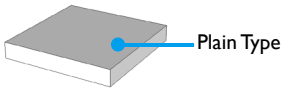
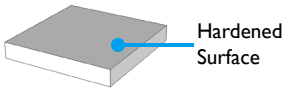
ALPHACOOL – THE COOLING COMPANY

# Alphacool Eisschicht 14 W/mK

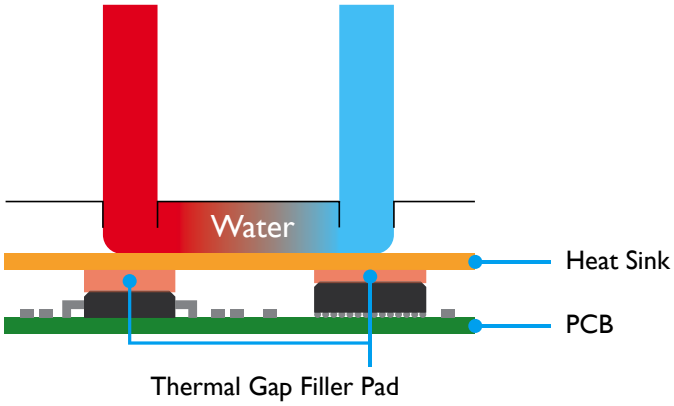
## Features

**Highly Conformable and High Heat Conducting Gel Materials.**
Eisschicht Thermal Gap Filler Pads are highly conformable and high heat conducting gel materials in a versatile sheet form. They easily fit and adhere to most all shapes and sizes of components, including protrusions and recessed areas.

## Constructions

| Series | Chracteristics | Constructions |
|---|---|---|
| Alphacool Eisschicht 14 W/mK | Silicone compound with double sticky surfaces and Thermal Conductivity of XR-j material is 14.0W/m-K by using GHP (9.0W/m-K by using Hot Disk) |  Plain Type |
| Alphacool Eisschicht 14 W/mK - 0.5mm | Silicone compound as above XR-j plus additional hardening of the top surface to facilitate handling and installation during complex assemblies |  Hardened Surface |

## Recommended Application




In areas where space between surface is uneven or varies and where surface textures are a concern regarding efficient thermal transfer, the supple consistency of Gap Filler Pad is excellent for filling air gaps and uneven surfaces.

## Thermal Resistance

Unit: K-cm²/W (K-in²/W)

| Compression Force | 0.5mmT | 1.0mmT | 1.5mmT |
|---|---|---|---|
| 100kPa (14.5psi) | 0.8 (0.12) | 1.1 (0.17) | 1.6 (0.25) |
| 300kPa (43.5psi) | 0.7 (0.10) | 1.0 (0.16) | 1.5 (0.23) |
| 500kPa (72.5psi) | 0.6 (0.09) | 1.0 (0.15) | 1.3 (0.19) |

Alphacool International GmbH
Marienberger Str. 1
38122 Braunschweig

Telefon: +49 531 28874 - 0
Fax: +49 531 28874 - 22
e-Mail: info@alphacool.com

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## Typical Properties

| Properties | | unit | XR-m | | Test method |
|---|---|---|---|---|---|
| Physical Properties | Color | - | Light Gray | | Visual |
| | Specific Gravity | - | 3.2 | | ASTM D 792 |
| | Hardness Highest Value | Shore OO (ASKER C) | 80 (57) | | ASTM D2240 (ISO 7619) |
| | Tensile Strength | MPa (psi) | 0.2 (29.0) | | ASTM D 412 |
| | Elongation | % | 25 | | ASTM D 412 |
| | Tear Strength | N/mm (ppi) | 1.0 (5.7) | | ASTM D 624 |
| Electrical Properties | Volume Resistivity | Ohm-m | $1.0x10^{11}$ | | ASTM D257 |
| | Breakdown Voltage | kV/mm (volts/mil) | 18 (457) | | ASTM D 149 |
| | Dielectric Strength | kV/mm (volts/mil) | 13 (330) | | ASTM D 149 |
| | Dielectric Constant | - | 50Hz | 6.8 | ASTM D 150 |
| | | | 1kHz | 6.8 | |
| | | | 1MHz | 6.8 | |
| | Dissipation Factor | - | 50Hz | 0.06 | ASTM D 150 |
| | | | 1kHz | 0.001 | |
| | | | 1MHz | 0.001 | |
| Thermal Properties | Thermal Conductivity | W/m-K | 14.0 by GHP | | ASTM D 5470 |
| | | | 9.0 by Hot Disk | | ISO/CD 22007-2 |
| | Useful Temperature | °C (°F) | -40 to +150 (-40 to +302) | | - |
| | Low molecular Siloxane | wt% | $D_4$ to $D_{20}$ Total | 0.0020 or less | Gas Chromotography |
| | Flame Retardant | UL94 | V-0 | | UL94 |

