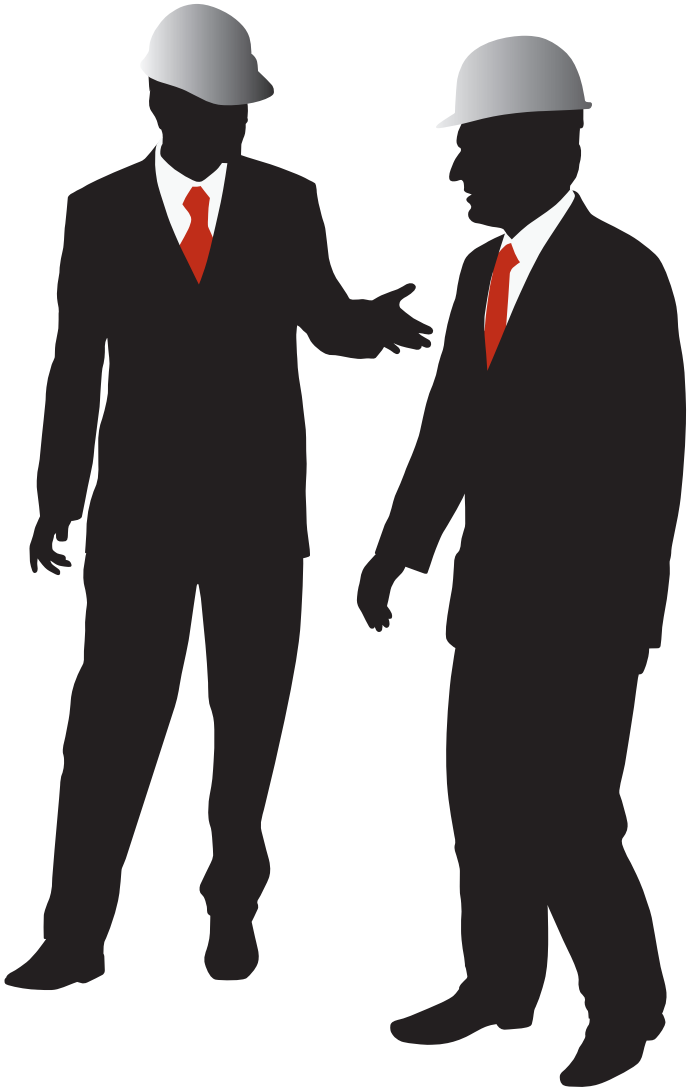
FOAM CONTROL®

LONG-TERM THERMAL RESISTANCE

WHAT'S THE R-VALUE OF YOUR INSULATION IN 50 YEARS



Foam-Control® Insulation has a Permanent Lifetime R-value.

Molded polystyrene is a unique closed-cell foam. The gas in the cells of molded polystyrene is simply air from the atmosphere. Because molded polystyrene is inert and does not change over time, it holds a permanent lifetime R-value.

FOAM CONTROL®

Long-Term Thermal Resistance

Thermal Resistance of Insulation.

Insulation is of paramount importance to reduce the energy consumption of buildings. In the summer, insulation reduces the heat flow from the hot exterior to the cool interior environment. In winter, insulation reduces the heat lost from the warm interior to the cold exterior. The resistance to heat flow through an insulation is called "thermal resistance". Thermal resistance is commonly referred to as R-value. A complete understanding of the R-value of insulation over its lifetime is critical to designing buildings that achieve reduced energy consumption.

Most people understand that the higher the R-value, the greater the insulating power of an insulation. However, many people do not understand that the R-value of XPS is lost over the lifetime of the product.

XPS Loses R-value Over It's Lifetime.

It is well understood that XPS insulations trap gas in their cells other than air and XPS will lose the gas over time. This is a natural process of materials coming to equilibrium with the environment. If this encapsulated gas assists with providing R-value then the R-value of the insulation will drop over time.

The trapped gases in the cells of XPS foam assist to provide an initial high R-value. During the life of these foams, air from the atmosphere diffuses in and the trapped gases diffuse out. The result is XPS loses R-value over it's lifetime.

