

KIWOPRINT® TATTOO D 163

Acrylate and dispersion based pressure sensitive adhesive

KIWOPRINT TATTOO D 163 is used for the production of self-adhesive foil, labels and conveyors made of paper, cardboard, rigid PVC, polyester foil, pre-treated polyethylene and polypropylene, polyurethane, fiber glass, resopal etc. For special applications KIWOPRINT TATTOO D 163 can be used for the production of dry and wet transfers (e.g. temporary tattoos). Only raw materials which comply with the Cosmetics Regulation 1223/2009 were used for its production. The examination of KIWOPRINT TATTOO D 163 by an independent institute did not reveal any restriction of its merchantability considering the requirements of the cosmetics regulation. Materials bonded with KIWOPRINT TATTOO D 163 can be stored for a minimum of 1 year without any decrease of adhesive strength, if covered with a suitable silicone paper and kept dry and dark at room temperature.

PREPARATION

Observe the following advice when producing self-adhesive materials:

1. Check the requirements, such as e.g. requested adhering strength, climatic strain, temperatures and UV resistance.
2. Chose the correct substrate and test compatibility with KIWOPRINT TATTOO D 163 (e.g. soft PVC film influences the adhesive layer):
3. In case of a direct contact of KIWOPRINT TATTOO D 163 with the printing inks, check compatibility of the inks. Kind and type of ink can influence the adhesive.
4. The correct choice of the mesh count is decisive for screen printing applications. The coarser the mesh, the higher is the build-up thickness and therefore the adhesion strength. For the production of temporary tattoos, usually a mesh of 54 to 90 threads/ cm is used.
5. For screen printing applications, solvent resistant emulsions of the AZOCOL range can be used. Ask KIWO for advice.
6. Chose the correct covering material. Use very smooth silicone paper or siliconized film. The adhesive layer depends on the covering material, the smoother the silicone liners, the smoother the adhesive layer (within 24 h). Furthermore, silicone liners must be adapted to the adhesive in order to avoid disturbances when removing them.

The suitability of the adhesive together with each component i.e. substrate, ink, liner, adhesion partner etc. must be tested before production parts are made. Special attention should be made for the long-term compatibility with the component materials. Also one must check the influences of the liner material and the state or nature of the substrate's structure or roughness. Silicone release agents, plasticizer migration etc. must be checked for and ruled out before one continues

Notice: When producing ink transfers which will get in contact with skin (tattoos), the finished transfer, i.e. including all printing inks, or other additives, have to be tested for non-irritability on skin.

APPLICATION

When screen printing, optimum adjustment of the printing machine determines the print result. Best results are achieved with stencils with high tension (25-30N/cm). Snap-off should be medium (4-6 mm), print velocity average (from 500 mm/s). This largely prevents the formation of bubbles. High air humidity facilitates working with dispersion based adhesives. During short printing breaks the stencil should be flooded with adhesive. If the printing breaks are longer than 5-10 minutes, the screen has to be cleaned. Water can be used to clean fresh adhesive. Dried adhesive can be removed with PREGAN 1014 E.

Stir well before use. KIWOPRINT TATTOO D 163 should not be thinned for application. Thinning with water is possible, however, thus printability, solids content, coating thickness and consequently the adhesive strength is reduced.

The adhesive can be dried at room temperature or in tunnel dryer for industrial production. Temperatures of up to +70°C can be applied without damaging the adhesive. Drying time depends on the applied adhesive thickness, kind of substrate, drying temperature and air flow. Test and optimize the most suitable values at your facility.

Notice: Completely dried adhesive layers are transparent.

Only completely dry adhesives achieve highest bonding values. For further processing the applied adhesive must completely be dry; only then should the silicone paper be applied. A bubble-free laminating of the liner is recommended, as enclosed air influences the adhesive layer.

To avoid die cutting problems, the adhesive layer should end 0,5-1,0 mm in front of the punch line. Back-lit areas will not be printed as the adhesive film has an influence on the light intensity.

ADHERING

Adherence of self-adhesive components produced using KIWOPRINT TATTOO D 163 can be improved by:

1. Dust and oil free parts
2. Optimum application temperature: 20-50°C
3. Additional pressure (approx. 20 N/ cm²) with a heated silicone rubber pad (40-50°C)
4. Preventing air bubbles and stretching the substrate during application
5. Flat and smooth substrate (e.g. pressure moulding parts without burrs or sprue marks)
6. Sufficient adhesion surface area relative to total surface area.

TECHNICAL DATA

BASIS	Aqueous dispersion of an acrylate polymer
COLOUR	Wet: milky white Dry: transparent
VISCOSITY	Approx. 8000 mPas (Brookfield RVT, spindle 5, 20 r/min., 20°C)
SOLIDS CONTENT	Approx. 57 %
pH-VALUE	Approx. 5,5
DENSITY	Approx. 1,01 g/cm ³
PEEL VALUE	Approx. 10,8 N/ inch (after 1 min bonding time) Approx. 17,5 N/ inch (after 24 h bonding time) 90 µm adhesive thickness onto 50 µm polyester film. Tested according to PSTC 1. Measured at 23°C with peel tester type 5966 from Instron. Load cell 10 kN, class 0,5, DIN EN ISO 7500-1 for tension and pressure, peel speed 300 mm/min., peel angle: 180°. Applied to polished stainless steel using a hand roller (10 pounds, rolled 5 x in each direction) and measured after the corresponding bonding time at 23°C. Adhesion area: 2,54 x 10 cm.
DYNAMIC SHEAR STRENGTH	Approx. 162 N/ inch ² 90 µm adhesive thickness onto 50 µm polyester film. Measured at 23°C with peel tester type 5966 from Instron, load cell 10 kN, class 0,5, DIN EN ISO 7500-1 for tension and pressure, peel speed 0,1 inch/min. Bonded onto a 100-µm polyester film using a hand roller (10 pounds, rolled 5x in each direction). Adhesion area: 1 x 1 inch. Measurement after 24 hours.
STATIC SHEAR STRENGTH	Approx. 1037 sec 90 µm adhesive thickness onto 50 µm polyester film. Bonded onto a 50 µm polyester film using a hand roller (10 pounds, rolled 5x in each direction). Adhesion area: 1 x 1 inch. Measurement after a bonding time of 24 hours. After 15 min. tempered in a drying cabinet at +105°C the shear stress was tested by hanging an extra weight of 1 kg onto the sample.
HEAT SHEAR STRENGTH	Approx. > +160°C 90 µm wet adhesive thickness on 50 µm polyester film and dried at 50°C. Tested according to ASTM D 4498 (SAFT = Shear Adhesion Failure Temperature). Bonded onto a 50 µm polyester film using a hand roller (10 pounds, rolled 5x in each direction). Adhesion area: 1 x 1 inch. Test after 24 h earliest. After drying for 15 min in a drying cabinet at +40°C, shear strength is tested by hanging a 500 g weight onto the sample. Test is started at 40°C, temperature is then increased every 10 min. by 5°C until the sample falls off the substrate.
UV RESISTENCE	Good

**HEALTH HAZARDS/
ENVIRONMENTAL
PROTECTION**

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

STORAGE

6 months (at 20-25°C and tightly closed original container). Protect against freezing.

KIWOPRINT TATTOO D 163 should not come into contact with unprotected metal for an extended period of time.