## Compression Force

Unit: N/6.4cm² (psi)

| Compression Ratio | 0.5mmT | 1.0mmT | 1.5mmT |
|---|---|---|---|
| 10% | 110 (24.9) | 89 (20.2) | 96 (21.8) |
| 20% | 335 (76.0) | 206 (46.7) | 248 (56.2) |
| 30% | 592 (134.2) | 453 (102.6) | 505 (114.4) |
| 40% | 849 (192.3) | 714 (161.8) | 825 (186.9) |
| 50% | 1091 (274.1) | 1095 (248.1) | 1213 (274.8) |
| Sustain 50% | 898 (203.4) | 897 (203.2) | 945 (214.1) |

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# Alphacool Eisschicht 14 W/mK

## Durability

| Test Property | Unit | 70°C | | 150°C | |
|---|---|---|---|---|---|
| | | Initial | After 1,000hrs | Initial | After 1,000hrs |
| Specific Gravity | - | 3.2 | 3.2 | 3.2 | 3.2 |
| Hardness | ASKER C | 50 | 64 | 50 | 85 |
| Breakdown Voltage | kV/mm | 18 | 19 | 18 | 19 |
| Thermal conductivity | W/m-K | 14 | 14 | 14 | 14 |

| Test Property | Unit | 60°C / 90%RH | |
|---|---|---|---|
| | | Initial | After 1,000hrs |
| Specific Gravity | - | 3.2 | 3.2 |
| Hardness | ASKER C | 50 | 62 |
| Breakdown Voltage | kV/mm | 18 | 17 |
| Thermal conductivity | W/m-K | 14 | 14 |

reduced tempereature

-40°C = -40°F
60°C = 140°F
70°C = 158°F
125°C = 227°F
150°C = 302°F

- Specimen: XR-j

## Types and Configurations

| Series | Product Name | Thickness | Sheet Size |
|---|---|---|---|
| Alphacool Eisschicht 14W/mK (Sarcon XR-Hj) | 14W/mK (Sarcon XR-Hj) | 0.5mm ± 0.15 | 100x100x0,5mm<br>2x 120x20x0,5mm |
| Alphacool Eisschicht 14W/mK (Sarcon XR-j) | 14W/mK (Sarcon XR-j) | 1.0mm ± 0.20 | 100x100x1mm<br>2x 120x20x1mm |
| | | 1.5mm ± 0.20 | 100x100x1,5mm<br>2x 120x20x1,5mm |

## Handling notes

- It is recommended to use the material in up to 30% of compression ratio. Using the material beyond the recommended compression rate may result in excessive silicone oil exudation.
- It is recommended to compress the material with the equal ratio on the whole surface. Partial excessive stress may also result in excessive silicone oil exudation.

## Warranty Statement

- Properties of the products may be revised due to some changes for improving performance.
- Properties values in this document are not specification or guaranteed.
- This product is made of silicone, and silicone oil may exude from the product.
- This product is made of silicone, and low molecular siloxane may vaporize depending on operating conditions.
- The product is designed, developed, and manufactured for general industrial use only. Never use for medical, surgical, and/or relating purposes. Never use for the purpose of implantation and/or other purposes by which a part of or whole product remains in human body.
- Beforeusing,asafetymustbeevaluatedandverifiedbythepurchaser.
- Contents described in the document do not guarantee the performances and qualities required for the purchaser‘s specific purposes.The purchaser is responsible for pre-testing the product under the purchaser‘s specific conditions and for verifying the expected performances.
- Statements concerning possible or suggested uses made herein may not be relied upon, or be constructed, as a guaranty of no patent infringement.

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