

MEDIUM DENSITY • CLOSED CELL SPRAY FOAM INSULATION

Thermoseal HFO

PROUDLY MADE USING
Forane 1233zd HFO
Liquid Blowing Agent

Thermoseal HFO is an HFO based Next Generation two component, semi-rigid, medium density, 2.0 lb closed cell polyurethane foam insulation system which simultaneously insulates and air-seals your building structure. Thermoseal HFO uses the latest generation, high performance HFO blowing agent known as Forane 1233zd LBA. Forane LBA has a global warming potential (GWP) of 1, which is 99.9% lower than HFC blowing agents. Thermoseal HFO requires the use of an "A" component (ISO) and a blended "B" component (RESIN), which contains ZERO ozone depleting catalysts, polyols and fire retarding materials. Thermoseal HFO is designed to make homes more energy efficient, quieter, healthier and more comfortable. Thermoseal HFO fills all building cavities completely sealing all cracks, crevices, and voids where air loss and infiltration are most common.

PHYSICAL PROPERTIES

PROPERTY	VALUE	TEST METHOD
R-Value	7.4 @ 1" / 25 @ 3.5"	ASTM C 518
Core Density	1.9 - 2.1 lb. / ft ³	ASTM D 1622
Closed Cell Content	>= 92%	ASTM D 2856
Water Vapor Transmission — Permeance	0.86 Perms @ 1.37"	ASTM E 96
Tensile Strength (PSI)	48.64 lbf/in ²	ASTM D 1623
Compressive Strength (PSI)	27.43 lbf/in ²	ASTM D 1621
Dimensional Stability	2.49%	ASTM D 2126
Water Absorbition	0.86% change	ASTM D 2842
Air Permeance (air impermeable per IRC, IBC & IECC requirements)	<0.02 L/sm ² @ 75 Pa/2.0"	ASTM E 283 & E 2178
Wind Uplift Test	PASS @ 210 (psf) / 286 (mph)	UL 1897
Approved for Fortified Roofs	PASS @ 171.6 (psf)	ASTM E 330
Meets or Exceeds Type II — Standard Spec. for SPF Rigid Thermal Insulation	Pass	ASTM C 1029

FIRE PROPERTIES / CODE CERTIFICATIONS



Surface Burning Characteristics • Flame Spread • Smoke Index	Class 1 Pass 10 / <450	ASTM E 84
Ignition Barrier • Evaluation Report. Complies with the applicable requirements of ICC-ES AC377 Appendix X for use in attics and crawlspaces without a prescriptive ignition barrier.	ER-0698 • IAPMO ES	ICC-ES AC377 Appendix X
Thermal Barrier • Evaluation Report. Pass using DC315 at (88.88 sq. ft./gal @ 18 mils wet and 12 mils dry) coverage rate of 1.136 gallons (4.3 L) per 100 sq. ft. (9.3 m ²) • Pass using NO-BURN ThB @ 14 WFT / 9 DFT	ER-0698 • IAPMO ES	NFPA 286

Storage and Processing Information

RECOMMENDED PROCESSING PARAMETERS

Recirculation Target	Do not recirculate. Gradually warm drums to 77°F prior to use.	
Primary Heater Target (Initial)	110-120°F	43-49°C
Primary Hose Target (Initial)	110-120°F	43-49°C
Target Processing Pressure	1200-1450 psi	8274-9997 kPa
Substrate & Ambient Temp	>14°F (Winter) / >45°F (Summer)	>-10°C (Winter) / >7°C (Summer)
Moisture Content of Substrate • Must be clean and free of dust and debris	<18%	<18%
Moisture Content of Concrete	<10%	<10%

LIQUID COMPONENT PROPERTIES

PROPERTY	A SIDE – PMDI	B SIDE – THERMOSEAL HFO
Color	Brown	Amber
Viscosity @ 77°F (25°C)	185 - 230 cps	400-520 cps
Specific Gravity	1.25	1.17 - 1.19
Storage Temperature	50°F-75°F (10°C-24°C)	50°F-75°F (10°C-24°C)
Mixing Ratio (By Volume)	1:1	1:1
Shelf Life • Of unopened drums stored within specified range	1 Year	180 Days

PROCESSING

Application processing temperatures can vary and are dependent upon indoor ambient temperature, outdoor ambient temperature, substrate temperature, humidity, elevation, substrate type, equipment, and other factors. While manufacturing polyurethane foam plastic on site, the applicator must continuously observe the characteristics of the sprayed foam and adjust the processing temperatures and pressures to maintain optimal cell structure, adhesion, and overall foam quality. It is the sole responsibility of the applicator to manufacture Thermoseal polyurethane foam plastic on-site within our specifications. When applying Thermoseal, all substrates must be 10°F degrees above the dew point and free of all debris including frost, oil, rust, dust, or other debris. The equipment being used must be set to deliver a consistent 1:1 ratio by volume and must be capable of achieving at least 1200 psi and the target processing temperatures outlined in this manual. To maintain warranty status on all Thermoseal products, the Applicator's Thermoseal Training Certificate must be current. Thermoseal Training is free and can be conducted on our website at <http://www.ThermosealUSA.com>.

DISCLAIMER: To the best of our knowledge, all technical data contained herein is true and accurate as of the date of issuance and subject to change without prior notice. User must contact Thermoseal, LLC to verify correctness before specifying or ordering. We guarantee our products to conform to the quality control standards established by Thermoseal, LLC. We assume no responsibility for coverage, performance or injuries resulting from use. Liability, if any, is limited to replacement of the product. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY THERMOSEAL USA EXPRESSED OR IMPLIED; STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.