

Insulthane® Extreme | Closed-Cell Polyurethane Foam

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

Approvals and Certifications

- Meets the material requirements of CAN/ULC-S705.1-15 as per CCMC 13697-L
- GreenGuard Gold Certified – Ensures product is acceptable for use in schools and healthcare facilities
- ULC-Evaluated Radon System (ULC ER-R40584)
- Insulthane® Extreme - Environmental Product Declaration (EPD) available upon request
- Insulthane® Extreme - Manufacturer Inventory (HPD-equivalent) available upon request

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 38°C (100°F). This process will be repeated for each additional pass to ensure proper heat dissipation. If spraying on heat sensitive materials (PEX pipe, low voltage wiring), spray maximum of 1" of foam and allow to fully cool before additional full thickness passes are added.

Foam must be protected from UV exposure within 90 days of application. Apply ccSPF insulation only when surfaces and ambient temperatures are within manufacturers' prescribed limits. Ambient humidity should be below 80% and substrate temperatures must be more than 3°C (5°F) above dew point to avoid condensation risks.

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 ng/ (Pa·s·m ²)
Water Vapour Transmission	ASTM E96 50 mm	36 ng/ (Pa·s·m ²)
Corner Wall Test	CAN/ULC-S127	330
Fungi Resistance	ASTM C1338	No Growth
Flame Spread	CAN/ULC-S102 Steiner Tunnel	Flame 5 Smoke 130
Flame Spread	ASTM E84 Class 1	<25
Dimensional Stability* (Volume Change after 28 days)	ASTM D2126	-20°C, +1.0% 80°C, +1.0% 70°C & 97% ±3%RH, +9.0%

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

* Dimensional Stability was tested without a substrate

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
Protection of Exterior Building Face (NBC, Art. 3.2.3.8)	CAN/ULC-S101 Inboard Assembly (8" thickness)	Pass
Protection of Exterior Building Face (NBC, Art. 3.2.3.8)	CAN/ULC-S101 Outboard Assembly (8" thickness)	Pass
CCMC #	Material Listing	13697-L
CCMC #	Air Barrier System	14030-R
ULC-Evaluated Radon Protection System	ULC ER-R40584	Pass

Processing Parameters

Pressures (dynamic):	70-100 bar (1000-1500 psi)
A&B Preheat Temperature:	45-55°C (110-130°F)
Hose Temperature:	45-55°C (110-130°F)
Drum Temperature in Use:	20-30°C (68-86°F)
Substrate Temperature (Summer):	10-50°C (50-122°F)
Substrate Temperature (Winter):	-10-25°C (14-77°F)

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

Theoretical Yield (Based on Density)

Insulthane® Extreme: Approx. 4400-4800 bdft.

Liquid Component Characteristics

Component A: Colour: Brown
MDI (ISO) 150 - 350 cP @ 25°C
1.24 kg/L sg @ 25°C

Component B: Colour: Burnt Sienna
Resin 600 cP @ 25°C
1.18 kg/L sg @ 25°C

Mix Ratio by Volume: 1:1 of A:B

Packaging

Drums	Weight	Volume
Part A (ISO)	500 lbs (227 kg)	51 gal. (192 L)
Part B (Resin)	500 lbs (227 kg)	48 gal. (183 L)
Totes	Weight	Volume
Part A (ISO)	2500 lbs (1134 kg)	254 gal. (960 L)
Part B (Resin)	2500 lbs (1134 kg)	242 gal. (915 L)

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 storage temperature and shelf life of materials:

Drum Storage Temperature:

ISO (A)	10-32°C (50-90°F)	12 month shelf life
RESIN (B)	10-32°C (50-90°F)	6 month shelf life

Please refer to product label for recommended best before date.

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

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 spraying)
- 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-combustable 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 25 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.

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 building code requirements for a suitable thermal barrier (e.g., drywall).

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.

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.

THICKNESS		THERMAL RESISTANCE	
Inches	mm	R-Value	RSI
1"	25	5.3	0.9
1.5"	38	8.1	1.4
2"	51	11.1	2
2.5"	64	14.2	2.5
3"	76	17.5	3.1
3.5"	89	20.8	3.7
4"	102	24.1	4.2
4.5"	114	27.4	4.8
5"	127	30.7	5.4
5.5"	140	33.9	6
6"	152	37.2	6.6
6.5"	165	40.4	7.1
7"	178	43.7	7.7
7.5"	191	47	8.3
8"	203	50.2	8.8
8.5"	216	53.5	9.4
9"	229	56.8	10
9.5"	241	60	10.6
10"	254	63.3	11.1

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.

A more in-depth application guide is available in the *Elastochem Spray Foam Training Manual*. Please contact Elastochem Specialty Chemicals Inc. for more information.



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