

Keratherm® - KL 90, KL 91

Ceramic filled adhesive film - with or without fibre glass

Kertherm® KL90 and KL91 are thermal conducting, electrical isolating double sided adhesive films. They have an excellent, permanent adhesive strength with high thermal conductivities and at the same time very good insulation characteristics. Low thermal contact resistances can be achieved with a very reliable adhesive strength on different surfaces.

There are no mechanical fixation with clips, screws or rivets needed. Due to the soft surface finish tolerances can be compensated very good. Light weight, easy handling and high elasticity are further advantages.

Properties	Unit	KL 90	KL 91
Color		black	black
Basis		acrylate	acrylate
Reinforcement (fibre glass)		without	with
Thermal properties			
Thermal resistance* R_{th}	K/W	0.52	0.55
Thermal impedance* R_{ti}	$^{\circ}\text{Cmm}^2/\text{W}$	208	220
	Kir^2/W	0.32	0.34
Thermal conductivity*	W/mK	1.4	1.35
Electrical properties			
Dielectric breakdown $E_{d, ac}$	KV/mm	10.0	10.0
Volume resistivity	Ωm	2.6×10^4	2.6×10^4
Dielectric loss factor $\tan \delta$	1	30.5×10^{-2}	30.5×10^{-2}
Dielectric constant ϵ_r	1	18.5	18.5
Mechanical properties			
Hardness	Shore A	45	59
Tensile strength (single adhesive film)	MPa	0.25	11.28



Applications:

Thermal connection of

- CPUs, LEDs
- Flip Chips, DSPs, BGAs, PPGAs
- BGAs, PPGAs
- MOSFETS on heat sinks

For example in:

- power supplies and inverter modules
- computers
- telecommunication electronics
- automotive electronics

The data presented in this leaflet are in accordance with the present state of our knowledge. All statements, technical information and recommendations herein are based on tests we believe to be reliable. The customer is thereby not absolved from carefully checking all supplies immediately on receipt. The recommendations made in this catalogue should be checked by preliminary trials because of conditions during processing over which we have no control, especially where other companies' raw materials are also being used. Before using, user shall determine the suitability of the product for its intended use, and the user assumes all risks and liability whatsoever in connection there with. We reserve the right to alter product constants within the scope of technical process or new developments. The recommendations do not absolve the customer from the obligation of investigating the possibility of infringement of third parties right and, if necessary, clarifying the position. Sellers' and manufacturer' only obligation shall be to replace such quantity of the product proved to be defective. Neither seller nor manufacturer shall be liable either in tort or contract for any loss or damage, direct or incidental, or consequential, including loss of profits or revenue arising out of the use or the inability to use a product. No statement, purchase order or recommendations by seller or purchaser not contained herein shall have any force or effect unless in an agreement signed by the officers of the seller and manufacturer. last updated: 08/2009

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Specific film characteristics	Unit	KL 90 (without fibre glass)	KL 91 (with fibre glass)
Application temperature (continuous)	°C	-40 to +125	-40 to +125
Testing the reflow stability 10s/270°C		passed	passed
Adhesive film thickness (+/- 10%)	µm	300	300
Shelf Life	Monate	12	12

Specific film characteristics	Unit	KL 90 (without fibre glass)	KL 91 (with fibre glass)
Application [pressure/time]	N/cm ² /sec.	10/10	10/15
Tensile shear strength [25mmx25mm-adhesive area-180° aluminum - adhesive film - aluminum]	N/cm ² [DIN EN 1645] [ASTM D 1003]	>30	>25
Tensile shear strength temperature-dependant** [25mmx25mm-adhesive area-180° aluminum - adhesive film - aluminum]	N/cm ² [DIN EN 1645] [ASTM D 1003]	157.2 51.7 14.1 12.0 10.7	146.8 50.3 13.6 10.7 9.5
Tensile shear strength after vibration test (sinusoidal with temperature overlay at 60°C); vibration 10-500 Hz; 50 s/m ² (5g) test cycle 24h (6h per axis) [1]	N/cm ²	31.5	32.5
Tensile shear strength after vibration test (sinusoidal at R T); vibration 10-500 Hz; 100 s/m ² (10g) test cycle 24h (8h per axis) [2]	N/cm ²	32.1	35.9
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]

*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.

[1], [2]: sinusoidal vibration test - Fc gem. DIN EN 60068-2-6 and DIN EN 60068-2-2; VDE 0468-2-2