

Insulthane® Extreme

Product Description:

Insulthane® Extreme is a two component, closed-cell spray polyurethane foam (ccSPF) medium-density insulation system. It's the first ccSPF in the Canadian market to deploy a HFO blowing agent with a Global Warming Potential (GWP) of 1. Its high yield, superior thermal and moisture performance, environmental benefits and exceptional adhesion make it ideal for residential, industrial and commercial applications. Insulthane Extreme is available in a summer and winter blend.

Appearance:

The final cured product is Burnt Sienna (red) in colour.

Recommended Applications:

Residential Interior Construction:

Wall enclosures, ceilings, interior foundation, attic, crawl space, cathedral ceiling, under floor slab, duct work, rim joists etc.

Residential Exterior Construction:

Walls, foundations, roof, exterior framing, and cantilevered areas

Industrial Construction:

Wall enclosures including steel, above or below grade, foundation walls, underfloor slab, underside of deck etc.

Commercial Interior Construction:

Walls, foundation walls and underside of roof decks

Technical Properties

Attribute	Test	Results
Density	ASTM D1622	2.2 lb/ft ³ 34.5 kg/m ³
Long Term Thermal Resistance (50mm Foam Depth)	CAN/ULC-S770-09	R 10.9 RSI 1.92
Water Vapour Transmission	ASTM E96 25 mm	47.34 ng/ (Pa·s·m ²)
Water Vapour Transmission	ASTM E96 50 mm	36.1 ng/ (Pa·s·m ²)
Corner Wall Test	CAN/ULC-S127	330
Fungi Resistance	ASTM C1338	No Growth
Dimensional Stability* (Volume Change after 28 days)	ASTM D2126	-20°C, +1.0% 80°C, +1.0% 70°C & 97% ±3%RH, +9.0%

Approvals and Certifications

- Meets the material requirements of CAN/ULC-S705.1-15 as per CCMC 13697-L
- Installed by Certified Applicators in accordance with an ISO 17024 and ISO 17020 accredited FQAP Program.
- GreenGuard Gold Certified – ensures product is acceptable for use in schools and healthcare facilities.

Application Information

A minimum of 15 mm and a maximum of 50 mm per pass is required as per the guidelines of the CAN/ULC-S705.2 application standard. Temperatures of initial pass will be recorded to ensure that the core temperature is below 100°F before applying the second pass, this will ensure adequate cooling time has occurred. This process will be repeated for each additional pass to ensure proper heat dissipation.

Apply foamed-in-place polyurethane insulation only when surfaces and ambient temperatures are within manufacturers' prescribed limits.

Substrate temperature for Standard Grade: 10-50°C.

Substrate temperature for Winter Grade: -10-25°C.

A more in-depth application guide is available in the Insulthane Extreme applicators manual, please consult the *Elastochem Spray Applied Rigid Polyurethane Foam, Medium Density - Application Training Manual*.

Attribute	Test	Results
Tensile Strength	ASTM 1623	64.5 psi, pass 445 kPa, pass
Air Permeance @ 25 mm	ASTM E2178	0.002 L/S·m ²
Water Absorption (% Volume)	ASTM D2842	3.3%
Compressive Strength	ASTM D1621	25.4 Psi 175 kPa
Open Cell Content	ASTM D2856	2.5%
VOC Emissions	CAN/ULC-S774	25 hours, passed
CCMC #	Material Listing	13697-L
CCMC #	Air Barrier System	14030-R

All testing performed by an accredited independent third-party test Facility

* Dimensional Stability was tested without a substrate

Air Barrier Testing Results

As per CAN/ULC-S742 Air Barrier Systems for Exterior Walls of Low-Rise Buildings: (< 0.05 L/s·m²) @ 75 Pa - A1 Classification

Processing Parameters

Pressures (dynamic):	70-100 bar (1000-1500psi)
Preheat Temperature:	“A” and “B” Component 40-52°C (105-125°F)
Hose Temperature:	40-52°C (105-125°F)
Drum Temperature in Use:	20-30°C (68-86°F)
Surface Temperature:	Standard Grade: 10-50°C (50-122°F) Winter Grade: -10-25°C (14-77°F) “A” and “B” Component 45-55°C (110-130°F)

For optimal processing of ccSPF, Elastochem recommends the above parameters in use with a Graco Fusion AP/CS gun equipped with a AR 4242/AR 4747 chamber. The use of larger gun chambers may result in diminished yield and physical properties.

