

NEW BRUNSWICK INSULATION

Rigid Foam Board

XPS, EPS, and polyiso rigid foam board insulation
for foundations, continuous exterior insulation, and
under-slab applications

18 Expert Answers from Insulation IQ

newbrunswickinsulation.com/construction-brain

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How does polyisocyanurate rigid foam compare to XPS board insulation for R-value retention in cold New Brunswick winters?

Polyisocyanurate (polyiso) loses significant R-value in NB's cold winters, while XPS maintains consistent performance — making XPS the better choice for exterior applications in our Climate Zone 6 conditions.

Polyiso's Cold Weather Performance Problem

Polyiso rigid foam is rated at R-6 to R-6.5 per inch at laboratory test temperatures (around 75°F/24°C), but its R-value drops dramatically as temperatures fall. At 20°F (-7°C) — a typical winter day in New Brunswick — polyiso delivers only about R-4.5 per inch. When temperatures hit -10°F (-23°C), which happens regularly during NB winters, polyiso's effective R-value can drop to R-3.5 per inch or lower. This represents a **40-45% reduction in thermal performance** exactly when you need insulation most.

The problem occurs because polyiso's blowing agent (pentane) condenses at cold temperatures, reducing the insulating properties of the foam cells. In practical terms, that expensive 2-inch polyiso board you installed for R-12 might only be delivering R-7 to R-8 during January and February — the months when your heating bill is highest.

XPS Maintains Consistent Performance

XPS (extruded polystyrene) provides R-5 per inch and maintains this rating across the full temperature range experienced in New Brunswick. Whether it's +30°C in July or -25°C in January, XPS delivers the same thermal resistance. This consistency makes XPS far more predictable for energy modeling and heating cost calculations.

Best Applications for Each Material in NB

Use XPS for: Below-grade foundation insulation, exterior continuous insulation over sheathing, under-slab applications, and any location where the foam will experience outdoor winter temperatures. XPS also offers superior moisture resistance — critical for NB's wet soils and high humidity conditions.

Use polyiso for: Interior applications where it stays warm (interior basement walls, interior side of cathedral ceilings), flat roof assemblies where it's protected above the roof deck, and commercial applications with hybrid insulation systems. Polyiso works well when it remains above 40°F (4°C) consistently.

NB-Specific Recommendations

For exterior wall continuous insulation — increasingly popular in comprehensive energy retrofits — XPS is the clear choice in New Brunswick. A 2-inch XPS layer provides consistent R-10 thermal bridging protection through our 4,800-5,200 heating degree day winters. Polyiso in the same application might only deliver R-7 to R-8 when you need it most.

For basement wall insulation, XPS rigid foam boards are ideal because they handle soil moisture contact and maintain full R-value against cold foundation walls. Many NB contractors install 2 inches of XPS (R-10) against basement walls, then frame with 2x4 studs and add R-12 batts for a total of R-22 — excellent performance for our climate.

Cost Considerations

Polyiso typically costs \$2.50-\$5.00 per square foot installed in NB, while XPS runs \$2.00-\$4.00 per square foot. When you factor in polyiso's reduced winter performance, XPS often delivers better value per dollar of actual thermal resistance during heating season. For the modest price difference, XPS provides peace of mind and predictable performance year-round.

Professional Installation Notes

Both materials require proper installation with sealed joints and continuous coverage to prevent thermal bridging. However, XPS is more forgiving of installation imperfections because its performance doesn't vary with temperature. This consistency makes it easier for contractors to predict and guarantee energy savings.

Need help finding a professional insulation contractor experienced with rigid foam installation? New Brunswick Insulation can match you with local experts who understand the performance differences between these materials in our Maritime climate.

Q2

How do I properly tape and seal the seams of rigid foam board insulation I installed myself in a Moncton home?

Properly sealing rigid foam seams is critical for maintaining the thermal barrier and preventing air leakage — gaps as small as 1/8 inch can reduce your insulation's effectiveness by 25% or more. The key is using the right tape for your foam type and ensuring clean, dry surfaces for maximum adhesion.

For **XPS rigid foam** (pink or blue board), which is most common for basement applications in Moncton homes, use **Tyvek tape, Zip System tape, or high-quality foil tape** specifically rated for foam board. Avoid standard duct tape — it fails within 2-3 years as the adhesive degrades. For **polyiso boards** (foil-faced), the existing foil facing provides an excellent surface for foil tape adhesion.

Surface preparation is everything. Clean both foam surfaces with a dry cloth to remove dust, foam particles, and any oils from handling. The foam must be completely dry — moisture under the tape prevents proper bonding and

leads to eventual failure. In Moncton's humid Maritime climate, this is especially important if you're working in a damp basement.

