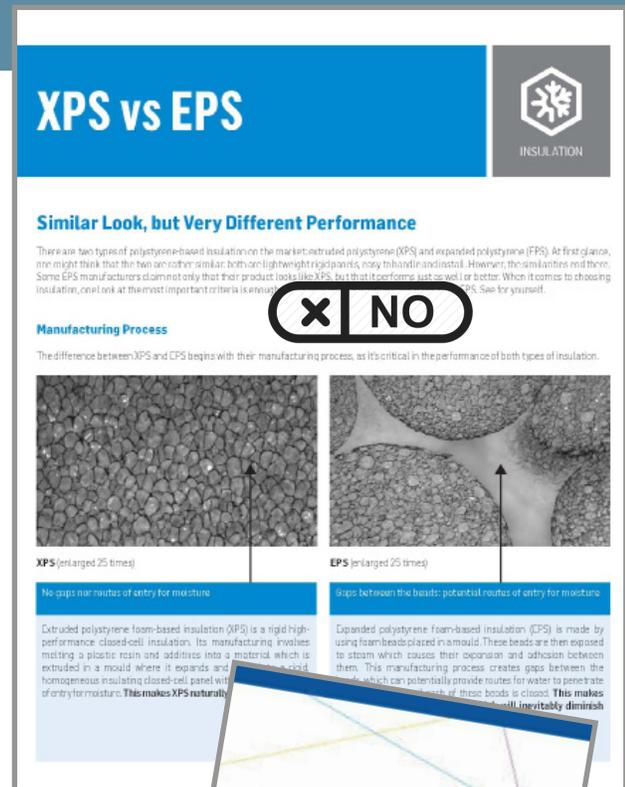


TECHNICAL BRIEF

Soprema Comparative Advertising Not Aligned with Canadian Code of Advertising Standards

Soprema recently published, “XPS vs EPS – Similar Look, but Very Different Performance,” that disregards the Canadian Code of Advertising Standards, specifically regarding the inappropriate and select use of test data. In particular, the Code stipulates accuracy and clarity concerning the general impression conveyed by the advertisement and demands that claims be supported by reliable evidence that, when dependent on test or survey data, must reflect accepted principles of research that characterize the current state of the art.

Regarding comparative advertisements, the Canadian Code of Advertising Standards prohibits unfair disparagement or attack on competitors that exaggerate the nature or importance of competitive differences.



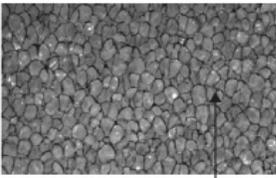
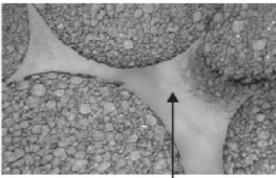
XPS vs EPS

Similar Look, but Very Different Performance

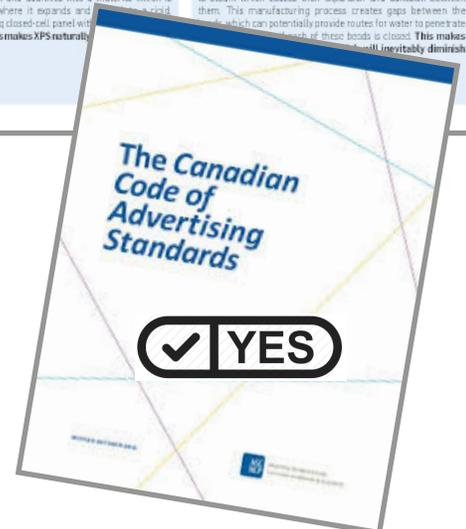
There are two types of polystyrene-based insulation on the market: extruded polystyrene (XPS) and expanded polystyrene (EPS). At first glance, one might think that the two are very similar: both are lightweight rigid panels, easy to handle and install. However, the similarities end there. Some EPS manufacturers claim not only that their product looks like XPS, but that it performs just as well (or better). When it comes to choosing insulation, one's eye is not the most important criteria (it should be). See for yourself.

Manufacturing Process

The difference between XPS and EPS begins with their manufacturing process, as it's critical in the performance of both types of insulation.

