



# SATURN

RESOURCE MANAGEMENT

## 3.6.5 Foam Board Insulation

Foam board is combustible and creates toxic smoke if it burns. Foam insulation usually requires covering with a thermal barrier or an ignition barrier.

Foam board, although not an insect food, is an insect-friendly material that can aid termites in establishing colonies in wood structures. Mitigate all sources of ground water before installing foam near a foundation. When foam is installed on the outside of foundations, the surrounding soil should be treated with a termiticide. Inside a crawl space, foam must never provide a

direct link from the ground to wood materials where termites or carpenter ants are common. The IRC forbids foam below grade in “very heavy” termite-colonized regions; the foam must be kept 6 inches above grade.

### Expanded Polystyrene (EPS) Foam Board

EPS foam board, sometimes called beadboard, is the most inexpensive of the foam insulations. EPS varies in density from 1 to 2 pcf with R-values per inch of 3.9 to 4.7, increasing with greater density. EPS is packaged in a wide variety of products by local manufacturers. Products include structural insulated panels (SIPS), tapered flat-roof insulation, EPS bonded to drywall, and EPS embedded with fastening strips.

EPS is flammable and produces toxic smoke when burned. EPS has a low maximum operating temperature (160 degrees F) — a concern for using EPS under dark-colored roofing or siding. EPS shrinks in some high-temperature installations.

EPS is very moisture resistant and its vapor permeability is similar to masonry materials, which makes EPS a good insulation for masonry walls.

Dense EPS (2 pcf) is appropriate for use on flat roofs and below grade. Dense EPS is also more dimensionally stable and less likely to shrink. Use weatherproof coverings to prevent degradation by ultraviolet light and freezing and thawing at ground level.

### Extruded Polystyrene (XPS) Foam Board

XPS is produced by only a few manufacturers and is popular for below-grade applications. XPS is more expensive than EPS and has an R-value of 5.0 per inch. XPS may be the most moisture-resistant of the foam boards.

XPS is flammable and produces toxic smoke when burned. XPS must be covered by a thermal barrier when installed in living spaces. XPS has a low maximum operating temperature (160

degrees F) that is a concern for using XPS under shingles or dark-colored siding. XPS has shrunk in some installations. Use weatherproof coverings to prevent degradation by ultraviolet light and freezing and thawing at ground level.

### Polyisocyanurate (PIC) Foam Board

PIC board has the highest R-value per inch (R-6 or a little more) of any common foam board. PIC is packaged with a vapor permeable facing or an aluminum-foil (vapor barrier) facing. PIC is expensive but worth the cost when the thickness of insulation is limited.

PIC is combustible and produces toxic smoke during a fire. However some products have fire retardants that allow installation in attics and crawl spaces without a thermal barrier or ignition barrier.

PIC has a low maximum operating temperature (<200 degrees F) that may be a concern for using PIC under dark-colored roofing or siding. Use the high-density (3 pcf) PIC board for low-sloping roof insulation.