

## 2-pack marking inks

### Elpemer® SD 2618, yellow Elpemer® SD 2698, white

Index SD = screen printing

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- application by means of screen printing
- photoimageable
- aqueous-alkaline developable

Please read this technical report and the material safety data sheet carefully before using the product.

### 1. General information

The 2-pack marking inks **Elpemer® SD 2618, yellow**, and **SD 2698, white**, are photoimageable and aqueous-alkaline developed. They are preferably used for pilot and small series production (please see also Item 3: "Special notes").

### 2. Application

The 2-pack marking inks of the series **Elpemer® SD 2618** and **SD 2698** are applied by means of screen printing and owing to their good solder bath resistance can be used both for legend printing on the component side of the pcb and for service printing on the soldering side of the pcb.

### 3. Special notes

The 2-pack marking inks of the series **Elpemer® SD 2618** and **SD 2698** are blanket-printed on the pcb using an empty screen which replaces the time and cost intensive manufacture of stencils so that, especially with regard to pilot and small series production, enormous cost-saving potentials result.

The 2-pack marking inks of the series **Elpemer® SD 2618** and **SD 2698** are **free** of lead chromated pigments, that have to be classified as "toxic" in accordance with German dangerous goods regulations (GefStoffV). Nevertheless, the excellent covering power corresponds to that of the lead-chromated yellow pigmentations otherwise commonly used to date.

## 4. Characteristics

	SD 2618	SD 2698
<b>Colour/appearance</b>	yellow, silk-glossy	white, silk-glossy
<b>Solids content</b> [% by weight] according to ISO 3251, EN ISO 3251 (1 h/125 °C, 1 g weighed quantity) mixture	78 ± 2	78 ± 2
<b>Viscosity at 20 °C</b> [mPas] according to ISO 3219, EN ISO 3219 (measured with Haake RV 20*, PK 1/1°, D = 50 s <sup>-1</sup> ) mixture	20,000 ± 2,000	20,000 ± 2,000
<b>Density at 20 °C</b> [g/cm <sup>3</sup> ] DIN 53217, part 2 mixture	1.38 ± 0.05	1.42 ± 0.05
<b>Pot life of the mixture</b> (at room temperature: approx. 18 - 23 °C; set-up quantity: 500 g; sun and light radiation must be avoided)	at least 1 week	at least 1 week

\* Viscosity measuring unit supplied by: Haake Mess-Technik GmbH + Co  
Dieselstraße 4, 76227 Karlsruhe, Germany  
Phone: +49 - 7 21 - 40 94 - 0  
Fax: +49 - 7 21 - 40 94 - 360

## 5. Dangerous goods regulation

Detailed specifications of safety precautions, environmental protection, waste disposal, storage, handling, exhaust air regulations as well as other characteristics can be found in the material safety data sheet according to EEC 91/155.

When using chemicals, the common precautions should be noted carefully.

## 6. Properties

The 2-pack marking inks **Elpemer® SD 2618** and **SD 2698** are particularly distinguished by the following features:

- high solids content, thus low pollution of process exhaust air by solvents
- excellent covering power, thus high contrast to the substrate; even finest details can be recognized easily
- excellent resolution enables the representation of finest structures
- excellent adhesion to photoimageable solder resists of the series **Elpemer® 2467\***, aqueous-alkaline developable and **Elpemer® 2469 SM\***, polyalcohol developable
- very good solder bath resistance; thus also suitable for “service printing” on the soldering side.

\* Special technical reports for these products are available upon request. In our report manual these reports are filed under group 2.

## 7. Mixing ratio

### Component A : Component B = 4 : 1 (parts by weight)

The two components (resin component A and hardener component B) are already packed in the correct mixing ratio.

The volume of the container of component A is sufficiently large to accommodate the total quantity of component B.

For mixing, we recommend using mechanical stirring equipment while the stirring time should be at least 10 to 15 minutes. Our technical information sheet **TI 15/10**: "Processing of 2-pack systems" gives detailed advice on correct mixing. We will gladly provide you with **TI 15/10** upon request.

Processing can be started directly after thorough mixing. The pot life at room temperature (18 - 23 °C) is at least one week. Since the system is sensitive to light, solar and light radiation should be avoided. The use of yellow light or yellow filters is recommended.

**CAUTION:** The labels on our containers indicate both the volume [L] and weight [kg]. The mixing ratio applies to the weight.  
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## 8. Processing

### 8.1 Screen printing

Processing is effected by means of screen printing. Printing should only be effected on clean and grease-free substrates. Processing is possible on hand-printing tables as well as on semi- or fully automatic screen printing machines..

