

1. PRODUCT NAME

Korolite® 400 Expanded Polystyrene (EPS) Insulation

2. MANUFACTURER

Airfoam Industries Ltd.
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800.663.8162 or 604.534.8626 | www.airfoam.com

3. PRODUCT DESCRIPTION

Korolite® Expanded Polystyrene (EPS) is a high-performance, closed cell, rigid foam insulation material that uses air as main ingredient. EPS insulation resists moisture and mold/fungi growth with low environmental impacts, high & stable Long-Term Thermal Resistance, and good drying potential over the long service lives of buildings.

Korolite® 400 is used in many residential and commercial construction applications such as wall, roof and below-grade insulation including under slabs.

Sizes: Korolite® EPS insulation is available in various lengths, widths and common thicknesses listed in Table 2. Common widths and lengths are 2'x8' and 4'x8' [0.61m x 2.44m or 1.22m x 2.44m] but can be custom ordered in any size to meet your project specifications.

4. TECHNICAL DATA

Code Compliance

Refer to Airfoam's Code Compliance Research Report CCRR-0379 at www.airfoam.com/Airfoam-Code-Report-CCRR-0379.pdf

Korolite® 400 EPS insulation is third-party certified and complies with:

- **Thermal Insulation:** ASTM C578 **Type XIV**, ICC-ES AC12
- **Surface Burning Characteristics:** CAN/ULC-S102.2, ASTM E84 (UL 723)

Material Properties

Korolite® 400 insulation products exhibit the typical physical properties indicated in Table 1 and below when tested as represented.

Typical insulation values for common thicknesses are listed in Table 2.

Environment Data

EPS has much lower environmental impacts than most other foam plastic insulation materials. The **Environmental Product Declaration (EPD)** has been certified by UL Environment and is available on www.airfoam.com. Korolite® EPS insulation may contain up to 30% pre-consumer recycled content or can be ordered without recycled content for EIFS/Stucco applications. Korolite® EPS insulation **resists mold & fungi growth** per ASTM C1338 and has no nutritional value for insects. To protect against termites place adequate physical barriers such as membranes around below-grade EPS.

Max. service temperature: Long-Term Exposure 75°C [167°F], Intermittent Exposure 80°C [176°F]

Thermal expansion coefficient: 5-7 • 10⁻⁵/°K

Capillarity: None.

TABLE 1. Korolite® 400 EPS Insulation - Material Properties

Property ¹	Units	Value	Standard
Compressive Resistance²			
Minimum @ 10% Deformation	psi	40	ASTM D1621 Proc. A
	kPa	276	
Thermal Resistance^{3,4} Minimum @ 24°C [75°F]			
R-Value / inch thickness	ft ² •hr•°F/(BTU•in)	4.27	ASTM C518
RSI / 25mm thickness	m ² •°C/(W•25mm)	0.74	
Flexural Strength Minimum	psi	60	ASTM C203 Proc. B
	kPa	414	
Water Vapor Permeance⁴	perms	2.3	ASTM E96 desiccant
Maximum @ 1" [25.4mm] thickness	ng/(Pa•s•m ²)	132	
Water Absorption⁵ Maximum	% by volume	2	ASTM C272, 1 Day
Dimensional Stability	% linear change max.	1.5	ASTM D2126, 7 Days @ 70±2°C
Additional Thermal Resistance Information^{3,4,6}			
Typical R-value ^{2,3,6} per inch [25.4mm] @ 25°F	ft ² •hr•°F/ (BTU•in)	4.8	ASTM C518 or C177
@ 40°F	ft ² •hr•°F/ (BTU•in)	4.6	

¹ The test methods used to determine the material properties provide a means of comparing different cellular plastic thermal insulations. They are intended for use in specifications, product evaluations and quality control, but they are not intended to predict end-use product performance.

