

## 2-pack marking inks of the series

# SD 2692 T

- very long pot life/processing time (at least 6 weeks)
- the catalysed adjustments (Index **K**) have a shorter curing time, an even better adhesive strength and a pot life of one day
- low solvent/high solids content
- excellent covering power
- excellent definition due to high thixotropy
- do not contain any of the substances listed in the RoHS directive 2002/95/EC, the end-of-life vehicle directive 2000/53/EC or WEEE directive 2002/96/EC

This technical report is valid for the following adjustments:

- **SD 2632 T**, red
- **SD 2642 T**, black
- **SD 2652 T**, blue
- **SD 2692**, white
- **SD 2692 T**, white
- **SD 2612 T-K**, yellow
- **SD 2692 T-K**, white

Indices:    **SD** = screen printing  
                  **T**    = thixotropic  
                  **K**    = catalysed

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Please read this technical report and the material safety data sheet according to directive 1991/155/EEC carefully before using the product.

## 1. General information

The 2-pack marking inks of the series **SD 2692 T** are thermal curing screen printing lacquers with a high solids content.

## 2. Application

The 2-pack marking inks of the series **SD 2692 T** are applied by screen printing where they are used to print legends for assembly, test and service purposes, e. g. letters, figures, bar codes and symbols. The good solder bath resistance renders them suitable for the application of service prints, even on the solder side of the printed circuit board. For large-area printing on copper, numerous solder resists in various colours are available.

## 3. Special notes

The 2-pack marking inks of the series **SD 2692 T** are distinguished by an excellent covering power and, on account of the thixotropic adjustment (index **T**), a very good definition. This means that even fine details can be both very easily read, owing to the contrast against the background, and represented accurately.

The low material consumption, as a result of the high solids content, and the very long processing time/pot life (at least 6 weeks) of the mixed ink guarantee a high degree of economy for the user.

The catalysed 2-pack marking inks of the series **SD 2692 T** (index **K**) cure considerably faster than the non-catalysed adjustments (see item 8 "Drying/Curing") so that they are particularly suitable for the legend printing of large series'. Due to the catalyst the pot life is reduced simultaneously from 6 weeks to one day. The catalysed adjustments are distinguished by a further improved adhesion and scratch resistance, especially after Ni/Au (ENiG) and electroless Sn (CSN) processes.

The 2-pack marking ink **SD 2692**, white is not thixotropized and thus especially suitable for overprinting tightly packed conductors.

### The following marking inks are also available:

The 1-pack marking inks of the series **SD 2513 UV** for application by screen printing have a solids content of 100 % and on account of the fast UV curing boast short processing times. However, they exhibit a slightly lower solder bath resistance.

The photoimageable 2-pack marking inks **Elpemer® SD 2618** and **SD 2698** enable the representation even of fine details. The time- and cost-consuming process of making screen printing stencils does not apply so that they are especially suited for use in pilot and small volume series'. They are blanket coated by screen printing and developed in aqueous-alkaline solution.

The white UV curing marking ink **IJ 2595 UV** is highly economic when applied by the **ink-jet process**. The advantage of this marking ink is its fast **UV** curing (Index **UV**), after which the product already shows good adhesion to the solder resist and resistance to electroless Ni/Au (ENiG) and electroless Sn (CSN) processes without the need for final thermal curing. Owing to the precise application, a conceivable application field for this marking ink could be the generation of bar codes.

Special reports are available for these products and can be provided upon request. In our report manual these technical reports are filed under group 2. On our report manual CD you will find technical reports in the "Products" section.

## 4. Dangerous goods regulations

- Please read our material safety data sheet according to directive 1991/155/EEC where you will find detailed specifications of safety precautions, environmental protection, waste disposal, storage, handling, transport as well as other characteristics.
- When using chemicals, the common precautions should be carefully noted.