Screen fabric	:	polyester 68 - 100 T
Screen tension	:	at least 18 N
Squeegee	:	65 - 70 Shore A hardness with angular cut
Squeegee angle	:	75 - 80°

### 8.2 Pre-drying

Temperature	[°C]	:	80
Time	[min]	:	approx. 30

The sole function of pre-drying is to remove solvents, thus their removal must be ensured by means of an effective exhaust air equipment.

### 8.3 Exposure

To obtain an optimum resolution with the least possible film distortion 5 to 7 kW exposure units, preferably equipped with water-cooled burners should be used. The exposure parameters must be adjusted to the developing process below (see Item 8.4).

Type of burner	:	Fe-doped mercury vapour lamp	
Exposure energy	[mJ/cm <sup>2</sup> ]	:	400 - 600
Exposure time	[s]	:	approx. 20 - 25 (for 7 kW exposure units)
Stouffer step (on copper)	:	approx. 9 (free developed)	

### 8.4 Development

#### Aqueous-alkaline development

Concentration of developer	[%]	:	1.0 ± 0.1 (Na <sub>2</sub> CO <sub>3</sub> solution)
Developing temperature	[°C]	:	32 ± 1
Developing time	[s]	:	approx. 60

### 8.5 Thermal curing

Temperature	[°C]	:	150
Time	[min]	:	60*

\*Object holding time:

The time is measured from the point when the panels reach the curing temperature.

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## 9. Adjustment of viscosity

The 2-pack marking inks **Elpemer® SD 2618** and **SD 2698** are adjusted in such a manner that they can normally be processed in the condition supplied. If necessary, their viscosity can be reduced for processing purposes only by adding thinner **V 2608**.

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## 10. Auxiliary products

We recommend the following auxiliary products for the processing of **Elpemer®**:

### 10.1 Cleaning and deoxidizing agent HP 5625 for conveyORIZED spraying equipment:

- for pre-treating Cu pcbs prior to coating with **Elpemer®**solder resists in conveyORIZED spraying units
- for deoxidizing and degreasing without any copper degradation
- no foaming.

### 10.2 Screen opener HP 5200:

- spray to dissolve dried circuit printing lacquers from screens
- contains extremely active substances, so immediately effective against clogged screens
- silicone and grease-free
- CFC-free propellant.

p.t.o.

### 10.3 Anti-static spray HP 5500:

- any static charge that occurs during the screen printing process can be avoided or removed by means of anti-static spray **HP 5500**
- solvent, silicone and grease-free
- CFC-free propellant.

### 10.4 Defoamant HP 5911:

- to defoam aqueous-alkaline developing media
- silicone-free, fully biologically degradable, effective concentration: 0.02 to 0.05 %.

Special technical reports for these products are available on request. In our report manual these reports are filed under group 5.

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## 11. Cleaning

For the manual cleaning of screens and tools we recommend our cleaning agent **R 5817**. Owing to its high flash-point (+32 °C) and the classification into hazard class A II according to VbF (provisions for flammable liquids) our cleaning agent **R 5821** is particularly suitable for use in automatic screen washing units.

Another cleaning agent that is especially suitable for use in automatic screen washing units is our **R 5899** which is particularly distinguished by a low vapour pressure (< 0.1 hPa at 20 °C) and thus does not fall under the EU VOC regulation which judges solvents by their percentage of volatile organic compounds and has to be converted to national law until April 2001. Owing to its high flash point (> 100 °C) the cleaning agent **R 5899** contributes to an increased work safety and reduces particularly environmental pollution.

Special technical reports for these products are available upon request. In our report manual these reports are filed under group 5.

Further information regarding contents and consequences of the EU-VOC regulation 1999/13/EG can be found in our technical information sheet **TI 15/110 E**. We will gladly provide you with this technical information sheet on request. In our report manual this technical information sheet is filed under group 15.

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## 12. Drying conditions

The drying conditions are divided into:

- pre-drying (see Item 8.2)  
and
  - thermal curing (see Item 8.5).
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## 13. Standard packaging

The **Elpemer** 2-pack marking inks **SD 2618** and **SD 2698** are packed for delivery as follows:

Component A = 10 tins of 0.8 kg = 8 kg in 1 carton  
Component B = 10 tins of 0.2 kg = 2 kg in 1 carton  
= 1 selling unit = 10 kg

Partial lots of a selling unit can also be ordered but will entail corresponding surcharges to cover repackaging costs.

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## 14. Storage

In a cool, dry place sealed original containers can be stored for at least 9 months.

**According to EN ISO 9001 labels on containers show expiry dates!**

**ATTENTION:** Storage temperatures in excess of +25 °C affect the storage stability. The system is sensitive to light, therefore the containers must be protected from direct solar and light radiation.