Apply tape with firm, consistent pressure using a J-roller or similar tool to eliminate air bubbles and ensure full contact. Start at one end and work systematically to the other, maintaining steady pressure. The tape should extend at least 1 inch onto each foam board surface. For **butt joints** (where boards meet end-to-end), center the tape over the seam. For **corner joints**, apply tape to one surface first, then fold it 90 degrees onto the adjacent surface.

Seal all penetrations immediately — don't leave gaps around pipes, electrical conduits, or other obstacles for later. Use **acoustical sealant** (like Tremco or Big Stretch) for irregular gaps and small penetrations. This sealant stays flexible and maintains its seal through thermal cycling, which is crucial in NB's temperature swings from -25°C winters to +30°C summers.

For **large gaps** (more than 1/4 inch between boards), use **expanding foam sealant** first, then tape over the cured foam. Low-expansion foam is better than high-expansion — it won't bow your boards or create pressure that breaks the tape seal. Allow foam to cure completely (usually 24 hours) before taping.

Pay special attention to the top and bottom edges where your foam meets the foundation wall and floor joists. These transitions are common failure points. Use a combination of sealant and tape to create a continuous air barrier. If you're installing a **vapour barrier** (6-mil polyethylene) over the foam, the tape seams become even more critical as they're your last line of defense against air leakage.

Test your work by running your hand along all seams on a cold day — you'll feel any air movement immediately. Professional installers often use a smoke pencil or incense stick to identify air leaks, but the hand test works well for DIY verification.

When to call a professional: If you're dealing with complex geometries, multiple penetrations, or if this foam installation is part of a larger basement finishing project where the air sealing must integrate with framing and electrical work. Professional insulation contractors have specialized tools and tapes that create more durable seals, and they understand how foam board insulation fits into the overall building envelope strategy for Moncton's Climate Zone 6 conditions.

Need help finding a professional insulation contractor for larger projects? New Brunswick Insulation can match you with experienced foam board specialists in the Moncton area.

Q3

Are there NB Building Code requirements for the thickness of rigid foam board used in Campbellton basement walls?

The NB Building Code requires R-17 to R-20 for below-grade basement walls, but doesn't specify rigid foam thickness directly — it's the R-value that matters. For Campbellton's cold northern climate, you'll want to hit the higher end of this range.

To meet code with rigid foam in Campbellton, you'll need **3.5 to 4 inches of XPS (extruded polystyrene)** at R-5 per inch, or **4 to 5 inches of EPS (expanded polystyrene)** at R-4 per inch. XPS is the better choice for Campbellton basements because it maintains its R-value when exposed to soil moisture — critical given the area's wet spring conditions and high water table in many locations.

Campbellton's northern location accumulates over 5,200 heating degree days annually, making it one of the coldest regions in New Brunswick. The frost line extends 4.5 to 5 feet below grade, so your basement walls are dealing with sustained ground temperatures well below freezing for months. This makes proper basement insulation even more critical than in southern NB — an uninsulated basement in Campbellton can account for 30-40% of total home heat loss.

The code requires the insulation to extend **the full height of the below-grade wall**. Many contractors try to save money by only insulating the top few feet, but this creates a thermal bridge through the lower concrete that wastes energy and can cause condensation problems where the insulated and uninsulated sections meet.

Installation details matter enormously in Campbellton's climate. The rigid foam must be sealed at all edges with acoustical sealant or spray foam to prevent air leakage. Any gaps allow warm, moist interior air to reach the cold concrete behind the foam, causing condensation that leads to mould growth you'll never see until it becomes a major problem.

For a typical Campbellton basement (8-foot walls), expect to pay **\$3,000 to \$6,000** for professional XPS installation including proper sealing and furring strips for drywall attachment. While 3.5 inches meets code, many Campbellton homeowners are going to 4 or even 5 inches for the extra comfort and energy savings — the incremental cost is modest compared to the long-term heating bill reduction.

Don't use polyiso or open-cell spray foam below grade in Campbellton. Both absorb moisture and lose R-value when wet. Stick with XPS rigid foam or closed-cell spray foam for below-grade applications in northern NB's challenging moisture conditions.

Need help finding a professional insulation contractor familiar with Campbellton's specific climate challenges? New Brunswick Insulation can match you with experienced local professionals who understand northern NB building science requirements.

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What is the total installed cost comparison between polyiso and XPS rigid foam board for insulating a Saint John NB foundation from the exterior?

For exterior foundation insulation in Saint John, XPS rigid foam will cost approximately 15-25% less than polyiso and is the better choice for NB's cold climate. XPS typically runs \$2.00-\$4.00 per square foot installed versus polyiso at \$2.50-\$5.00 per square foot installed.

