

KIWOPRINT UV 94/1

Screen printable, pressure sensitive adhesive based on UV-cross-linking polymers

KIWOPRINT UV 94/1 is a high quality, pressure sensitive adhesive for the production of self-adhesive components made of rigid PVC, glass metal and film made of polycarbonate, polyester and pre-treated polyethylene and polypropylene. It is applied by screen printing. Depending on the properties of the substrate, adhered products can be removed only hardly or not all from the substrate.

PRECAUTIONS

For the production of self-adhesive materials the following aspects have to be considered:

1. Check requirements such as adhesion strength, climatic load, temperature and UV-resistance.
2. Choose a suitable substrate and test for compatibility with KIWOPRINT UV 94/1 (e.g. soft PVC-film may interact with the adhesive layer).
3. If direct contact between printing ink and adhesive may occur, test for compatibility, as some inks may interact with the adhesive layer.
4. When screen printing, the selection of the mesh type is essential for determining the desired result. The coarser the mesh count, the thicker the adhesive, so the higher the adhesive values. Graphic applications are usually carried out with a mesh of 77-55 (T), for technical applications higher adhesive thicknesses are needed that can be reached with a mesh of 36-90 (T).
5. When screen printing, solvent resistant emulsions of the AZOCOL range must be used. Ask KIWO for advice.
6. Choose a suitable release liner. Very smooth silicone paper or siliconized film of medium release should be used.

The compatibility of the adhesive to each component i.e. carrier, ink, release liner, adhesion partner etc. must be tested before use in production. Focus should be on the long-term compatibility of the adhesive with the used inks and substrates. The influences of the release liner and the quality of the substrate (roughness, silicone release agents, plasticizer migration) must be tested as well.

PROCESSING

When storing the adhesive for a longer period of time, the additives may ascend to the surface, therefore stir prior to use.

This data sheet is for your information. A legally binding assurance of the product's suitability for a specific purpose cannot be derived from it and no liability can be assumed for any potential damages that may occur. Liability for damages due to a slightly negligent breach of duty on our part on the part of our legal representative or vicarious agent is excluded. Our liability for damages due to injury to life, body or health is not covered by this limitation of liability. Our products are subject to continuous production and quality control and leave our company in perfect condition.

This product is intended solely for industrial applications and not for use by the end consumer. We recommend to our customers to always test the product themselves since only in this way – also after production – can the freedom from certain substances and the suitability for a particular purpose be verified. The user has to test the product for suitability for the intended application. We reserve the right to modify product specifications. Tests that are not part of the specifications of the product mentioned above have not been carried out. All information applies only to the above-mentioned product obtained from Kissel + Wolf GmbH. It corresponds to our current state of knowledge, but is not a confirmation of a particular application and is not automatically replenished.

All information is valid for a maximum of 12 months from the date stated above (annexes may be provided with their own date). Any industrial property rights as well as existing laws and regulations are to be observed by the recipient of our product on his own responsibility. Intellectual property rights of third parties must be observed. Our terms and conditions of sale and delivery shall apply.

When screen printing, optimal press adjustment can determine the quality of the resulting print, e.g. air bubbles in the adhesive layer can be avoided. Best printing results can be achieved with a high mesh tension (25 - 30 N/cm). The snap-off should be 3 - 5 mm, the printing speed slow to medium. The printing image produced using KIWOPRINT UV 94/1 is very smooth. In general, it is bubble free. Due to the light sensitivity of the liquid adhesive, it is recommended to process the adhesive under yellow light or at least not in directly illuminated areas. Thinning with solvents or monomer reducers is neither recommended nor necessary.

Drying of UV-pressure sensitive adhesives is not done in the conventional way. KIWOPRINT UV 94/1 chemically cross-links when exposed to UV-light. Use common UV-curing units normally used for UV printing inks. The optimum curing range should be established using one's own production equipment and conditions. Different exposure intensity causes different cross-linking results. Highly cross-linked films of KIWOPRINT UV 94/1 result in high shear strength. A slightly lower cross-linking produces an adhesive layer with higher bond values and reduced shear strength. It is absolutely necessary to control the UV-power permanently during production to guarantee uniform product quality. Only properly cross-linked adhesive films give highest bond values. KIWOPRINT UV 94/1 is very reactive. An exposure dose of 300-500 mJ/ cm² produces an adhesive film suitable for use.

