

# Plugging paste SD 2768 NB

The plugging paste **SD 2768 NB** is used to seal via holes for adapting the vacuum during incircuit testing. It prevents the tin-solder from seeping through to the component side and the flux residues from settling in the vias.

- Base: Epoxy resin (ER)
- applied by screen printing
- low volume shrinkage due to the high solids content to permit a reliable filling of the via holes within optimum process control
- no bleeding on gold or other metal surfaces, thus particularly suitable for via-in-pad applications
- excellent solder bath resistance, also in lead-free solder processes
- good resistance to electroless/electroplating baths
- ink film almost insoluble after curing
- UL Recognised Component: best flame class V-0 acc. to UL 94, UL File No. E80315

## Characteristics

Colour/appearance	green
Solids content of mixture ISO 3251 1 h, 125 °C [257 °F], 1 g weighed quantity	82 ± 2 % by weight
Viscosity* of mixture at 20 °C [68 °F] ISO 3219	35,000 ± 5,000 mPas
Density of mixture at 20 °C [68 °F] ISO 2811-1	1.52 ± 0.05 g/cm <sup>3</sup>
Pot life of mixture at room temperature, approx. 18-23 °C [64.4-73.4 °F] at 5-10 °C [41-50 °F]	42 h 5 days

\* measured with Haake RS 600, C 20/1°, D = 50 s<sup>-1</sup>,  
viscosity measuring unit supplied by Thermo Fisher Scientific, [www.thermofisher.com](http://www.thermofisher.com)

Indices: SD = screen printing, NB = no bleeding

## Physical and mechanical properties

Property	Test method	Result
Resistance to solvents	IPC-SM-840E, 3.6.1 Isopropanol 10% alkaline cleaning agent	passed passed
Resistance to solvents	test boards, dipped in methylene chloride (dichloromethane), 30 min at room temperature	no swelling
Thermal cycling test	5 cycles of 15 min boiling water, 2 min iced water (Peters test method LP-13.0)	passed
Solder bath resistance	IPC-SM-840E, 3.7.2 IPC-TM-650, 2.6.8	passed: 20 s at 265 °C [509 °F] passed: 20 s at 288 °C* [550.4°F]
Thermal class	based on DIN IEC 60085	B = 130 °C [266 °F]


## Electrical properties

Property	Test method	Result
Dielectric strength	VDE 0303, part 21 IPC-TM-650, 2.5.6.1	≥ 80 kV/mm
Surface resistance	VDE 0303, part 30 DIN IEC 60093	≥ 2 x 10 <sup>14</sup> Ohm
Volume resistivity	VDE 0303, part 30 DIN IEC 60093	≥ 10 <sup>16</sup> Ohm x cm
Moisture and insulation resistance	IPC-SM-840E, 3.9.1	class H and T
Comparative Tracking Index (CTI)	DIN EN 60112 on base material with CTI 225 CTI 600	CTI 225 CTI 600
Electromigration	IPC-SM-840 E	no migration
Electrocorrosion	20 cycles at min. 90 % r. h./100 V direct current  1 cycle = - 1 h heating from 25 °C [77 °F] to 65 °C [149 °F] - 3 h holding at 65 °C [149 °F] - 1 h cooling from 65 °C [149 °F] to 25 °C [77 °F]	passed

\* The CTI value of the coating depends, among others, on the tracking resistance values of the base material. The CTI value of the base material is at least maintained.

**Note:** Optimum electrical insulation values can only be achieved when all flux residues are removed thoroughly from the pcb after HAL.

## Processing

	Please read this technical report and the publications listed below carefully before using the product. These sheets are enclosed with the first shipment of product or sample.
<b>MSDS</b>	The corresponding material safety data sheet contains detailed information and characteristics on safety precautions, environmental protection, transport, storage, handling and waste disposal.
<b>TI</b>	<a href="#">Technical information TI 15/3</a> "Protective measures when using chemicals including lacquers, casting compounds, thinners, cleaning agents"
<b>TI</b>	<a href="#">Technical information TI 15/10</a> "Processing of 2-pack systems"
<b>TI</b>	<a href="#">Technical information TI 15/13</a> "Pretreatment in the pcb fabrication process"

Since the many different permutations make it impossible to evaluate the whole spectrum (parameters, reactions with materials used, chemical processes and machines) of processes and subsequent processes in all their variations, the parameters we recommend are to be viewed as guidelines only that were determined in laboratory conditions. We advise you to determine the exact process limitations within your production environment, in particular as regards compatibility with your specific follow-up processes, in order to ensure a stable fabrication process and products of the highest possible quality.

