EPS vs. XPS Comparison

EPS (expanded polystyrene) and XPS (extruded polystyrene) insulation are similar in that they are both comprised of polystyrene resin, both use trapped air as their long term insulating medium and both have a closed-cell structure. However, they key differences between EPS and XPS are moisture resistance, environmental impact, long term R-value, compressive strength, panel sizes and cost per R-value.

Moisture Resistance: is important when selecting below-grade cavity wall and under slab insulation. XPS resists water absorption in the near term quite well however overtime as XPS takes in moisture more slowly it also releases moisture more slowly. EPS over a longer period of time and using real-life field testing; performs better than XPS.

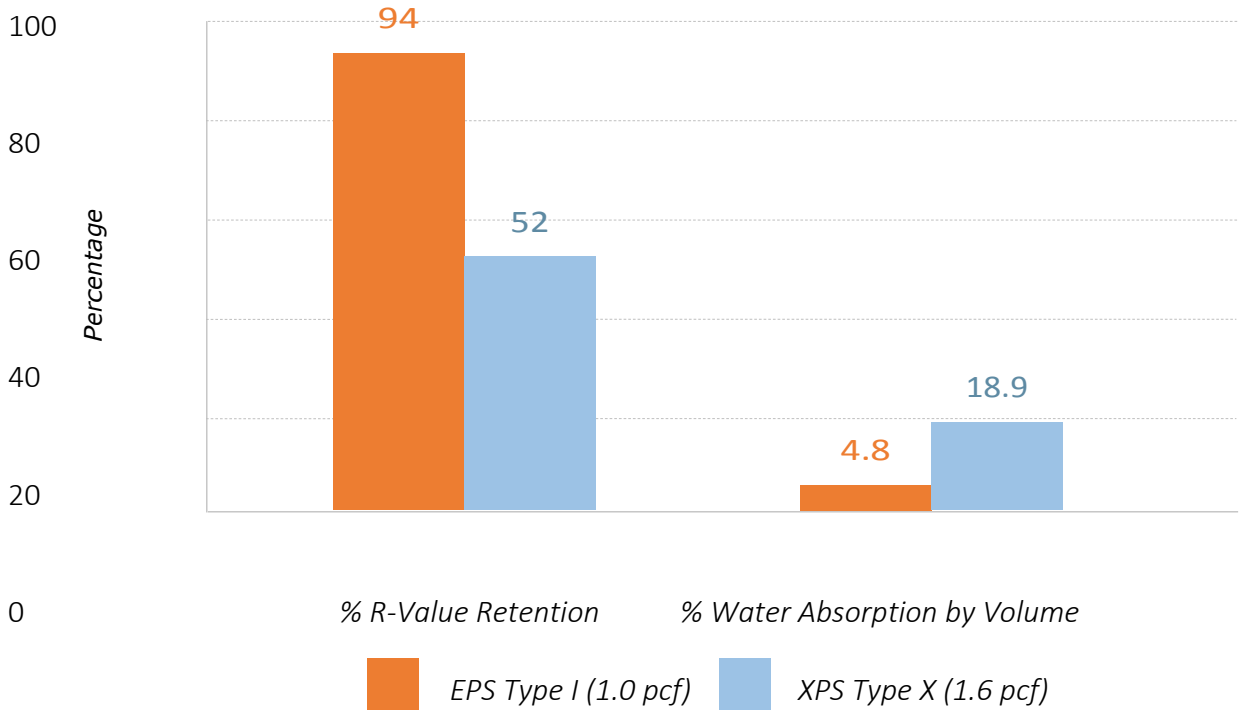
Environmental Impact: EPS has never contained Hydrochlorofluorocarbons (HCFCs). EPS uses no dyes whereas XPS companies have used pink, blue and green dyes. EPS can contain up to 15% recycled content.

Long term R-value: XPS is affected by off gassing which occurs when blowing agents present in XPS are released over the lifespan of the product and are slowly replaced with air which results in a loss of R-value.

Cost per R-value: EPS costs 10% to 30% less than XPS per equivalent R-value and compressive strength.

EPS Industry Alliance Test – 15 year In-Situ Research Shows EPS Outperforms XPS in R-Value Retention. The below graph is an excerpt from the study and the technical bulletin is attached for reference and further detail.

15 Year, real-life field study - R-value Retention & Water Absorption



The results demonstrate that EPS Type I outperforms XPS Type X in both R-value retention and decreased water absorption. Further, whereas the in-service R-value of the XPS insulation is reduced by half, expanded polystyrene still delivers 94% of its specified R- value of 3.6 per inch after 15 years. These long term performance advantages make EPS insulation a preferred choice when compared its competition.

This testing further confirms that water absorption results determined using ASTM C272 "Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Materials" cannot be correlated to the in- service performance of foam insulation. The main reason is that the laboratory test procedures call for partial or full submersion conditions which are not encountered in field applications. In fact, laboratory test methods were not developed for predicting actual performance, but were intended for use in specifications as a means of comparing relative physical properties of different cellular plastics and for product evaluations and quality control.

