelectronic GmbH
DaimlerChrysler AG
Datang Microelectronics Technology Co., Ltd.
Demag Cranes & Components GmbH
Dynamit Nobel GmbH
Erbslöh AG
Festo AG & Co. KG
Flabeg Deco GmbH & Co. KG
Glasstech Co., Ltd.
Goertek Electronics Co., Ltd.
Grundfos Pumpenfabrik GmbH
Hansgrohe AG
Hengstler GmbH
Honeywell AG
Infineon Technologies AG
IRLBACHER Blickpunkt Glas GmbH
ITT Industries Rudolf Schadow GmbH
Krone GmbH
Leopold Kostal GmbH & Co. KG Fahrzeugelektrik

Marquardt GmbH
Maschinenfabrik Mönninghoff GmbH & Co. KG
MB Quart GmbH
MOLEX GmbH
Montblanc-Simplo GmbH
National Rejectors Inc. GmbH
ORGA Kartensysteme GmbH
Pepperl & Fuchs Drehgeber GmbH
Philips Sound Solutions
Recaro Aircraft Seating GmbH & Co.
Robert Bosch GmbH
Shanghai Eternal Information Technology Co., Ltd.
Sielaff GmbH & Co. KG Automatenbau
Siemens AG
TRW Automotive Electronics & Components
TYCO Electronics AMP GmbH
Voith Turbo GmbH & Co. KG

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DELO Industrial Adhesives
Ohmstrasse 3 · D-86899 Landsberg
Phone +49 8191 3204-0
Fax +49 8191 3204-144
E-Mail info@DELO.de
www.DELO.de