## 15. Further literature

In addition to the recommendations given in this technical report we can provide our own technical publications which give highly detailed information on the application and processing of our products:

### Application Information AI 2/1

**"Processing instructions for the photoimageable solder resists of the series Elpemer 2467, Elpemer 2469 and Elpemer 2463 FLEX"**

All reports which are available can be found in the **technical information sheet TI 15/101 E** and all technical information sheets in the listing of all **technical information sheets (TI's) technical information TI 100 E**.

We will gladly provide you with this literature on request. In our report manual all **technical information sheets (TI's)** are filed under group 15. Moreover, this information can be accessed on our web-site at <http://www.peters.de>.

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## 16. Further products for the production of pcbs

Our production programme includes all special lacquers for the production of printed circuits:

### 16.1 Etch resists

High definition, resistant up to pH 9.5; strippable in caustic soda; UV or conventional curing.

### 16.2 Plating resists

Resistant at all pH levels, UV or conventional curing.

### 16.3 Elpemer® photoresists

Photoimageable etch and plating resists, aqueous-alkaline as well as polyalcohol developable, strippable in caustic soda solution, for screen-printing, curtain coating and roller coating procedures.

### 16.4 Solder resists

1- and 2-pack solder resists, available as low solvent content and solvent-free adjustments, non-bleeding, UV curing or thermo curing, available in a highly flexible adjustment.

### 16.5 Elpemer® photoimageable solder resists

Photoimageable 2-pack solder resists for rigid and flexible circuits, polyalcohol developable and/or aqueous-alkaline developable, for the procedures screen-printing, curtain coating and electrostatic spraying.

### 16.6 Peelable solder resists

Thermal and UV curing 1-pack systems for covering those parts of the printed circuit boards which should not be in direct contact with the solder bath such as gold contacts, card-edge connectors, tip contacts, through-platings in SMT-mixed assemblies, etc. or for covering in plating baths/ for electroless metallizing. Peelable before and/or after the soldering process.

### 16.7 Marking inks, legend inks

Conventional 1- and 2-pack inks as well as UV-curing systems.

### 16.8 Elpemer® photoimageable marking inks, legend inks

Photoimageable 2-pack marking inks for the application in screen-printing; print is made in blank screen, so that no time-consuming preparation of a screen-stencil is required.

### 16.9 Carbon-conductive inks

Substitute for gold at contact points; for the production of crossing tracks.

### 16.10 Via-hole fillers

1-pack screen printing inks to fill via holes. Enables vacuum-incircuit test even for SMT-PCBs

p.t.o..

### 16.11 Plugging pastes

The solvent-free **1-pack plugging paste PP 2795** has been developed especially for the bubble-free filling of plated-through holes. By achieving completely plane surfaces, it is possible to fix plane insulation layers in SBU technology.

### 16.12 Heatsink pastes

The thermal management of printed circuit boards resp. Flat packs becomes more simple and favourable in price by the application of the **1-pack heatsink paste HSP 2741**, black, keeping the same or even better heat-conducting properties of the total system. **HSP 2741** is solvent-free and can be applied in the requested structures and layer thickness in screen printing procedure.

### 16.13 Auxiliary products for PCB-fabrication

This extensive range of products includes thinners, retarders, screen-openers, anti-static sprays, anti-static agents, screen-cleaning agents, cleaning agents for screen-washing units and lacquer-processing units.

### 16.14 Defoamants

For the elimination of foam in acid and weak alkaline baths; for defoaming in aqueous-alkaline developers; **silicone-free and biologically degradable.**

### 16.15 Cleaner

For deoxidizing copper surfaces without metal degradation.

### 16.16 Dewatering fluids

For dehydration and preservation of printed circuit boards.

### 16.17 Water-dipping varnishes

Dewatering varnishes for printed circuit boards with excellent protection against corrosion.

### 16.18 Solder flux lacquers

For dip coating and roller coating processes against PCB corrosion.

Special technical reports for these products are available on request.

**Elpemer®** = registered trademark of Lackwerke Peters GmbH + Co

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## 17. Further products for the electronics/electrical engineering industries

We boast a wide range of

**conformal/permanent coatings, casting compounds, casting resins, electro pastes, insulating lacquers, impregnating varnishes, adhesive lacquers, chip adhesives and auxiliary products for the electronics.**

Special technical reports are also available for these products and can be provided on request.

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We are prepared to assist you in solving your problems and look forward to receiving your inquiry in case of need. We will gladly provide you with publications and samples free of charge upon request.

Our verbal and written advice is given to the best of our knowledge and has to be regarded as non-binding recommendation, also with regard to possible third-party proprietary rights. This advisory service, however, does not exempt the user of our products from performing his own tests in view of the application intended. A possible liability is confined only to the value of the goods supplied by us and applied by the user. Of course, we guarantee the perfect quality of our products in accordance with our terms of sale and delivery.