(Above grade) - SilveRboard vs. XPS Comparison

	Above Grade Wall Insulation - EPS vs. XPS Performance and Economics			
Category	**EPS**	**EPS**	**XPS**	**XPS**
Part Number	**SBGXS112508P**	**SB35XS108P**	**DOW-Cladmate**	**OC Codebord**
Thickness	1.125"	1"	1"	1"
Density	0.7 lb/ft³	2.0lb/ft³	1.0lb/ft³	1.5lb/ft³
R-Value	5	5	5	5
Compressive Strength	10 psi	35 psi	16 psi	20 psi
Water Vapour Permeance	2.14 Perm	3.48 perm	3.50 perm	0.85 perm
Air Leakage Testing	N/A	>0.0105	N/A	0.048

P = perforated, All competitive data has been obtained from public domain information

(Below grade) - SilveRboard vs. XPS Comparison

	Below Grade Foundation and Slab Insulation - EPS vs. XPS Performance and Economics					
Category	**EPS**	**EPS**	**XPS**	**XPS**	**XPS**	**XPS**
Part Number	**SB35S2000S**	**SB44S2000S**	**DOW - SM**	**DOW Hi-40**	**Foamular 300**	**Foamular 400**
Thickness	2"	2"	2"	2"	2"	2"
Density	2 lb/ft³	2.5 lb/ft³	2 lb/ft³	2.5 lb/ft³	2 lb/ft³	2.5 lb/ft³
R-Value	10	10	10	10	10	10
Compressive Strength	35 psi	44 psi	30 psi	40 psi	30 psi	40 psi
Water Absorption	0.43%	0.08%	0.70%	0.30%	0.70%	0.70%
Flexural Strength	84 psi	106 psi	n/a	n/a	54 psi	75 psi
Water Vapour Permeance	0.08 perm	0.03 perm	1 perm	1 perm	0.85 perm	0.85 perm

(Below grade) - Envirosheet vs. XPS Comparison

	Below Grade Foundation and Slab Insulation - EPS vs. XPS Performance and Economics							
Category	**EPS**	**EPS**	**EPS**	**EPS**	**XPS**	**XPS**	**XPS**	**XPS**
Part Number	**EN22S25004**	**EN30S24004**	**EN40S22504**	**EN60S22004**	**DOW - SM**	**DOW Hi-40**	**Foamular 300**	**Foamular 400**
Thickness	2.5"	2.4"	2.25"	2.2"	2"	2"	2"	2"
Density	1.5 lb/ft³	2 lb/ft³	2.5 lb/ft³	3.5 lb/ft³	2 lb/ft³	2.5 lb/ft³	2 lb/ft³	2.5 lb/ft³
R-Value	10	10	10	10	10	10	10	10
Compressive Strength	22 psi	30 psi	40 psi	60 psi	30 psi	40 psi	30 psi	40 psi
Water Absorption	1.87%	1.80%	1.57%	1.50%	0.70%	0.30%	0.70%	0.70%
Flexural Strength	45 psi	50 psi	63 psi	75 psi	n/a	n/a	54 psi	75 psi
Water Vapour Permeance	3.29 perm	2.50 perm	1.83 perm	1.83 perm	1 perm	1 perm	0.85 perm	0.85 perm

About Amvic

MADE IN CANADA

Amvic's primary manufacturing facility and head office is located in Toronto, ON, and was opened in 1999. In January of the same year, the company debuted at the National Association of Home Builders (NAHB) show. By June, Amvic had established itself in the insulated concrete form (ICF) industry and was producing ICFs for the North American market. All products are manufactured in Canada, including ICF, SilveRboard, Amdry, and PEX. The benefits of local production include easy distribution, proximity to the U.S., and the high-quality standards for raw material suppliers.

All Amvic ICF and EPS facilities are equipped with top-of-the-line machinery which ensures the consistent manufacture of the highest quality of energy efficient products. Amvic's network of facilities enables it to product products that can be delivered promptly anywhere in North America.

Today, Amvic is an industry-leading manufacturer of ICF and EPS insulation materials as a result of providing products that consistently exemplify exceptional quality,

superior strength, and ease of installation. Since the beginning, the company has experienced increasing demand for its product which has led to rapid growth and expansion that is anticipated to continue in the future.

GREENGUARD

Amvic's Insulated concrete forms are proudly Greenguard Gold Certified which means that they have met some of the world's most rigorous and comprehensive standards for low emissions of volatile organic compounds (VOCs) and is designed for use in indoor spaces that meet strict chemical emissions limits, which contribute to the creation of healthier interiors.

2030 CHALLENGE

Amvic Insulated Concrete Forms (ICFs) is aligned with the 2030 challenge as it offers a durable, resilient and sustainable structure that provides low energy consumption and operating costs. ICFs are energy and resource efficient throughout the building's life cycle; from the planning, construction, operation, maintenance, renovation and demolition phase. Amvic ICFs are manufactured with recyclable material and there is no off gassing present in the finished material making it Greenguard Gold Certified. Insulated Concrete Forms can generate as little as 1 percent construction waste. This greatly reduces land filling which produces methane emissions. Net Zero construction is also achievable, providing a tighter building envelope, better indoor air quality, and a safer, healthier way of life.