## 5. Characteristics

	<b>SD 2642 T, black SD 2652 T, blue SD 2692 T, white</b>	<b>SD 2632 T, red</b>	<b>SD 2692, white</b>
Solids content, ISO 3251 1h, 125 °C [257 °F], 1 g weighed quantity, 75-mm dish	85 ± 2 % by weight	86 ± 2 % by weight	85 ± 2 % by weight
Viscosity* at 20 °C [68 °F] ISO 3219, mixture	50,000 ± 10,000 mPas	35,000 ± 8,000 mPas	33,000 ± 5,000 mPas
Density at 20 °C [68 °F] ISO 2811-1, mixture	1.42 ± 0.05 g/cm <sup>3</sup>	1.28 ± 0.05 g/cm <sup>3</sup>	1.43 ± 0.05 g/cm <sup>3</sup>
Pot life of mixture at 18-23 °C [64.4-73.4 °F] (set-up quantity 500 g)	at least 6 weeks		

\* measured with Haake RV 20, PK 1/1 , D = 50 s<sup>-1</sup>

Viscosity measuring unit supplied by:

Thermo Electron (Karlsruhe) GmbH (formerly Haake-Messtechnik GmbH + Co)

Dieselstraße 4, 76227 Karlsruhe, Germany

Phone +49 (0) 721 - 40 94 - 0; Fax +49 (0) 721 - 40 94 - 300

www.thermo.com

### 5.1 Characteristics of catalysed adjustments

	<b>SD 2612 T-K, yellow</b>	<b>SD 2692 T-K, white</b>
Solids content, ISO 3251 1h, 125 °C [257 °F], 1 g weighed quantity 75 mm dish	89 ± 2 % by weight	86 ± 2 % by weight
Viscosity* at 20 °C [68 °F] ISO 3219, mixture	50,000 ± 10,000 mPas	50,000 ± 10,000 mPas
Density at 20 °C [68 °F] ISO 2811-1, mixture	1.29 ± 0.05 g/cm <sup>3</sup>	1.44 ± 0.05 g/cm <sup>3</sup>
Pot life of mixture at 18-23 °C [64.4-73.4 °F] (set-up quantity 500 g)	1 day	

\* measured one hour after set-up of mixture with Haake RV 20, PK 1/1 , D = 50 s<sup>-1</sup>

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## 6. Properties

The 2-pack marking inks of the series **SD 2692 T** are distinguished by the following properties:

### 6.1 General properties

- do not contain any of the substances listed in the RoHS directive 2002/95/EC, the end-of-life vehicle directive 2000/53/EC or WEEE directive 2002/96/EC
- low material consumption on account of high solids content

- high level of economy due to long pot life of the non-catalysed adjustments (at least 6 weeks); even long production intervals are possible without the need to prepare fresh material in the meantime
- excellent definition due to thixotropic adjustment
- free of lead chromate
- the very good covering power means excellent contrast against background; even fine details are easily legible
- good solder bath resistance; therefore also suitable for the application of service prints on the solder side of the printed circuit board
- excellent resistance to water, acids, lyes, oils, fats, as well as numerous solvents
- high abrasion resistance
- very good adhesion, especially of the catalysed adjustments, to copper, FR4 base material and solder resists as well as to numerous other surfaces, e. g. plastics, metals and glass (tape test according to IPC-TM-650, 2.4.28.1 on copper, FR4 base material and solder resists without flaking)
- excellent adhesion both to photoimageable solder resists such as **Elpemer® 2467** and **Elpemer® 2469 SM** and conventional solder resists such as **SD 2462 NB**.

## 7. Processing

The 2-pack marking inks of the series **SD 2692 T** are applied by screen printing. To achieve good adhesion, printing should be effected on completely clean, dry and grease-free substrates only.

### 7.1 Mixing ratio

The two components must be mixed as follows:

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

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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The two components are already packed in the correct mixing ratio. The volume of the container of component A is sufficient to accommodate the total quantity of component B and to allow perfect mixing.

→ Mix the two components in the indicated mixing ratio.

For mixing we recommend mechanical stirring equipment. Our **technical information sheet TI 15/10: "Processing of 2-pack systems"** gives detailed advice on correct mixing. In our report manual this technical information sheet is filed under group 15. We would gladly send you **TI 15/10** upon request. On our report manual CD and on our website you will find technical information sheets in the "Service" section. Once the ink has been mixed thoroughly, processing can start immediately.

### 7.2 Adjustment of viscosity

The 2-pack marking inks of the series **SD 2692 T** 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 by adding up to 5 % of the universal thinner **UV 5000**. The added quantity should not exceed max. 5 %.

### 7.3 Auxiliary products

- **Screen opener HP 5200**

The screen opener **HP 5200** is a highly active spray for dissolving dried screen printing inks immediately and safely from clogged screens. **HP 5200** is silicone-free and does not contain oils or oily substances, so that no smearing occurs.

- **Anti-static spray HP 5500**

The anti-static spray **HP 5500** prevents and eliminates any electrostatic discharge that occurs during screen printing. **HP 5500** is silicone- and grease-free.

