

RIGID BOARD: EXTRUDED POLYSTYRENE

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Example: Styrofoam products by Dow (by the way, Styrofoam is a Dow Chemical brand name and not a generic term for foam insulation).

Colour: Blue (Dow) or Pink (Celfort)

Thermal Resistance: RSI - .035/mm R - 5.0/in. Very high.

Cost: high

Capacity to dry out if wet: Won't get wet

Fire Resistance: Poor: Gives off toxic fumes.

Fungus / Vermin Resistance: Good

Limitations:

-- Must be covered. It is a fire hazard if exposed on the inside of the house and it will deteriorate if exposed to the sun on the outside of the house.

-- Easily damaged.

-- It is a vapour barrier (except for Canadian manufactured Dow CladMate and StyroSpan) and may be used on the outside of the house if the joints are not sealed (to allow for exfiltration of moisture) and the inside of the house has a reasonable vapour and air barrier (to limit the moisture that gets into the wall). In Canada it should be applied in 2ft. x 8ft. sheets (not 4x8) to provide adequate breathing joints. In a cold climate it should not be applied in thin 1/2 sheets as is common in warmer climates -- 1-1/2" thickness is considered the minimum (1.4" is common in Ontario). All of that is to avoid collecting condensation on the warm side of the insulation.

-- It is expensive.

Advantages:

With proper application techniques it can be used anywhere in the house.

-- It can be glued directly to concrete or wood with proper adhesive.

-- It will last forever underground.

-- It has a very high compressive strength

-- some formulations of Styrofoam are even used under highways and airport runways!

Notes:

-- Contrary to some of the literature, insulation should not be put over existing siding if there is strapping and an air space behind the existing siding. Remove the old siding to prevent air currents on the inside of the insulation, which would totally negate its insulating effects. Residing is always a good opportunity to inspect the wall under the old siding and repair any damage before hiding it for the next twenty years -- so take that old stuff off.

-- Some literature shows a vapour barrier on the outside of the old wall, then foam insulation and then the siding. This is acceptable on the condition that you have twice as much insulation on the outside as on the inside. This outside vapour barrier will work quite well if there is no insulation inside the wall at all, but do not add heavy inside insulation later or your wall will rot. (see Vapour Barriers)

Application:

-- Highly recommended for any insulation that must be in contact with the ground, such as exterior basement insulation or with water, such as the roof.

-- Highly recommended where space is more important than money, such as in cathedral ceilings.

-- Will work excellently anywhere else, but is often not worth the cost, given cheaper alternatives.

Keywords:

Basement, Ceiling, Foam, Insulation, Products, R-Value, Roof, Siding, Strapping, Types, Vapour Barrier, Walls

