

# Solder resist Elpejet® IJ 2467

Solder resist **Elpejet® IJ 2467** is a UV-curable inkjet ink for use in PCB production. The inkjet ink is applied selectively using digital drop-on-demand technology. Compared to screen printing and curtain coating methods, the process is simplified and accelerated, enabling a significant reduction in material consumption (selective minimal design).

- Adjustment 004
- application by means of inkjet technology
- compatible with Konica Minolta printheads 1024i (S, M and L) and Fuji Dimatix Samba G3L
- fast layout changes and dynamic marking
- cost-effective production of small quantities
- solvent-free
- optimum edge coverage and coating thickness distribution
- suitable for UV LED curing (365 and 395 nm)
- tack-free directly after printing due to process integrated UV LED lamps
- excellent resistances due to the "dual cure" property (UV and thermal curing)
- halogen-free according to JPCA-ES01-2003 / IEC 61249-2-21
- suitable for laser marking with CO<sub>2</sub> lasers (e.g. data matrix, barcodes)
- good TCT cycle resistance (temperature cycling test)
- very good resistance in electroless nickel/gold and electroless tin baths
- excellent dielectric properties
- high scratch resistance
- compatible with lead-free soldering processes
- meets/exceeds IPC-SM-840E

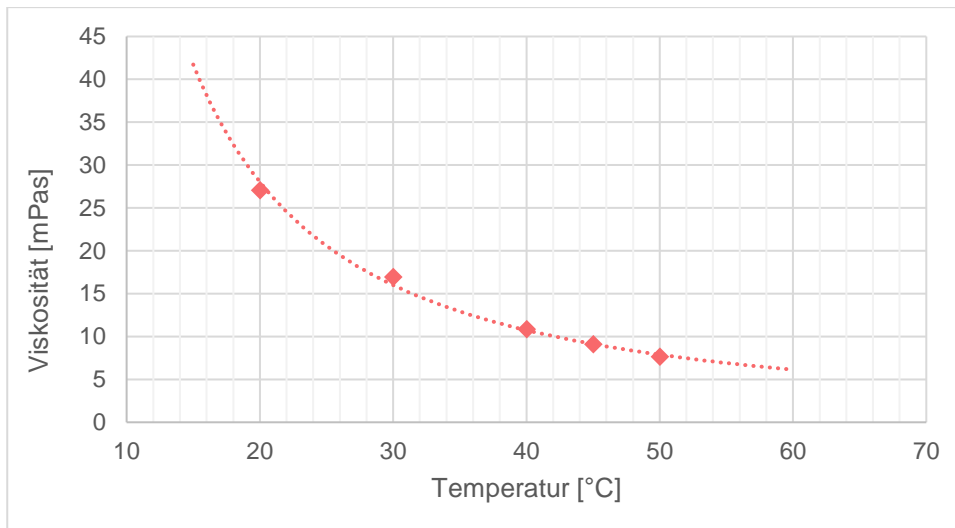
## Characteristics

<b>Colour/appearance</b>	green
<b>Solids content</b>	100%
<b>Viscosity*</b> at 45 °C [113 °F], DIN EN ISO 3219 (see also diagram below)	≈ 9 mPas
<b>Density at 20 °C [68 °F], DIN EN ISO 2811-1</b>	≈ 1.07 g/cm <sup>3</sup>
<b>Particle size</b> , Microtrac S3500	< 1 µm
<b>Surface energy</b> , Krüss DSA25	42.3 mN/m
<b>Surface tension at 45 °C [113 °F], Krüss BPT Mobile</b>	35.6 mN/m

\* measured with RS 600, C 35/1°, D = 100 s<sup>-1</sup>

viscosity measuring unit supplied by Thermo Fisher Scientific, [www.thermofisher.com](http://www.thermofisher.com)

### Viscosity depending on the temperature



### Physical and mechanical properties

Property	Test method	Result
Adhesion	IPC-SM-840E, 3.5.2.1	class H and T
Cross-cut	DIN EN ISO 2409 on copper on FR 4	GT 0 GT 0
Pencil hardness	IPC-SM-840E, 3.5.1	≈ 7 H
Resistance to solvents/ cleaning agents	IPC-SM-840E, 3.6.1.1 Isopropanol Isopropanol : deionized Water (75 : 25) 10% alkaline cleaner Monoethanolamine Deionized water D-Limonene	passed passed passed passed passed