• **Cleaning agents R 5899, R 5821 and R 5817**

The cleaning agent **R 5899** does not have to be marked according to German dangerous goods regulations and can be handled simply and safely. Owing to its high flash point (> 100 °C [> 212 °F]) it is especially suitable for use in screen washing equipment. The cleaning agent **R 5899** is particularly distinguished by a low vapour pressure (< 0.1 hPa at 20 °C [68 °F]) and thus is not affected by the EU-VOC regulation 1999/13/EG which judges solvents by their percentage of volatile organic compounds (VOC = volatile organic compounds).

Furthermore, the cleaning agent **R 5821** is available which, owing to its high flash point of +32 °C [89.6 °F], is also suitable for use in screen washing equipment as well as for cleaning work tools. For the manual cleaning of screens and tools we recommend our cleaning agent **R 5817** with its fast and thorough cleaning properties.



**Do not use cleaning agent as a thinner or for washing hands since solvents remove the natural grease from skin.**

Special technical reports for these products are available upon request. Further information regarding the content and consequences of the EU-VOC regulation can be found in our **technical information sheet TI 15/110 E "EU-VOC regulations – Content and consequences for the PCB industry"**. In our report manual these technical publications are filed under group 5 and 15. On our report manual CD you will find technical reports in the "Products" section and technical information sheets in the "Service" section.

**7.4 Screen printing**

**Recommended screen printing parameters**

Screen fabric	polyester 100 - 120 T (lines/cm) (corresponding to new nomenclature 100–40 up to 120-34) or corresponding steel mesh
Screen tension	at least 18 N/cm
Snap-off	as low as possible
Squeegee	75 – 80 Shore-A hardness
Squeegee profile	right-angled
Squeegee angle	75 - 80 °

**8. Drying/Curing**

The marking inks of the series **SD 2692 T** can be cured both in convection dryers or infrared conveyerised dryers:

	<b>Convection dryer</b>	<b>Infrared conveyerised dryer</b>
SD 2632 T SD 2642 T SD 2652 T SD 2692 SD 2692 T	45 min* 130 °C [266 °F]	7 - 8 min 160 - 180 °C [320-356 °F]
SD 2612 T-K SD 2692 T-K	15 min* at 150 °C [302 °F] or 30 min* at 130 °C [266 °F]	6 - 7 min 160 - 180 °C [320-356 °F]

\* Object holding time: Curing time is measured from the point when the panels reach the curing temperature.

→ Perform pretrials to determine the optimum temperature profile for IR curing the marking inks of the series **SD 2692 T**.

## 9. Standard packaging

The marking inks of the series **SD 2692 T** are packed for delivery as follows:

	<b>Component A in one carton</b>	<b>Component B in one carton</b>	<b>Selling unit</b>
SD 2632 T SD 2642 T SD 2652 T SD 2692 SD 2692 T	10 tins of 0.8 kg	10 plastic bottles of 0.2 kg	10 kg
SD 2612 T-K SD 2692 T-K	10 tins of 0.4 kg	10 plastic bottles of 0.1 kg	5 kg

Partial lots of the selling units may be ordered, but will entail surcharges to cover repackaging costs.

## 10. Storage

In a cool, dry place, sealed original containers can be stored for at least 6 months. For warehousing reasons, isolated cases may occur where the shelf life upon shipment is less than the shelf life indicated in this technical report. However, it is ensured that our products have **at least** two-thirds of their shelf life remaining when they leave our company.

In accordance with EN ISO 9001, labels on containers show expiry dates.



**Moisture and storage temperatures below 5 °C [41 °F] and above 25 °C [77 °F] as well as repeated opening of containers reduce the shelf life.**

## Any questions?

We would be pleased to offer you advice and assistance in solving your problems. Free samples and technical literature are available upon request.

The above information as well as advice given by our Application Technology Department whether in verbal or written form or during product evaluations is provided to the best of our knowledge, but must be regarded as non-binding recommendations, also with respect to possible third-party proprietary rights.

The products are exclusively intended for the applications indicated in the corresponding technical data sheets.

The advisory service does not exempt you from performing your own assessments, in particular of our material safety data sheets and technical information sheets, and of our products as regards their suitability for the applications intended. The application, use and processing of our products and of the products manufactured by you based on the advice given by our Application Technology Department are beyond our control and thus entirely your responsibility. The sale of our products is effected in accordance with our current terms of sale and delivery.

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