

ENERTITE® 1-2-1

Low-density open-cell polyurethane insulation

DESCRIPTION:

ENERTITE 1-2-1 is a low-density polyurethane spray insulation system which combines the properties of insulating materials of air barriers and is installed by qualified applicators trained by BASF Canada Inc. ("BASF Canada"). Incorporating water as the sole blowing agent, ENERTITE 1-2-1's superior specifications make it ideal for residential, commercial and institutional applications.

- Does not sag;
- Excellent sound absorption;
- Lack of ozone depleting;
- Excellent adhesion;
- Excellent dimensional stability;
- Good insulating value;

APPROVALS AND CREDENTIALS:

CCMC Evaluation report # 13489-R

Greenguard and Greenguard Children and SchoolsSM, certification for indoor air quality. Leadership in Energy & Environmental Design (LEED) recognizes the Greenguard certification.



TYPICAL PROPERTIES*

PROPERTY	VALUE	TEST METHOD
Density (core)	8.08 kg/m ³ (0.50 lb/ft ³)	ASTM D 1622
Water absorption	74.0% by volume	ASTM D 2842
Dimensional stability	-0.8 @ -29°C (-20°F)	ASTM D 2126
	-2.3 @ 70°C (158°F) @ 97± 3% RH	Vol. change % after 28 days
	-6.0 @ 80°C (176°F)	
Thermal insulation value	0.61 m ² .°K/W/25.4 mm (R value, 3.5 [ft ² .h.°F/Btu]/in)	ASTM C 518
Water vapour permeance	1449 ng/Pa.s.m ² (25.3 perm) for a thickness of 50 mm (1.97 inch)	ASTM E 96
Flame spread index**	418	CAN/ULC -S102 including -S127
Smoke development	300	
Emissions*** Time to occupancy	24 hrs	CAN/ULC -S774
Standard test method for hot-surface performance of high-temperature thermal insulation	93°C (200°F)	ASTM C 411
Fungal growth	Did not support fungal growth	ASTM C 1338

*These physical property values are typical for this material as applied at our development facility under controlled conditions. ENERTITE 1-2-1 performance and actual physical properties will vary with differences in application (i.e. ambient conditions, process equipment and settings, material throughput, etc.). As a result, these published properties should be used as guidelines solely for the purpose of evaluation. Physical property specifications should be determined from actual production material.

**Numerical flame spread ratings are not intended to reflect hazards presented by this or any products made from this material under actual fire conditions. ENERTITE 1-2-1 should not be left exposed and must be protected by a thermal barrier.

***The volatile organic compound (VOC) emissions under consideration were measured with an assumed room ventilation rate of 0.3 air changes per hour as per the NBC requirements for new construction.

General information

ENERTITE 1-2-1 can be installed in new or retrofit constructions. In either case, the product must be installed in open cavities in the following locations in a wood-frame construction that meets the requirements of the NBC 2005:

- exterior walls including perimeter joists;
- cathedral ceilings;
- floors separating living spaces from a garage;
- cantilever overhang floors; and
- interior below-grade foundation walls (damp proofing required, no contact with wet cement).

ENERTITE 1-2-1 is **NOT** designed for use as an **EXTERIOR** roofing system. Cold storage structures (e.g. coolers and freezers) and high humidity rooms (e.g. pools and saunas) demand special design considerations with regards to thermal insulation and moisture-vapour drive. ENERTITE 1-2-1 should **NOT** be installed in these types of constructions unless the structure was designed by a design professional.

- **Sound absorption and sound transmission on a wall assembly******

Noise reduction coefficient (NRC):	0.55
Sound absorption average (SAA):	0.53
Sound transmission class (STC):	36
Outdoor – indoor transmission class (OITC):	28

- **Application**

ENERTITE 1-2-1 must be applied by qualified applicators.

Correctly mixed ENERTITE 1-2-1 produces high quality polyurethane foam when applied in accordance with BASF Canada's specifications. The temperatures at which ENERTITE 1-2-1 can be sprayed range from -10°C up to +40°C (14°F to 104°F). Before and during spraying, the resin should be agitated with a corkscrew-style drum mixer.

- **Processing parameters**

A machine capable of 1:1 by volume output, chemical dispensing pressures of 59–83 bar (850-1200 psi) and a minimum 10 kW of primary heating capacity. A dedicated machine is recommended for using ENERTITE 1-2-1 to prevent contamination when switching over from WALLTITE® ECO™.

- Modern application guns capable of 2.3–6.8 kg/min (5–15 lb/min) output
- Cool air dryer must be used when using air purge guns
- Primary heaters set between 54–65°C (130–150°F) and ability to maintain the same temperature in the hose
- Automatic hose heat control and properly insulated hoses
- Drums to be stored at 15-25°C (60-77°F) for application
- Cooling recommended in trailer if unable to keep ambient temperature below 30°C (86°F) and also using WALLTITE ECO
- Corkscrew style 2 inch drum mixer capable of 800 rpm at 700 kPa (100 psi) air pressure with dry air and an inline lubricator (e.g. Graco Twistork)

**** For a specific wall assembly. For further information, please contact BASF Canada.

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Revision Date: May 21, 2010

Page 2 of 4

- **ENERTITE 1-2-1 and WALLTITE® ECO™ using the same machine. These two materials are distinct products with distinct application processes that MUST be stringently observed.**

Changing to ENERTITE 1-2-1

- Use a separate drum pump or wipe down pump shaft before putting into ENERTITE 1-2-1 drum.
- Mix ENERTITE 1-2-1 resin drum on **high speed (800 rpm or level 3 on a Twistork)** for a **MINIMUM** of 30 minutes prior to flushing.
- Constant mixing **on low speed (400 rpm or level 1.5 on a Twistork)** is required during flushing of resin.
- Flush WALLTITE ECO from coupling block into pail until colour of resin has completely changed from purple to yellow cream. Do not mix resins for recycling purposes; this can result in chemical contamination. Flush resin to be disposed of according to local regulations.
- Spray out a test sample to ensure ENERTITE 1-2-1 meets density criteria. If good, continue to application techniques below, otherwise continue flushing and test again.