ADHERING

The adhesion achieved with self-adhering articles printed with KIWOPRINT UV 94/1 can be improved by:

1. Ensuring parts are free of dust and mold release agents
2. Optimum application temperature: 20 - 50°C
3. Additional pressure (approx. 20N/ cm²) with a heated silicone rubber pad (40 - 50°C)
4. Providing a tension free bond and preventing air bubbles
5. Flat and smooth substrate (i.e. pressure molded parts free of burrs or sprue marks)
6. Sufficient adhesion surface area relative to total surface area.

CLEANING

KIWOSOLV L 72

TECHNICAL DATA

BASIS	UV-reactive polymers
COLOUR	Colourless
VISCOSITY	Approx. 8000 mPas (Brookfield RVT, spindle 5, 20 r/min., 20°C)
SOLIDS CONTENT	100%
DENSITY	Approx. 1,046 g/cm ³

**CROSS LINKING
UV LIGHT REACTION**

The values below were obtained using adhesive films cross-linked as follows:

Lamp type: 120 W/cm, mercury vapour lamp
 Screen mesh: 36-90 T
 Exposure dose 400 (mJ/cm²) UV integrator Technigraf (GL19)

PEEL VALUE

Approx. 21 N/ inch (after 1 min adhesion time)
 Approx. 32 N/ inch (after 24 h adhesion time)

Screen printing on 125 µm polycarbonate film. Measured at 23°C with tester type 5966 from Instron, load cell 10 KN, class 0,5 DIN EN ISO 7500-1 for tear and pressure per PSTC1. Angle 180°C, travers speed 300 mm/ min. Adhering at polished stainless steel (material 1.401) with hand roller according to PSTC-standard, roll weight 10 pounds, rolled 5 x in each direction. Adhering area 2,54 x 10 cm.

**DYNAMIC SHEAR
STRENGTH**

Approx. 140 N/ inch²

Screen printing onto 50 µm polyester film. Measured at 23°C with peel tester type 5966 from Instron, load cell 10 KN, class 0,1, DIN EN ISO 7500-1 for tension and pressure, measured 24 hours after adhering. Peel speed 0,1 inch/min., bonded on 50 µm PET film. Adhering area 1 x 1 inch. Adhering with a hand roller according to PSTC-standard, roll weight 10 pounds, rolled 5 x in each direction. Tested after 24 h adhesion time.

**STATIC SHEAR
STRENGTH**

Approx. 13 min

Adhering area 1 x 1 inch. Adhering with a hand roller, roll weight 10 pounds, rolled 5 x in each direction. Tested after 24 h adhesion time. Measured in a drying cabinet at +105°C after 15 min. Shear test is made by adding a load of 1 kg.

TACK VALUE

Approx. 700 g

Screen printing on 50 µm polyester film. Measured with Polyken Tack-Tester at 23°C. Peel velocity: 0,5 cm/ s. Tested with probe older A.

**HEAT SHEAR
STRENGTH**

Approx. +110°C

Screen printing on 50 µm polyester film. Tested according to ASTM D 4498 (SAFT = Shear Adhesion Failure Temperature). Adhering area of 1 x 1 inch, adhering at polyester film with a hand roller (10 pounds, 5 x in each direction). Test after 24 h. After 15 min at +40°C in a drying chamber, shear test with an additional weight of 500 g. Start of the test at 40°C, the temperature; raised temperature in steps of 5°C every 10 min. until the test sample has removed from the substrate.

HEALTH HAZARDS/

Please follow further information given in the material safety data sheet.

ENVIRONMENTAL PROTECTION

STORAGE

1 year (at 20-25°C and tightly closed original container).

Notice: Do not store or transport at a temperatures over 40°C!
Protect against direct sun exposure or other UV-light sources.