Liquid Component Characteristics

Component A :	150-250 cps @ 25°C (Viscosity) 1.24kg/L sg @ 25°C (Specific Gravity)
Component B :	600 cps @ 25°C (Viscosity) 1.18 kg/L sg @ 25°C (Specific Gravity)
Mix Ratio by Volume:	1:1 of A:B

Storage Recommendation

All material provided by Elastochem are to be sealed until ready for use. Keep drums closed during storage and out of a humid environment. Ensure a nitrogen blanket is in ISO drum. Keep drums out of direct sunlight. To ensure proper longevity of the products, unopened materials should be indoors within the temperature ranges referenced below. Please see chart below for shelf life of materials:

Shelf Life	Insulthane Extreme Part B Resin - 6 months	Insulthane ISO Part A 12 months
Storage Temperature Recommendations	15-24°C (60-75°F)	15-24°C (60-75°F)

Precautions

Like many construction materials, spray polyurethane foam is a combustible product. Therefore installers and occupants are to take precautions and safety measures to ensure the foam does not come into contact (within 75 mm) of any devices that have a surface temperature exceeding 80°C. Once application is completed, foam shall be protected with a thermal barrier in accordance with the local building code requirements for a suitable thermal barrier (e.g., drywall).

Health and Safety Handling

When Spraying or handling Insulthane Extreme ISO and Resin the following protective steps and equipment are recommended:

Protective Equipment

- Fabric coverall (non-porous)
- Nitrile gloves
- Supplied full face fresh air respirator (while spaying)
- Use personal protective equipment (see SDS)

Exposure

- Avoid all contact with skin
- Avoid all contact with eyes
- Do not ingest
- Do not inhale the vapours

In case of exposure, please refer to the SDS for first-aid measures

Spills

In case of spills, contain and collect spillage with a non-combustible absorbent material, such as: sand, earth, clay-based oil absorbent (kitty-litter), etc.

For larger spills, contact Elastochem 1-877-787-2436 or any agency specialized in chemical damage control (e.g., CANUTEC at 613-996-6666).

Reoccupancy

Wait 24 hours post-application with ventilation before re-occupancy of the living space.

Properly fitting breathing apparatus supplying fresh air must also be worn by the installers and all other trades or helpers within 10 meters (33 feet) working distance of the installer. Protective gloves, coveralls, eye protection, safety shoes and hard hats must also be worn while spraying. Mechanical ventilation with a minimum 0.3 air changes per hour is also required during and after spray installation.

Certified Installers Only

Only individuals who are trained by Elastochem Specialty Chemicals Inc. and certified by Urethane Foam Consultants (UFC) are approved to install Insulthane Extreme. UFC is the third-party certification organization specified by Elastochem Specialty Chemicals Inc. to provide a certified training program. Services provided by UFC include follow-up inspections, certification and remediation.

Long Term Thermal Resistance (LTTR)

The measured LTTR value shall be the design thermal resistance value. In accordance with the requirements of the CAN/ULC S705-15. The LTTR data presented in this table has been compiled from reported data on CCMC 13697-L

All cellular plastic insulations manufactured with the intent to retain a blowing agent, other than air, for a period longer than 180 days, shall be tested for LTTR in accordance with CAN/ULC-S770-09, Standard Method of Test for Determination of Long Term Thermal Resistance of Closed-Cell Thermal Insulating Foams.

THICKNESS	THERMAL RESISTANCE	
	Inches	R-Value <i>per inch</i>
1.0"	5.31	0.94
2.0"	5.54	1.95
3.0"	5.83	3.08
4.0"	6.03	4.25
5.0"	6.13	5.40
6.0"	6.20	6.55
7.0"	6.24	7.70
8.0"	6.28	8.85
9.0"	6.31	10.00
10.0"	6.33	11.15

CAN/ULC-S770-09 is a requirement of the of CAN/ULC-S705.1-15 Standard for Thermal Insulation-Spray Applied Rigid Polyurethane Foam, Medium Density-Material Specification, which is the requirement of SPF in the National Building Code of Canada. CAN/ULC-S705.1-15 is referenced under the following sections:

- Section 1.3 Referenced Documents and Organizations
- Section 1.3.1.2 (1) Applicable editions (Table 1.3.1.2)
- Section 5.10 Standards
- Sentence 5.10.1.1.(1) Compliance with applicable Standards (Table 5.10.1.1)
- Section 9.25 Heat Transfer, Air Leakage and Condensation Control
- Section 9.25.2 Thermal Insulation
- Article 9.25.2.2 Insulation Materials (CAN/ULC-S705.1)

Additional information on the aging process of foam thermal Insulation and the design thermal resistance of Polyurethane Foams can be found in *Use of Field Applied Polyurethane Foams in Buildings, Construction Technology Update No. 32*, IRC-NRC, M.T. Bomberg, M.K. Kumaran (December 1999)

Disclaimer: Technical information as shown in this document is intended to be used as general guidelines only. Please refer to the Safety Data Sheet and product label prior to using this product.

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