# DATASHEET

KERAFOL®

# Keratherm KL 90 & KL 91

Ceramic filled double sided adhesive film – with or without fiberglass
good thermal conductivity / good electrical isolation

| Property | Unit | KL 90 | KL 91 |
|---|---|---|---|
| Color | | black | black |
| Adhesive | | acrylate | acrylate |
| Reinforcement (fiberglass) | | without | with |
| **Thermal Properties** | | | |
| Thermal Resistance* $R_{th}$ | K/W | 0.52 | 0.52 |
| Thermal Impedance* $R_{ti}$ | °Cmm²/W<br>Kin²/W | 208<br>0.32 | 220<br>0.34 |
| Thermal Conductivity* | W/mK | 1.4 | 1.35 |
| **Electrical Properties** | | | |
| Breakdown Voltage $U_{d;\,ac}$ | kV | 6.0 | 6.0 |
| Dielectric Breakdown $E_{d;\,ac}$ | kV/mm | 20.0 | 20.0 |
| Volume Resistivity | Ωcm | $2.6 \times 10^{4}$ | $2.6 \times 10^{4}$ |
| Dielectric Loss Factor tan δ | 1 | $30.5 \times 10^{-2}$ | $30.5 \times 10^{-2}$ |
| Dielectric Constant $\varepsilon_r$ | 1 | 18.5 | 18.5 |
| **Mechanical Properties** | | | |
| Hardness | Shore A | 45 | 59 |
| Tensile Strength (single adhesive film) | MPa | 0.25 | 11.28 |

| Specific Film Characteristics | | Unit | KL 90 (without fiberglass) | KL 91 (with fiberglass) |
|---|---|---|---|---|
| Application | (pressure/time) | N/cm²/sec | 10/10 | 10/15 |
| Tensile Shear Strength<br>[25mmx25mm-adhesive area-180°<br>aluminum – adhesive film – aluminum] | | N/cm²<br>[DIN EN 1645] | 31.5 | 32.5 |
| Tensile Shear Strength<br>temperature-depending**<br>[25mmx25mm-adhesive area-180°<br>aluminum – adhesive film – aluminum] | -20°C<br>+20°C<br>+60°C<br>+70°C<br>+80°C | N/cm²<br>[DIN EN 1645] | 157.2<br>51.7<br>14.1<br>12.0<br>10.7 | 146.8<br>50.3<br>13.6<br>10.7<br>9.5 |
| Adhesion* (bonding strength) | | Nmm | >1.2 | >1.0 |
| Tack* (surface adhesiveness) | | mm | >1.5 | >1.2 |
| Peel Strength (90° on aluminum) | | N/25mm | 3 [adhesive] | 9 [adhesive] |
| Application Temperature (continuous) | | °C | -40 to +125 | -40 to +125 |
| Overall Thickness (±10%) | | mm | .300 | .300 |
| Shelf Life | | months | 12 | 12 |

*-used measurement - Texture Analyser (TA.XT-plus)
**-according to test standard DIN EN 1645; test speed 0,5 inch/min; adhesion area of 25x25 mm² (1inch²); glued on an AlCuMg1-substrate, stored at room temperature for 62 hours.

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## Processing and handling instructions for

## KL 90 and KL 91 double-sided adhesive film

When these simple, general, basic rules are followed for our KL90 and KL91 double-sided adhesive films, they display very good processing characteristics. They allow mechanical fastening aids, such as clamps, screws or rivets to be dispensed with. In addition to the adhesive tapes' good thermal and dielectric characteristics, their outstanding adhesive strength and good plasticity ensure reliable processability.

### Surface conditions

On the components to be adhered, the surfaces must be dry and free of impurities, such as oil, fat, dust, paint coatings and possible solvent contamination. Condensation humidity must also be prevented (e.g., when changing from cold to warm).
A clean surface guarantees that KL90 and KL91 adhesive films stick their best!

### Cleaning the surfaces

Depending on the component's condition, its surface may need to be cleaned mechanically or chemically. Mechanical cleaning roughens the surface. Make sure that the surface roughness is not as deep as the adhesive tape's thickness.
Chemical cleaning should be done with soft, clean cloths and solvents that are compatible with the material, such as alcohols, benzines, esters or ketones. These solvents' residues must not be left on the surfaces, because they interfere with the tape's adhesion.

### Adhesion

On plastics containing plasticizers and those of a nonpolar character, naturally the bond is impaired. Besides appropriate adhesion tests on these materials, if necessary a chemical or physical surface treatment is a prerequisite for improved bonding of the materials.

### Processing temperatures and necessary transmission forces

The adhesive tapes' processing temperature lies between +18°C and +35°C with a relative air humidity of 50% – 70%. A different temperature or air humidity will change the initial strength (adhesion). Increased contact pressure improves the tape's adhesion on the surface of the component. For larger, flatter bonds, adhesion can be improved by using a pressure roller or a surface press (contact pressure about 10 – 15 N/cm²). The final, highest adhesive strength is reached about 24 to 72 hours after application. A moderate temperature treatment to a maximum of 80°C supports this process and shortens the time (dynamic cycle with 30 minutes' hold time).

### Protective sheets and application to the component

The KL 90 and KL 91 adhesive films are covered with two different siliconized sheets. To apply the adhesive film, first the 70 µm thick PP sheet must be peeled off the tape (release lightly!). Then the adhesive tape (or also stamping) is placed pressed onto the surface to be adhered (as described above). This can be followed by direct further processing or interim storage. Before the final assembly, the second, 50 µm thick PETP protective sheet is removed and the intended surface is adhered.

### Storage and Shelf Life

KL 90 and KL 91 double-sided adhesive films must be stored at room temperature and normal humidity (room temp. = 18°C – 22°C; rel. humidity = 50% – 70%). Direct effects of sunlight or storage near heat sources must be absolutely prevented. To prevent pressure points, the rolls should also stand vertically in storage.
When the storage conditions are met, the adhesive tapes remain stable for at least 12 months. After this time, the adhesive tapes can continue to be used only if a test is made by the customer.

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