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content



Long-term
cushioning



Moisture
management



High-level
breathability



Lightweight



Washable



Antimicrobial

The World's First and only Aerogel-infused Open-cell PU Foam, the Ultimate Cold and Hot Weather Footwear Solution

OrthoLite® O-Therm™ insole technology creates a thermal barrier that elevates and reduces footwear temperature regulation to an unprecedented level, infusing open-cell PU foam with a proprietary aerogel creating the lightest, most advanced version of the world's most insulative material delivering unmatched thermal insulation and all-day comfort in cold and hot weather conditions underfoot.

PRODUCT SUMMARY

The proprietary aerogel in OrthoLite® O-Therm™ traps micro-pockets of air without the need for loft and won't lose its effectiveness when compressed under foot. Unlike other aerogel solutions, OrthoLite® O-Therm™ requires no special handling and or encapsulation—truly a world's first!

OrthoLite® O-Therm™ is the superior thermal barrier that is measurably more effective at blocking cold and heat underfoot than conventional insole technologies. Third party lab tests conducted by Vartest labs for cold and heat blocking performance, confirm the benefits of OrthoLite® O-Therm™ and its ability to deliver underfoot protection at extreme cold temperatures of -108°F or excessive heat at 140°F. Like all other OrthoLite® insoles technologies, O-Therm delivers on our promise of maximum breathability, performance, and unrivaled comfort. With the remarkable innovation of OrthoLite® O-Therm™, consumers can stay out longer, perform better and go farther in cold and hot weather conditions.

APPLICATION

OrthoLite® O-Therm™ is the optimal underfoot thermal barrier, with a thickness range from 2mm-20mm, you can dial in the level of cold or heat block performance based on the thickness of the foam you select. OrthoLite® O-Therm™ can also be combined with a wide range of OrthoLite® top-layer foams to create a custom insole solution tailored to a broad range of footwear categories.

Available in molded and die-cut applications, OrthoLite® O-Therm™ is also an ideal thermal barrier solution for footwear linings and Strobel layers—bringing unsurpassed cold block and heat block technology without adding bulk or weight.



*OrthoLite® O-Therm™
Molded Insole*

*Top Cover
Fabric*



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*OrthoLite® O-Therm™ is a
proprietary aerogel-infused foam
providing the ultimate thermal barrier
against cold and heat underfoot.*



*OrthoLite® O-Therm™
Die-cut Insole*

Formulation
OrthoLite® O-Therm™

MOQ
Standard

5% Total
Eco
Content

5% Recycled
Rubber

Density:
0.11g/cm³

Hardness:
25 +/-4 Asker C

**OrthoLite® O-Therm™
thickness:**
2mm-20mm

Sheet Size:
110cm x 200cm

Application:
Cold and Heat Block

Finished Goods:
Available in molded
and die-cut.

Color Available:
Lava Red PMS 1795

Recycled Rubber:
All OrthoLite® open-cell
formulations contain 5%
recycled rubber content.



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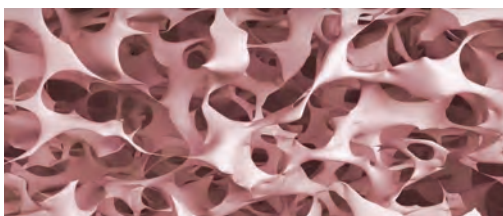
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OrthoLite® O-Therm™ Aerogel Thermal Foam Performance

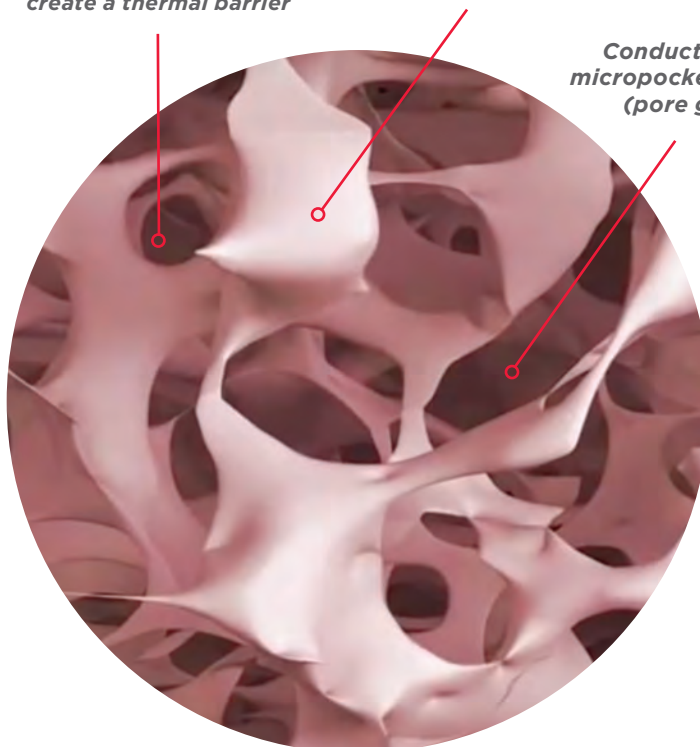
Aerogel is embedded in the polymer reducing its thermal conductivity, and by so increasing the thermal resistance of the matrix creating an optimal thermal barrier from cold and heat.



