# ISOLOFOAM

# EPS vs. XPS

### What you need to know. Key considerations.

### How it's made?

Expanded Polystyrene insulation, more commonly referred to as EPS, is a closed cell insulation made of 98% trapped air and only 2% plastic, making it an efficient insulator with a small amount of raw material. EPS begins as tiny beads of polystyrene, which look like grains of salt. The beads are sent into a mold and expanded many times from their original size using steam and pentane until they completely fill the space, forming a large rectangular block and cut into the final shape using hot wires.

Also considered as a closed cell insulation, Extruded Polystyrene (XPS) insulation begins as polystyrene crystals, which are combined with additives and a gas blowing agent. The materials are led into an extruding machine, where they are blended and melted into a thick liquid. The liquid is processed through a die, expanded into foam, shaped, cooled, and trimmed in standard square or rectangular boards.

#### Conforming to CAN/ULC-S701 standard, EPS & XPS are considered as equivalent in the building codes.

ISOLOFOAM is a Canadian manufacturer that specializes in the fabrication of innovative and eco-responsible products made of Expanded Polystyrene (EPS).

ISOLOFOAM is proud to offer tested and Greenguard/Greenguard Gold certified products that respect the environment and the health of its users.

EPS has lower lifetime Global Warming Potential (GWP) than XPS which makes it a better choice for sustainable long-lasting building construction.



#### Innovation for efficiency on site

Meeting the highest quality standards in the industry, each ISOLOFOAM product is developed with the intent of increasing building's energy efficiency and to ease the work on jobsites.

With a high performance and consistent R-value over time, EPS has the lowest price per inch for R-value, making it a more cost-effective solution than other insulation products, such as XPS.

Renowned for their value-added solutions, ISOLOFOAM products are used throughout the building envelope. Available in Eastern Canada and the Northeastern united states ISOLOFOAM products can also be found in components of manufactured goods and civil engineering solutions.





Air barrier system & non vapour-barrier





Graphite-enhanced expanded polystyrene

### ISO**FOIL**



Reflective vapour-barrier





Unique clipping system Patented product





Multidirectional tube retention



# ISOLOFOAM

## What you need to know. Key considerations.

EPS: Low global warming impacts, lifetime energy savings and overall durability

		EPS	XPS
×	Thermal Resistance	R-values from R3.75 to R4.7 (GPS+) per inch Lowest cost per R-value	R-value is R5 per inch As specified in the CAN/ULC-S701 standard, this R-value is not to be used for design, LTTR is the qualifying value
	Long-term Thermal Resistance (LTTR)	Not applicable (maintains R-value over time) High performance and consistent R-value that lasts as long as the building itself	LTTR min. is R4.6 (type 2-3), R4.71 (type 4) While LTTR identifies the decreased R-value, it does not quantify the aged R-value after 5 years; R-value can go even further down afterward <sup>1,2</sup>
$\bigcirc$	Water Absorption	Better drying potential Critical for maintaining R-value under severe long-term exposure conditions Field site independent testing, after 15 years in soil: 94% R-value retention <sup>3</sup>	More limited drying potential It further reduces R-value Field site independent testing, after 15 years in soil: 54% R-value retention <sup>3</sup>
	Compressive Resistance	10 to 60 psi	15 to 100 psi
F	Environmental Impact	Total Global Warming Potential of 2.64 kg CO <sub>2</sub> eq <sup>4</sup> Up to 20x better than XPS Significantly reducing CO <sub>2</sub> emissions and heating and cooling costs	Total Global Warming Potential vary from 2.06 to 59 kg CO <sub>2</sub> eq <sup>5</sup> XPS manufacturers are subject to environmental regulation of their blowing agents to reduce their impact
	Manufacturing Flexibility	Wide range of sizes and thicknesses Up to 48" x 42" width x 16' or 18' tall Possibility of laminating membrane Easy customization and possibility of moulding in complex shapes or forms	Limited sizes and thicknesses Supplied in 2' or 4' widths and maximum 4" thick

## What is LTTR? Why is it so important.

Certain types of insulation such as XPS lose R-value over the life of the product, as the gas trapped inside begins to slowly escape (off-gassing), making it necessary for manufacturers to provide information about the expected future R-value. The LTTR must be published by manufacturers and most importantly, be used as the design value as stated in the standard.

LTTR stands for Long-Term Thermal Resistance and its measurement is required in the Canadian CAN/ULC-S701 standard by following the CAN/ULC-S770 test method. The LTTR is used to predict the R-value for cellular plastic insulations that are manufactured with the intent to retain a blowing agent (other than air) and is intended to represent the R-value after five years of in situ aging.<sup>1</sup>

## LTTR does not apply to EPS because it isn't manufactured with the intent to retain a blowing agent other than air, meaning the R-value at production is going to last. No loss of R-value over time.

Sources

- CAN/ULC-S701.1:2022 Standard for Thermal Insulation, Polystyrene Board
- <sup>2</sup> EPSIA Technical Bulletin, LTTR & Aged R-Value, 2021
- <sup>3</sup> EPSIA Technical Bulletin, EPS Below Grade Series 105, 2014

- <sup>4</sup> EPSIA EPD EPS Insulation, 2023-03
- <sup>5</sup> Documentation from XPS manufacturers' websites as of 2023-03