Why XPS is Superior for Saint John Foundations

The cost difference becomes more significant when you consider performance in New Brunswick's climate. Polyiso's R-value drops dramatically in cold temperatures — while it's rated at R-6 to R-6.5 per inch at laboratory conditions (75°F), it drops to roughly R-4.5 per inch at 32°F and continues declining as temperatures fall. Since your Saint John foundation will experience soil temperatures well below freezing during our long winters, you're not getting the R-value you're paying for with polyiso.

XPS maintains its full R-5 per inch rating even at sub-zero temperatures, making it significantly more cost-effective on a per-R-value basis in actual operating conditions. For a typical Saint John foundation requiring R-17 to R-20 insulation (current NB Building Code), you'd need about 3 inches of XPS versus 3.5-4 inches of polyiso to achieve equivalent real-world performance.

Saint John Foundation Considerations

Saint John's coastal location brings additional moisture challenges that favor XPS. The city's proximity to the Bay of Fundy means higher soil moisture content and more frequent freeze-thaw cycles that can drive moisture into foundation assemblies. XPS is completely closed-cell with excellent moisture resistance — it won't absorb water even when in direct contact with damp foundation walls or backfill.

The persistent coastal winds in Saint John also increase the importance of continuous insulation. XPS boards can be installed with sealed joints using construction adhesive and foam sealant, creating an effective air barrier as well as thermal barrier. This dual function provides better value than polyiso, which requires a separate air barrier system.

Installation Cost Factors

For a typical Saint John foundation (800-1,000 square feet of below-grade wall area), expect total project costs of \$1,600-\$4,000 for XPS versus \$2,000-\$5,000 for polyiso. The higher polyiso costs reflect both material expense and the need for thicker installation to achieve equivalent performance. Both materials require excavation around the foundation perimeter, waterproofing membrane application, insulation attachment, and protective covering above grade — labor costs that are identical regardless of foam type.

When to Hire a Professional

Exterior foundation insulation requires excavation to frost depth (4-5 feet in the Saint John area), proper drainage management, and coordination with waterproofing systems. This is definitely professional work requiring equipment for excavation, knowledge of foundation waterproofing, and understanding of grading and drainage. The consequences of poor installation — water infiltration, foundation damage, or thermal bridging — are expensive to fix and often hidden until significant damage occurs.

Need help finding a professional insulation contractor experienced with exterior foundation work? New Brunswick Insulation can match you with local contractors familiar with Saint John's coastal conditions and soil requirements.

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Q5

How thick should rigid foam board be on a New Brunswick foundation wall? | Insulation IQ?

Foundation wall insulation is one of the most cost-effective upgrades a New Brunswick homeowner can make, and getting the thickness right directly determines how comfortable your basement is and how much you pay to heat it. The New Brunswick Building Code — which adopts the National Building Code of Canada — requires a minimum of **R-10 for basement walls** in most residential applications under Part 9, but that is a minimum, not a recommendation. For Climate Zone 6, which covers essentially all of New Brunswick, most energy efficiency programs and best-practice guidelines push for significantly more.

How rigid foam R-value relates to thickness depends on the product. The three types of rigid foam board used in Canadian basement applications each have different R-values per inch:

- **EPS (Expanded Polystyrene):** approximately R-3.8 to R-4 per inch
- **XPS (Extruded Polystyrene):** approximately R-5 per inch
- **Polyisocyanurate (Polyiso):** approximately R-6 to R-6.5 per inch at room temperature, though it performs poorly in cold conditions — not recommended for below-grade or cold exterior applications

To hit the **minimum code R-10**, you would need roughly 2 inches of XPS or 2.5 inches of EPS. However, to qualify for **NB Power efficiency rebates** and the **Canada Greener Homes Grant**, higher R-values are generally required. The Greener Homes Grant targets R-20 or better for below-grade walls, which means approximately 4 inches of XPS or 5 inches of EPS.

Practical recommendations for New Brunswick homes vary by situation:

For a **finished basement** that will be used as living space in a home in Fredericton, Saint John, or Moncton, aim for at least R-20 continuous on the interior of the foundation wall. Two inches of XPS (R-10) plus a 2x4 stud wall with R-12 or R-14 batts achieves this and is one of the most common retrofit approaches. Alternatively, 4 inches of rigid foam alone — strapped with horizontal 1x3 strapping — eliminates the thermal bridging that occurs through studs.

For **unfinished utility basements**, R-10 to R-15 continuous rigid foam is a practical minimum that keeps pipes from freezing and reduces heat loss, without the cost of finishing the space.

For **exterior foundation insulation**, applied to the outside of the foundation wall below grade, XPS is the preferred product because it is moisture-resistant and maintains its R-value when wet. EPS is also used and is slightly more environmentally friendly (lower global warming potential). Exterior insulation protects the foundation from freeze-thaw cycles — important in NB where the frost line reaches 1.2 to 1.5 metres — and keeps the foundation mass inside the thermal envelope, which reduces moisture risk. Typical exterior applications use 2 to 4 inches of XPS, protected above grade with a fibre-cement board, pressure-treated plywood, or dimple mat.