Changing to WALLTITE ECO

- Flush ENERTITE 1-2-1 from coupling block into pail until colour of resin has completely changed from yellow cream to purple. Do not mix resins for recycling purposes; this can result in chemical contamination. Flush resin to be disposed of according to local regulations.
- Spray out a test sample to ensure WALLTITE ECO meets minimum density criteria (refer to **BASF Canada WALLTITE ECO Application Guide**). If good, continue with application, otherwise continue flushing and test again.

- **Application techniques**

- Mix resin drum on **high speed (800 rpm or level 3 on a Twistork)** for a **MINIMUM** of 30 minutes prior to spraying.
- Constant mixing **on low speed (400 rpm or level 1.5 on a Twistork)** is required during application of foam.
- After drum has been mixing for 15 minutes, recirculate fresh material into the resin line from the drum, turn on the hose heat after recirculating and continue to mix the drum for an additional 15 minutes.
- Good mixing – product will appear creamy. Poor mixing – product will appear frothy.
- Keep the gun between 23-30 cm (9 to 12 inches) from substrate.
- Overlap a minimum of 75% between passes, adjusting arm speed accordingly.
- Fill cavity width completely with spray pattern.
- Keep passes to less than 61 cm (2 feet) in width to help reduce voids.
- Spray from the top of stud to bottom when spraying vertically.
- Ensure that the substrate is clean and dry before spraying.
- Apply only indoors.
- Allow 10–15 minutes before cutting.
- Can be applied up to 30 cm (12") per pass.
- During application in cool weather, steam will be produced from ENERTITE 1-2-1.

- **Chemical storage recommendations**

The resin and the isocyanate must be stored on pallets in a dry location that is sheltered from sources of heat and sunlight.

	Isocyanate	Resin
Shelf life	12 months	6 months
Temperature	15°C–25°C (60°F–77°F)	15°C–25°C (60°F–77°F)

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Revision Date: May 21, 2010

Page 3 of 4

- **Health and safety instructions**

- Ensure continuous and proper ventilation of work area, through a fresh air intake and extraction of foul air at a rate of 0.3 air changes per hour, during application and for 24 hours thereafter.
- Properly fitting breathing apparatus supplying fresh air for installers or any other person within a 10-meter (33 feet) radius of the operator during spraying. Persons suffering from respiratory allergies should avoid exposure to isocyanate.
- Overalls approved for chemical products used in polyurethanes, e.g. Tyvek/Saranex.
- Gloves when spraying approved to handle chemicals used in polyurethane, e.g. Nitrile.
- Safety glasses and gloves when handling liquid components; consult MSDS for handling components.
- If inhalation of vapours occurs, remove the person from the working area to breathe fresh air and if breathing is still difficult call a physician.
- Avoid contact with eyes, skin and clothing. In case of eye contact, immediately flush with large amounts of water for at least 15 minutes and call a physician immediately. In case of skin contact, wash area with soap and water. Wash soiled clothing before reuse.
- Do not store isocyanate in a damp location.
- In the event of a minor spill (i.e. 5 liters [1.32 gall]) of isocyanate, use an absorbent material, such as sand or any other absorbent material (not sawdust).
- In the event of a large spill, contact BASF Canada at 1-800-454-2673, or a specialist agency, CANUTEC at 613-996-6666.

- **Description of drum**

Isocyanate: (red 250 kg (551 lb) metal barrel)

Resin: (blue 200 kg (441 lb) metal barrel)

- **Fire risks**

Fires involving both components may be extinguished with carbon dioxide, chemical powder or inert gases. Self-contained breathing apparatus must be worn by personnel fighting the fire.

ENERTITE 1-2-1 improper application techniques **MUST** be avoided. Examples of improper application techniques include, but are not limited to excessive thickness of ENERTITE 1-2-1, off-ratio material and spraying into or under rising ENERTITE 1-2-1. Potential results of improperly installed ENERTITE 1-2-1 included: dangerously high reaction temperatures that may result in fire and offensive odors that may or may not dissipate. Improperly installed ENERTITE 1-2-1 must be removed and replaced with properly installed materials. ENERTITE 1-2-1 insulation is combustible. High-intensity heat sources such as those from grinding, welding or cutting torches must not be used in contact with or in close proximity to ENERTITE 1-2-1 or any polyurethane foam. Large masses of ENERTITE 1-2-1 should be removed to an outside safe area, cut into smaller pieces and allowed to cool before discarding into a trash receptacle. Foam plastic materials installed in walls or ceilings may present a fire hazard unless protected by a thermal barrier approved by the National Building Code.

BASF Canada

For more detailed information, call:

Eastern region

ON, QC, MAR

Toll-Free: 1-866-474-3538

Western region

BC, AB, SK, MB, NWT, YT, NU

Toll-Free: 1-800-891-0671

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Revision Date: May 21, 2010

Page 4 of 4