Property	Test method	Result
	Propylene glycol monomethyl ether acetate (PMA) at room temperature at room temperature, 60 min	passed
Resistance to acid	10% H <sub>2</sub> SO <sub>4</sub> at 20 °C [68 °F], 30 min	passed
Resistance to lye	10% NaOH at 20 °C [68 °F], 30 min	passed
Ionic contamination	Alpha Ionograph M500	< 0.3 µg NaCl/cm <sup>2</sup>
Hydrolytic stability	30 min 100 °C [212 °F] water steam	no change
	IPC-SM-840E, 3.6.2 28 days, 97 ± 2 °C [206,6 ± 35,6 °F], 90-98 % r. h.	passed
Solder bath resistance	IPC-SM-840E, 3.7.2, 10 s 265 °C [509 °F]	GT 0
Lead-free reflow soldering	IPC-SM-840E, 3.7.3.1, 6 x 260 °C [500 °F] Peak	GT 0
Thermal shock resistance	IPC-SM-840E, 3.9.3 100 cycles -65/+125°C [-85/257 °F]	class H and T
	1000 cycles -40/+125°C [-40/257 °F] 1000 cycles -40/+140°C [-40/284 °F]	passed
Permanent temperature resistance	1000 h 140°C [284 °F]	GT 0

## Electrical properties

Property	Test method	Result
Dielectric strength	IPC-TM-650, 2.5.6.1	≥ 150 kV/mm
	IPC-SM-840E, 3.8.1	passed
Surface resistance	DIN EN 62631-3-2	≥ 2.4 x 10 <sup>14</sup> Ohm
Specific volume resistivity	DIN EN 62631-3-1	≥ 2.7 x 10 <sup>16</sup> Ohm x cm
Insulation resistance	IPC-SM-840E, 3.8.2	class H and T
Moisture and insulation resistance	IPC-SM-840E, 3.9.1	class H and T
	1500 h 85 °C/85 % r. h., 1000 Volt	≥ 5 x 10 <sup>8</sup> Ohm
	1500 h 65 °C/93 % r. h., 1000 Volt	≥ 5 x 10 <sup>8</sup> Ohm
Comparative Tracking Index (CTI, Tracking resistance)	DIN EN 60112, on FR4 base material with CTI 600	≥ CTI 600*

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

## 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.

### MSDS

The corresponding material safety data sheet contains detailed information and characteristics on safety precautions, environmental protection, transport, storage, handling and waste disposal.

### TI

[Technical information TI 15/3](#) "Protective measures when using chemicals including lacquers, casting compounds, thinners, cleaning agents"

The solder resist Elpejet® IJ 2467 is applied by means of inkjet printers (DoD technology).

→ Ensure that the surface to be coated is clean, dry and grease-/oxide-free.

→ Use a chemical pretreatment such as Cupra Etch SR 8600 or MECetch-BOND CZ-2001 to achieve a microfine roughening of the copper surfaces.

For a better printing result, we recommend an additional antitarnish such as Atotech Inkpromoter T15 or MECetchBOND CL-8320.

For waveform parameters please contact our application technology department (ATD).

Since it is a UV-curing lacquer, exposure to UV radiation (sunlight or fluorescent lamps) leads to curing of the lacquer. Therefore, yellow light or yellow filters/UV protective foils are necessary.



Protect from UV light

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.

### **Auxiliary products recommended**

- [ELPESPEC® cleaning agent HP 5870](#)  
for the cleaning of inkjet printers
- [ELPESPEC® cleaning agent R 5821](#)  
for the cleaning of work place and tools

### **Drying/curing**

Pinning is performed with the UV LEDs (395 nm or 365 nm) integrated in the printhead with an energy of approx. 180 mJ/cm<sup>2</sup>.

This is followed by a LED bump (395nm or 365 nm) with an energy of approx. 2500 mJ/cm<sup>2</sup>.

Final curing is carried out for 60 min at 150 °C [302 °F].

### **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 6 months



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



Protect from UV light

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.

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 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.

**ATTENTION! For new products, according to preliminary technical reports, adequate practical results are not always available which would permit a comprehensive assessment of such a product. It is therefore imperative to exercise particular care in the testing of such products with regard to the application intended!**

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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