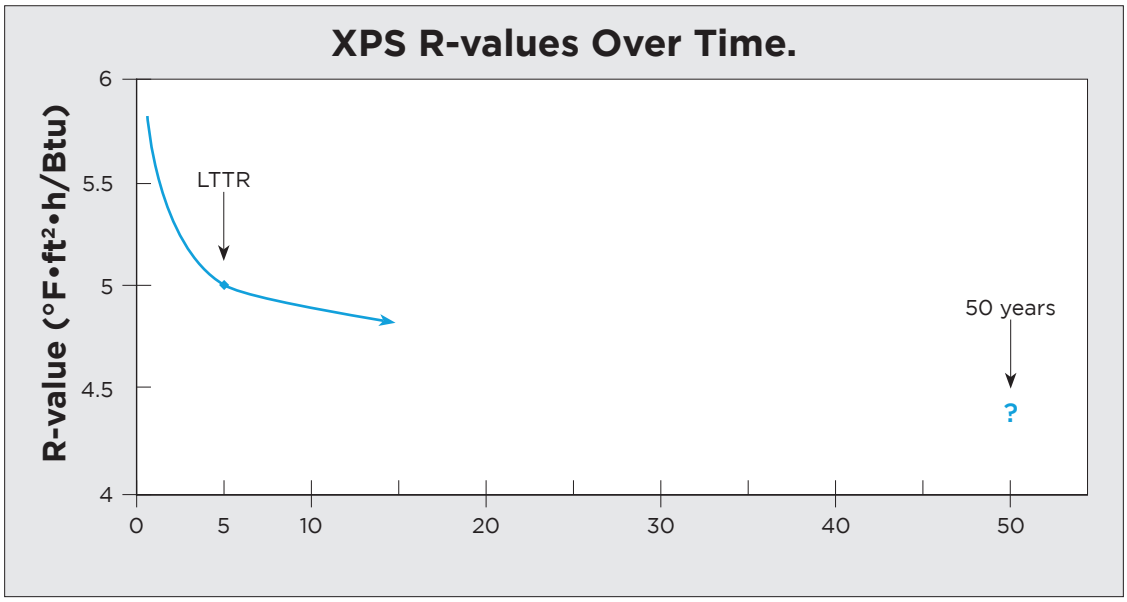
Unlike XPS, the R-value of molded polystyrene is permanent.

Don't Compromise, use insulation that has a permanent R-value for the life of the building.

Long-Term Thermal Resistance (LTTR) Test Methods.

The concept of predicting the thermal resistance of an insulation over time has evolved considerably in the past decade. Two test methods are commonly used to report R-value for materials with trapped gases other than air. The test methods are ASTM C1303 and CAN/ULC-S770. Both test methods provide a method to estimate the Long-Term Thermal Resistance or long-term R-value of insulations.

Each of the methods involves cutting thin sections approximately 3/8" (10 mm) from a sample of thicker insulation. Due to the thin size of the samples, diffusion of air in and trapped gases out is quicker than for the original thicker sample. The R-value loss of the thin sections can then be used to predict the R-value loss of the original thickness material.



Long-Term Thermal Resistance

LTTR.

The LTTR value commonly published from testing to ASTM C1303 or CAN/ULC-S770 is an estimate for the R-value of the insulation after 5 years. Many insulation manufacturers are promoting LTTR without providing a clear understanding that LTTR is an estimate for the R-value of the material after only 5 years.

The concept of a 5 year R-value being equal to the "time-weighted 15 year average" is also often used by XPS manufacturers. This approach assumes that the higher R-value established in years 1-4 is weighted by the inevitably lower R-value of the insulation in years 6-15. Neither the 5 year R-value, nor the time-weighted 15 year average approach is appropriate for use in building design. This is due to the fact that the R-value of XPS continues to decline below the LTTR published 5 year numbers. Starting in year 5 and for the remaining life of the insulation, the R-value of XPS is below LTTR published R-values.

50-Year R-value.

Most insulation users are interested in a true long-term thermal R-value for their insulations. A time period appropriate for building application is 50 years. In order to avoid confusion with the existing LTTR numbers commonly published, we recommend the use of a 50 year R-value be used for insulation specifications.

A 50 year R-value is a more suitable long-term R-value for use in building design. The 50 year R-value can easily be determined using the existing protocol described in ASTM C1303 or CAN/ULC-S770.

Specify a 50-year R-value for a reliable long-term R-value for building design.

Specify a 50-year R-value for your insulation R-value to ensure long-term performance and energy savings!

R-values for Molded Polystyrene and XPS Insulations.

Insulation	Initial R-value	LTTR (5-year R-value)	50-year R-value
FOAM CONTROL 150	4.2	4.2	4.2
FOAM CONTROL 250	4.4	4.4	4.4
XPS	approximately 5.5	5.0	4.3[2]

R-values at 75˚F, units are °F•ft²•h/Btu

[1] Estimate based on warranty of 80% of published R-value

[2] Estimate based on available testing and published research

Molded polystyrene Provides a Permanent Lifetime R-value.

The 5-year and 50-year R-values for Foam-Control insulation are the same as the initial R-value since the gas trapped in the cells of Foam-Control insulation is atmospheric air. Unlike XPS, Foam-Control insulation does not lose R-value over time.

Foam face-off: Choosing Foam-Control over XPS.

- Foam-Control provides a stable long-term R-value at a lower cost
- Foam-Control uses a blowing agent with low global warming potential and low ozone depletion
- Foam-Control meets strength requirements at a lower cost
- Foam-Control and XPS have resistance to moisture, but Foam-Control has a higher vapor permeance leading to superior drying potential
- Foam-Control with **Perform Guard**® treatment available to provide termite resistance

Proven to meet, or exceed, building codes.

Foam-Control is manufactured under an industry leading quality control program monitored by UL and further recognized in UL Evaluation Report UL ER11812-01. Foam-Control meets ASTM C578, "Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation".

Ready to take control? Start here.

If you're ready to have Foam-Control contribute to your next project, just contact your nearest Foam-Control manufacturer and Technical Sales Representative. They will be happy to give you design consultation, information about Foam-Control products, pricing, and answers to all of your questions.

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