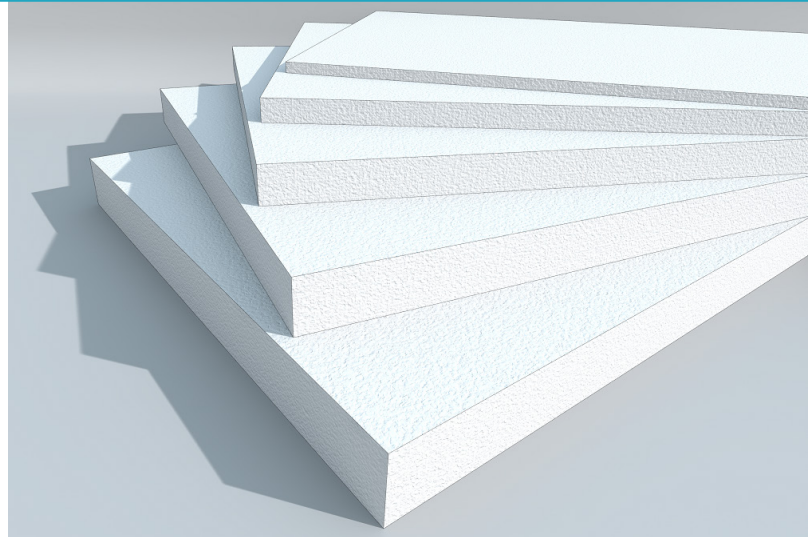
² The elastic limit is between 1% and 2% strain. Compressive resistances at 10% strain are provided for applications where the intended end-use can tolerate plastic (permanent) deformation under load.

³ R means resistance to heat flow. The higher the R-value, the greater the insulating power.

⁴ Values are for 1 inch or 25mm thick samples with natural skins intact. Better values will result for thicker materials.

⁵ The lab-test methods for water absorption use complete submersion under a head of water for 24 or 96 hours, so the values are applicable to specific design requirements only when the end-use conditions are similar to test method requirements.

⁶ not part of all the industry consensus standards (ASTM C578, CAN/ULC-S701.1) and provided AS-IS solely for informational purposes.



Applicable Standards

- ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus
- ASTM C203 - Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation
- ASTM C303 - Standard Test Method for Dimensions and Density of Preformed Block and Board—Type Thermal Insulation
- ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
- ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
- ASTM C1338 - Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings
- ASTM C1512 - Standard Test Method for Characterizing the Effect of Exposure to Environmental Cycling on Thermal Performance of Insulation Products
- ASTM D1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics
- ASTM D1622 - Standard Test Method for Apparent Density of Rigid Cellular Plastics
- ASTM D2126 - Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging
- ASTM D2863 - Standard Test Method for Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index)
- ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics
- ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials
- ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials
- ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Material
- CAN/ULC-S101 - Standard Methods of Fire Endurance Tests of Building Construction and Materials
- CAN/ULC-S102 - Standard Method of Test for Surface Burning Characteristics of building Materials and Assemblies
- CAN/ULC-S701.1 - Standard for Thermal Insulation, Polystyrene, Boards & Pipe Covering
- ICC-ES AC12 - Foam Plastic Insulation
- NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components

Fire Characteristics

- Limiting Oxygen Index: min. 24% per ASTM D2863. Airfoam's EPS for construction applications contains a polymeric (non-HBCD) fire retardant modifier.

Surface Burning Characteristics

- Canada:** CAN/ULC-S102.2: Flame-Spread Rating ≤290, Smoke Developed Classification over 500.
- USA:** ASTM E84 (UL 723)^a: Flame Spread Index ≤25, Smoke-Developed Index ≤450 up to 6" thick.

^a Ceiling measurement only, conducted through determination of flame spread index and smoke developed index with the removal of any contribution of molten materials ignited on the floor of the Steiner tunnel.

Fire Protection

CAUTION: This product is combustible. Keep away from high heat and ignition sources. A protective barrier or a thermal barrier is required as specified in the appropriate building code.