The specified product data is based upon standard processing conditions/test conditions of the mentioned norms and must be verified if necessary while observing suitable test conditions on processed products.

Feel free to contact our application technology department (ATD) if you have any questions or for a consultation.

### Safety recommendations

- When using chemicals, the common precautions should be carefully noted.
- Ensure that extractor units of workplace ventilation arrangements are positioned at solvent source level.

### Mixing



Component A : Hardener (Component B) = 5 : 1 (parts by weight)

On the labels of our containers, you will find the volume [L] and weight [kg]. The mixing ratio refers to the weight.

Excess mixed ink should be stored in a cool place; this will prolong the pot life (see item "Characteristics").

### Adjustment of viscosity

The plugging paste **SD 2768 NB** is adjusted in such a manner that it can normally be processed in the condition supplied. To reduce its viscosity for processing purposes

**DIL** dilute with Universal thinner **UV 5000** or Universal retarder **UZ 5100**

### Auxiliary products recommended

- [ELPESPEC® screen opener HP 5200](#)

highly active spray for dissolving dried screen printing inks from the screen; silicone- and grease-free, thus no surface defect/dewettings or smearing effects to be expected

- [ELPESPEC® anti-static spray HP 5500](#)  
prevents and eliminates electrostatic discharge occurring during screen printing; silicone- and grease-free
- [ELPESPEC® cleaning agent R 5899](#)  
for screen washing equipment, simply and safely to handle, no labelling in accordance with the German dangerous goods regulations required, extremely high flash point (> 100 °C [> 212 °F]), low vapour pressure < 0.1 hPa at 20 °C [68 °F], thus not affected by the EU-VOC regulation 1999/13/CE
- [ELPESPEC® cleaning agent R 5821](#)  
for the cleaning of equipment and work tools, high flash point (+32 °C [89.6 °F])
- [ELPESPEC® cleaning agent R 5817](#)  
for the manual cleaning of screens and tools

## Screen printing

→ Ensure that the surface to be coated is clean, dry and grease-/oxide-free and that copper surfaces preferably have an average surface roughness of 2 µm.

### Screen printing parameters recommended

Screen fabric	steel fabric: - 224/100 (80 mesh standard screen) - 245/65 - 265/50 for initial orientation tests: use polyester screen between 36-90 and 43-80 (old nomenclature: 35-43 T)
Screen printing stencil	voids in the fabric > hole diameter (about 0.1 – 0.2 mm larger, depending on size of the printing format) A high stencil build-up is not necessary because the ink should be printed into the drill holes only. As a rule it is sufficient to close the screen mesh with a thin coat of emulsion or a thin capillary film.
Printing underlay	thickness approx. 3 mm, use base material that was drilled with the same drill programme but where the diameters of the holes are five times the size of the actual via holes (the printing underlay enables the filling of the holes since there is no air resistance under the holes)  An undergrid would also be acceptable provided it does not permit the printing substrate to rebound.
Snap-off	as low as possible
Flooding	rubber squeegee 75 Shore A, squeegee profile 90°, sliding 70°
Printing	rubber squeegee 75 Shore A, squeegee profile: 30-45°, squeegee angle 90°, high squeegee pressure if possible (4 bar), slow printing speed if possible

These print parameters serve as a guideline and have to be optimised depending on the layout of the printed circuit board and adapted to the respective production conditions.

After curing, the ink assumes a virtually insoluble state.

→ Check the printing result carefully as not even strippers will dissolve the ink.

The plugging paste is not suitable for filling tinned via holes, as in case of resoldering the plugging paste may sag due to the melting of the tin.

## Drying/Curing

The curing conditions also depend upon the quantity of plugging paste applied.

→ Perform pre-trials to determine the optimum curing parameters. If possible adjust a ramp-formed curing curve in order to expel any entrapped solvent residues, e.g.:

**45 min at 80 °C [176 °F], followed by final cure for 45 min at 130 °C [266 °F]  
(object holding time\*).**

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

## Packaging

The packing units available are indicated in our offer which we will send you upon request.

## Shelf life and storage conditions



Shelf life: In sealed original containers at least 9 months



Storage conditions: +5 °C to +25 °C [+41 °F to +77 °F]

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. Labels on containers show shelf life and storage conditions.

## Disclaimer

All descriptions and images of our goods and products contained in our technical literature, catalogues, flyers, circular letters, advertisements, price lists, websites, data sheets and brochures, and in particular the information given in this literature are non-binding unless expressly stated otherwise in the Agreement. This shall also include the property rights of third parties if applicable.

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Any questions? We would be pleased to offer you advice and assistance in solving your problems. Samples and technical literature are available upon request.

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