*Nano pores inside
a multi-porous structure
create a thermal barrier*

*Conduction through
the foam matrix*

*Conduction in
micropockets of air
(pore gas)*



KEY ATTRIBUTES OF AEROGEL



THERMAL INSULATION

- Nano pores inside a multi-porous structure creates a thermal barrier
- Thermal conductivity: 17 to 22 mW/m.K



LIGHTNESS

- Lightest man made material. Only weighs 3x the weight of air.
- Air porosity is more than 90%!
- Low density enhances the performance of the shoe with airy comfort.



HYDROPHOBICITY

- Super hydrophobic. Repels water and moisture.
- Contact angle of more than 160°C
- Moisture is moved away from the foot to provide a drier, healthier shoe environment



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TESTING PROTOCOL

OrthoLite® worked with renowned third party thermal test laboratory, Vartest Laboratories, to quantify the thermal performance of OrthoLite® O-Therm™ aerogel insoles under extreme cold and heat conditions.

Testing was performed on 3 insole thicknesses: 2mm, 4mm and 6mm. Each insole had a CK mesh top cloth. Results were reported over 10 minutes. The tests were performed with components layered from top to bottom as follows:

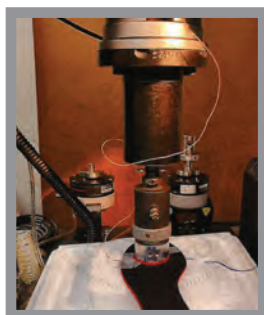
- 10psi of force to simulate a person standing on the insoles
- Silicone disc on top of insole used as human skin surrogate
- Thermocouple/thermometer
- Insole
- Thermocouple/thermometer
- Cold testing: dry ice base temperature is -108.4°F (-78°C)
- Heat testing: The hot plate base temperature is 140°F (60°C)

COLD TESTING

The protocol for cold testing used dry ice to establish a base temperature of -108.4°F (-78°C).

HEAT TESTING

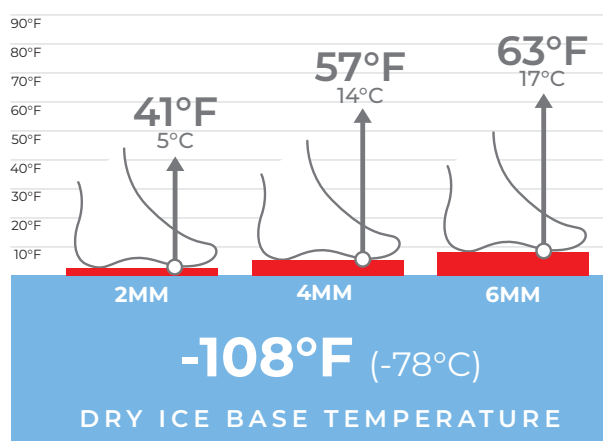
The protocol for heat testing used a hot plate to establish a base temperature of 140°F (60°C).



*Testing conducted at
Vartest Laboratories*

Cold Blocking Results

With a baseline temperature of -108°F underfoot, third party lab tests show that increasing the thickness of OrthoLite® O-Therm™ underfoot measurably increases the level of thermal resistance/temperature specifically in the area measured underfoot. The chart below demonstrates those changes applying a thickness range of 2-6mm of OrthoLite® O-Therm™.



Heat Blocking Results

With a baseline temperature of 140°F underfoot, third party lab tests show that increasing the thickness of OrthoLite® O-Therm™ underfoot measurably increases the level of thermal resistance/temperature specifically in the area measured underfoot. The chart below demonstrates those changes applying a thickness range of 2-6mm of OrthoLite® O-Therm™.