 <p>XPS (enlarged 25 times)</p> <p>No gaps nor routes of entry for moisture</p> <p>Extruded polystyrene foam-based insulation (XPS) is a rigid high-performance closed-cell insulation. Its manufacturing involves melting a plastic resin and additives into a material which is extruded in a mould where it expands and forms a uniform, homogeneous insulating closed-cell panel with no gaps or routes of entry for moisture. This makes XPS naturally</p>	 <p>EPS (enlarged 25 times)</p> <p>Gaps between the beads: potential routes of entry for moisture</p> <p>Expanded polystyrene foam-based insulation (EPS) is made by using foam beads placed in a mould. These beads are then exposed to steam which causes their expansion and adhesion between them. This manufacturing process creates gaps between the beads, which can potentially provide routes for water to penetrate the insulation. The gaps between these beads is closed. This makes EPS</p>
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X NO



Soprema

Misrepresentation of Technical Data

Soprema makes numerous broad claims, uses qualifying language (e.g. may, could, possible, potential) alongside factual connotations, references isolated data points that support Soprema's misrepresentation and largely relies on dated research published in the 1970's. To the right is a list of advertising claims that do not meet the Canadian Code of Advertising Standards.

1

Soprema makes 'better than' declarations without corroboration.

2

Images of the EPS and XPS cellular structure lack proper scientific labeling and are not sourced.

3

Soprema's use of words such as 'may', 'potentially' and 'likely', are red flags that they do not have conclusive evidence to support their claims.

4

The failure to account for the LTTR of XPS inflates Soprema's XPS thermal performance by 6% - 8%.

5

ASTM D2842 is a water submersion test and is not applicable to foam insulation applications that would not be subjected to standing water.

6

ASTM C666 - a freeze-thaw test for concrete - is not intended to predict long-term performance.

Proper use of EPS & XPS insulation requires knowledge of moisture properties detailed in standardized test methods.

In Reality...

Both EPS and XPS are closed cell foams and are subject to the material specifications set forth in CAN/ULC S701, Standard for Thermal Insulation, Polystyrene Boards and must comply with all applicable building codes. The claim that more EPS than XPS is needed to achieve the same insulation properties fails to account for the EPS cost advantages and manufacturing flexibility to provide a wide range of thicknesses and densities that meet the desired performance properties.

The current International Residential Code and the Canadian NRC-CNRC report attest to the fact that EPS is suitable for below-grade applications, providing appropriate thermal, moisture and mechanical performance.

Most of the research referenced by Soprema date from 1970s and 1980s which disagree with more recent studies on EPS versus XPS long-term performance, moisture absorption and R-value retention. Three of the studies cited by Soprema were disqualified by the U.S. NAD review for inappropriate use of test data.

No single type of insulation has a monopoly on performance. When evaluating foam insulations, it is essential to select the material best suited for the application based on cost and performance. Specifying the appropriate product followed by proper installation is critical to the long-term performance of a building assembly.

Canadian Advertising Regulations & Guidelines

In comparative advertising there are eight types of claims, each requiring its own standard of supporting evidence. Superiority claims based on the factual results of a laboratory test or scientific study are held to a high degree of specificity. Canada's Competition Act, enforced by the Canadian Bureau of Competition, limits the use of technical reports to substantiate claims that match the parameters of the test results being referenced. For example, if the test results being cited are for a particular material density and thickness, those results cannot be transposed to represent other materials of different densities and/or thicknesses. They also cannot be adopted as generalized conclusions about a broader aspect of the material performance.

The Canadian Code of Advertising Standards (Code), which is the cornerstone of advertising self-regulation in Canada – similar to the U.S. National Advertising Directive (NAD) – sets forth the following guidelines, with emphasis regarding the inappropriate use of test data:

1. Accuracy & Clarity

(a) Advertisements must not contain, or directly or by implication make, inaccurate, deceptive or otherwise misleading claims, statements, illustrations or representations.

(b) Advertisements must not omit relevant information if the omission results in an advertisement that is deceptive or misleading.

Soprema Marketing Claim

Competitive Advertising Concerns

XPS is technically superior to EPS

- This comparative statement is subjective and does not reference published research to substantiate the claim.

Photography of EPS & XPS –
Enlarged 25 times

- Digital images of enlarged objects must include an embedded notation to indicate the level of magnification. The scientific community does not recognize comparative images without proper labeling of magnification scales.¹
- The images do not provide any information to indicate if they are of a similar density.

