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KIWOPRINT®D 159 NF

Acrylate and dispersion based, screen printable, pressure sensitive adhesive, does not contain APEO

KIWOPRINT D 159 NF is a high quality, screen printable pressure sensitive adhesive for the production of self-adhesive materials for the automotive and electronic industry (e.g. touch panels, visual instrument panels, front panels, electrical devices) when high peel strength is required. High viscosity allows printing on absorbing surfaces (felt, PE foam). Materials bonded with KIWOPRINT D 159 NF 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.

PRECAUTIONS

For the production of self-adhesive components the following facts have to be considered:

1. Check requirements like adhesion strength, climatic load, temperature and UV-resistance.

2. Choose a suitable substrate and test for compatibility with KIWOPRINT D 159 NF (z. B. soft PVC may interact with the adhesive layer)

3. If direct contact between printing ink and adhesive may occur, test for compatibility, as some inks may intact with the adhesive layer.

4. When screen printing, the selection of the mesh type is essential for the desired result. The coarser the mesh count, the thicker the adhesive layer and the higher the adhesive values.

5. When screen printing, water 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 should be used. The adhesive layer orients itself to the release liner and the smoother the release liner is, the smoother the adhesive layer will be after 24 hours. Also, the silicone layer must be compatible to assure a proper release from the adhesive.

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.

APPLICATION

When screen printing, optimal adjustment of the printing machine can determine the print result. This largely prevents the formation of bubbles. High air humidity facilitates the application of dispersion adhesives. During short printing breaks the stencil should only be flooded with adhesive. Spray with water to facilitate further printing**.** If the printing breaks are longer than 10 - 15 min. the screen has to be cleaned. Water can be used to clean fresh adhesive. Dried adhesive can be removed with PREGAN 1014 E.

Stir KIWOPRINT D 159 NF well prior to use. The adhesive should not be thinned for application. Thinning with water is possible, however, it favours the formation of bubbles during printing and reduces the coating thickness and consequently the adhesive strength.

The adhesive can be dried by storage at room temperature or by tunnel dryer for industrial production. The adhesive can be dried at temperatures up to 70°C without damage. Drying time depends on the quantity of adhesive to be dried, substrate type, drying temperature and air movement. Best values have to be determined or optimized on your own facilities.

Notice: Completely dried adhesive layers are transparent.

Only properly dried adhesive layers give highest bond values. For further processing the applied adhesive must be completely dry, only then should the silicone paper or film be applied. Avoid air traps between release liner and adhesive as trapped air will influence the adhesive surface.

ADHERING

The bond of self-adhesive components produced using KIWOPRINT D 159 NF can be improved by:

1. Dust and oil free parts
2. Optimum application temperature: 20 - 60°C
3. Additional pressure (approx. 3 - 4 bar on 100 cm^2) 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 molding parts without burrs or sprue marks)
6. Sufficient adhesion surface area relative to total surface area

TECHNICAL DATA

BASIS	Aqueous acrylate dispersion
COLOUR	Wet: White Dry: Transparent
VISCOSITY	Approx. 30.000 mPas (Brookfield RVT, spindle 6, 20 r/ min, 20 °C)
SOLIDS CONTENT	Approx. 62,5%
pH-VALUE	Approx. 5,8
DENSITY	Approx. 1,023 g/cm³
PEEL STRENGTH	Approx. 25 N/inch (after 1 min bonding time) Approx. 39 N/inch (after 24 h bonding time) 90 µm wet adhesive thickness onto 125 µm polycarbonate film. Tested according to PSTC 1. Measured at 23°C with peel tester type L 500 from Lloyd Instruments. Load cell 100 N, class 1, 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 5x in each direction) and measured after the corresponding bonding time at 23°C. Adhesion area: 2,54 x 10 cm.
STATIC SHEAR STRENGTH	Approx. 140 s 90 µm wet 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.
DYNAMIC SHEAR STRENGTH	Approx. 110 N/ inch² 90 µm wet adhesive thickness onto 50 µm polyester film. Measured at 23°C with peel tester type L 500 from Lloyd Instruments, load cell 2500 N, class 1, DIN EN ISO 7500-1 for tension and pressure, peel speed 0,1 inch/min. 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 24 hours.
TACK VALUE	Approx. 1300 g 90 µm wet adhesive thickness onto 50 µm polyester film. Measured with Polyken Tack-Tester at 23°C, adhesion: 1 s, peel speed; 0,5 cm/s. Measured with specimen holder „A“.

HEAT SHEAR STRENGTH	Approx. +90°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-RESISTANCE	Very good
HEALTH HAZARDS/ ENVIRONMENTAL PROTECTION	Please follow further information given in the material safety data sheet.
STORAGE	12 months (at 20 - 25 °C and tightly closed original container). Protect against frost. KIWOPRINT D 159 NF should not come into contact with unprotected metal for a longer period of time.