¾ Hour Fire Rating for a Composite Wall Assembly with EPS c.i. (Continuous Insulation) per **CAN/ULC-S101, ASTM E119**, see Design No. CPIA/CWP 45-01. Meets **NFPA 285** with specific limitations for an exterior wall assembly. For more information consult Airfoam's CCRR-0379 at www.airfoam.com/Airfoam-Code-Report-CCRR-0379.pdf, your engineer, local building department or call Airfoam at 800.663.8162.

Solubility & Incompatibility

Insoluble in water and in general chemically inert. EPS dissolves in hydrocarbons (e.g. fuels, oils, tar), organic solvents (e.g. acetone/ketones, benzene, paint thinner), ethers, esters, aldehydes and amines.

5. INSTALLATION

Follow the Installation Guide for Korolite® Expanded Polystyrene (EPS) Rigid Insulation available at www.airfoam.com.

Install Korolite® insulation in compliance with all applicable building codes. Korolite® insulation is easy to handle and install and can be cut with a utility knife or any sharp blade. Butt edges and ends tightly to adjacent EPS boards. Ensure compatibility of any other product (such as adhesives, tapes, coatings or finishes) with Expanded Polystyrene. Korolite® Rigid Foam Insulation is a non-structural material. Korolite® insulation shall only be placed into an assembly where the moisture transport mechanisms are well understood and determined to be acceptable in accordance with accepted engineering practice (e.g. current ASHRAE Handbook of Fundamentals).

For safe handling and storage information refer to the Safety Data Sheet (SDS) at www.airfoam.com/SDS.pdf or request a printed copy.

GHS Classification: Non-Hazardous.

UV-light surface degradation: white EPS can be exposed to direct sunlight for a few weeks. Prolonged exposure to ultraviolet light creates a yellow dust on the surface of EPS products which has negligible impact on the products' properties but may require removal before adhering other materials such as stucco or self-adhesive membranes.

TABLE 2. Korolite® 400 Thermal Resistance @ 75°F [24°C] by Thickness

Material Thickness	Min. R-Value ft ² ·hr·°F/BTU	Min. Rsi (m ² ·°C)/W	
1"	25.4mm	4.27	0.74
1.5"	38.1mm	6.41	1.11
2"	50.8mm	8.54	1.48
2.5"	63.5mm	10.68	1.85
3"	76.2mm	12.81	2.22
4"	101.6mm	17.08	2.96
5"	127mm	21.35	3.70
6"	152.4mm	25.62	4.44

Additional Thermal Resistance information for colder temperatures is available at www.korolite.com.

6. AVAILABILITY

Korolite® EPS insulation is supplied from Surrey BC through our extensive distribution network. For product availability or to get in touch with your local distributor, call Airfoam at 800.663.8162 or +1.604.534.8626.

7. WARRANTY

Airfoam offers a **30-year limited warranty** for Korolite EPS Insulation **including retention of 100% of its R-value**. See www.airfoam.com/Korolite-Insulation-30-Year-Limited-Warranty.pdf and www.airfoam.com/terms for Terms and Conditions of Sale.

8. MAINTENANCE

No maintenance is required in normal use. EPS insulation that became wet can be dried out within reasonable times per ASTM C1512 tests using adequate drainage and/or ventilation.

9. TECHNICAL SERVICES

Airfoam can provide technical information and support to help address questions when using Korolite® EPS insulation. Technical personnel are available to assist with any insulation project. For technical assistance, contact Airfoam at:

Online: www.airfoam.com/EPS-Insulation-Support.php

Phone: 800.663.8162 or +1.604.534.8626

Fax: +1.604.534.1212



Recycling: Expanded Polystyrene (EPS) can be recycled for reuse in a variety of different applications, from construction and landscaping to packaging and park benches. Airfoam Industries Ltd. is a registered Recycling Facility for EPS materials accepting recyclable #6 white Expanded Polystyrene (EPS) from our customers - free of charge, if it is clean, dry, and not mixed with any other materials.

10. FILING SYSTEM

Korolite® 400 EPS Technical Specifications filed at: www.airfoam.com



Please contact us for a free estimate or additional information: www.airfoam.com

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