XPS No Gaps or Routes of Entry for
Moisture

- The claim of “no gaps nor routes of entry” is misleading, as it is well recognized that XPS absorbs moisture in both laboratory and field studies.²

EPS Gaps Between the Beads; Potential
Routes for Entry for Moisture

- Soprema does not reference a study to substantiate the claim, “This manufacturing process creates gaps between the beads.” Further, Soprema’s use of the phrases, “likely to absorb moisture,” and “can potentially provide routes for water,” are evidence they do not have a conclusive body of evidence to support these claims.

Insulating Properties (R-Value) Typical
R-Values Per Insulation (Table 1)

- CAN/ULC S701.1:2017 (Standard for Thermal Insulation, Polystyrene Boards) references only “Long-Term Thermal Resistance” (LTTR) for XPS. For XPS Types 2 and 3, the LTTR is 4.60 per inch and for Type 4, 4.71 per inch – not R-5 per inch as published by Soprema.
- The failure to account for XPS LTTR inflates the thermal performance of XPS by 6-8.7%.
- The EPS R-Values are incorrectly transposed from the RSI units. They range from 3.75 to 4.27 per inch.

Moisture and Water Resistance, Max.
Water Absorption Specifications Based
on CAN/ULC S701.1 (bar graph)

- Types 2 and 3 are mislabeled, as the water absorption specification in CAN/ULC S701.1 for Types 2 and 3 are applicable to both XPS and EPS.
- Type 1 (EPS only) and Type 4 (XPS only) are not comparable materials, as they have completely different properties, such as compressive resistance and density.
- In reference to applicable test methods, CAN/ULC S701.1 clearly states in NOTE 1 of TABLE 1: “They are intended for use in specifications, product evaluations and quality control. They are not intended to predict end-use product performance.”
- ASTM D2842 (Standard Test Method for Water Absorption in Rigid Cellular Plastics) is a water submersion laboratory test that would only be applicable in cases where insulation is immersed in standing water. In a U.S. National Advertising Division (NAD) comparative advertising determination³ assessing claims regarding EPS and XPS, NAD recommended moisture absorption claims referencing ASTM D2842 be discontinued or published with specific qualifiers that Soprema has not accounted for.

Performance in Freeze-Thaw
Conditions, Specifically for an Inverted
Roof System with EPS

- The CRREL study referenced by Soprema was also considered in the U.S. NAD Compliance Proceedings with a recommendation to discontinue XPS advertising claims referencing this study or provide disclaimers citing ASTM C666 (Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing) test limitations, stating it is not intended to provide a quantitative measure of the length of service that may be expected from a specific type of concrete, nor to test foam plastic insulation.

Long-Term Thermal Performance,
R-value Retention After Long-Term
Exposure in Applications Under Ground
Level

- The headline “Long-Term Thermal Performance” implies LTTR for XPS as specified in CAN/ULC S701.1, and as such is misleading, according to the Canadian Advertising Standards.
- ASCE published the consensus standard, ASCE 32-01, in 2001, but did not conduct the review implied by the citation.
- Soprema’s use of R-5 per inch for XPS is intentionally misleading as CAN/ULC S701.1 now recognizes only an LTTR value of R-4.60 or R-4.71 for XPS, not R-5.

Compressive Strength

- This statement does not reflect recognized industry practice that allows for material to be engineered to meet customized specifications that may exceed the minimum requirements listed in CAN/ULC S701.1.

¹See https://www.researchgate.net/post/Is_the_declaration_of_the_magnification_in_images_still_acceptable

²S. Cai, B. Zhang, L. Cremaschi, “Moisture Behavior of Polystyrene Insulation in Below-Grade Application”, *Energy and Buildings*, January 15, 2018, 24-38.

³THE DOW CHEMICAL COMPANY (Styrofoam Brand Insulation), Report #4383. NAD/CARU Case Reports (August 2005), <https://case-report.bbb.org/>

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The EPS Industry Alliance publishes technical bulletins to help inform building professionals on the performance characteristics of expanded polystyrene (EPS) building products. The information contained herein is provided without any express or implied warranty as to its truthfulness or accuracy.