Replaces the Technical Information KIWOPRINT UV 92 Red dated 16.09.11 Update: 13.06.12

KIWOPRINT® UV 92

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

KIWOPRINT UV 92 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. Preferably used in the automotive industry for the production of self-adhesive condensation-water shields and damping film

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 92 (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 77-55 (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.

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 92 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 92 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 92 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 92 is very reactive. An exposure dose of 500 – 700 mJ/ cm² produces an adhesive film suitable for use.

ADHERING

The adhesion achieved with self-adhering articles printed with KIWOPRINT UV 92 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. 7.000 mPas (Brookfield RVT, spindle 5, 20 r/min., 20°C)

SOLIDS CONTENT 100%

DENSITY Approx. 1,05 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, [92 threads/in with a 90 micron thread diameter.]
Exposure dose	660 (mJ/cm²)

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PEEL VALUE

Approx. 30 N/ inch (after 1 min adhesion time)
Approx. 36 N/ inch (after 24 h adhesion time)

Screen printing on 125 µm polycarbonate film. Peel strength per PSTC 1. Measured with peel tester type L 500 of Lloyd Instruments, load cell 100 N, class 1, DIN EN ISO 7500-1 for tension and pressure, 180° peel test, measured 1 min. and 24 hours after adhering. Peel 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. 125 N/ inch²

Screen printing onto 50 µm polyester film. Measured at 23°C with peel tester type L 500 of Lloyd Instruments, load cell 2500 N, class 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. 70 sec

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. 1250 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

Appprox. +80°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/ ENVIRONMENTAL PROTECTION

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

STORAGE

9 months (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.