Vapour management is critical at foundation walls. Concrete and block foundations pass moisture vapour from the surrounding soil year-round. When installing rigid foam on the interior, the foam itself acts as a vapour retarder — but it must cover the entire wall surface with no gaps, and joints must be taped with a foam-compatible tape. Any air gaps behind the foam allow moisture to accumulate against the concrete and migrate into the assembly. In basements in the Sussex or Miramichi areas where seasonal groundwater is more active, an interior drainage mat or dimple membrane behind the foam helps manage bulk water before it can reach the insulation.

Cost estimates for rigid foam foundation insulation in New Brunswick currently run approximately:

- EPS board (2 inch): \$0.70 to \$1.00 per square foot materials

- XPS board (2 inch): \$1.00 to \$1.40 per square foot materials
 - Installed cost (labour + materials, interior application): \$3.00 to \$6.00 per square foot depending on complexity
- A full basement perimeter of 600 square feet insulated to R-20 might cost \$3,500 to \$6,000 installed, but with NB Power rebates and Greener Homes incentives, the net cost can be meaningfully lower. Always verify current rebate amounts directly with NB Power and the federal program, as amounts change seasonally.

For guidance specific to your foundation type and basement use, a professional insulation assessment is worthwhile before committing to a product and thickness. New Brunswick Insulation connects homeowners with local contractors experienced in NB foundation work.

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Q6

What is the difference between XPS and EPS rigid foam for New Brunswick homes? | Insulation IQ?

XPS and EPS are both rigid foam board insulation products used extensively in New Brunswick homes, but they differ in manufacturing process, performance characteristics, environmental impact, and cost. Choosing between them is not simply a matter of picking the cheaper option — the application location and moisture conditions in NB's Climate Zone 6 environment make certain properties much more important depending on where in the house you are insulating.

XPS (Extruded Polystyrene) is manufactured by melting polystyrene resin with a blowing agent and extruding it through a die, which creates a uniform closed-cell structure with a smooth skin on both faces. In Canada it is most commonly sold under the trade name Styrofoam (blue, manufactured by Dow) or as pink board (Owens Corning).

XPS has an **R-value of approximately R-5 per inch** and maintains that value reliably across a wide range of temperatures and moisture conditions. Its closed-cell structure makes it inherently resistant to water absorption — XPS absorbs less than 0.3% of its volume in water over a 28-day immersion test. This moisture resistance is why XPS is the default choice for below-grade applications, under-slab insulation, and exterior foundation walls in NB.

EPS (Expanded Polystyrene) is manufactured differently — polystyrene beads are expanded with steam in a mould, fusing the beads together. The result is the familiar white beadboard foam, visible at the cut edges as small spheres. EPS has an **R-value of R-3.8 to R-4 per inch** at standard Type II density, though higher-density grades (Type IX) achieve closer to R-4.2. EPS is also a closed-cell foam but has a slightly more permeable structure than XPS — it absorbs somewhat more moisture over long periods, though it also dries out more readily than XPS when conditions allow. The cells in EPS contain trapped air rather than a blowing agent, which means EPS **does not degrade in R-value over time** — a meaningful advantage over XPS, which loses some R-value as the blowing agent slowly escapes over the first decade of service.

Where Each Product Makes Sense in New Brunswick

For **below-grade foundation walls and under-slab applications** — common in Fredericton, Moncton, and Saint John basements — XPS is historically the dominant choice because of its superior moisture resistance and higher R-per-inch value. When soil moisture is in constant contact with insulation, EPS can absorb slightly more water and experience R-value degradation in persistently wet conditions.

However, for **above-grade wall assemblies, attic hatches, and interior basement applications** where the insulation is protected from bulk water, EPS at high enough thickness is equally effective and typically costs 20 to 40% less per R-value than XPS in New Brunswick markets. Many energy-efficient builders in NB use EPS on the interior of basement walls (2 to 4 inches) where the foam is not in direct contact with soil and moisture management is handled by other means.

Environmental impact has become a significant factor in product selection. XPS uses HFC blowing agents (primarily HFC-134a in North American products) with a very high global warming potential — over 1,400 times that of CO₂. EPS uses pentane as its blowing agent, which has a global warming potential roughly 7 times that of CO₂. From a lifecycle environmental perspective, EPS is substantially less harmful. The federal Greener Homes Grant, while not specifying product type, reflects a broader push toward environmentally responsible retrofits — and EPS aligns better with that intent.

Cost comparison in NB (approximate, 2025 market): 2-inch XPS runs \$1.00 to \$1.40 per square foot; 2-inch EPS Type II runs \$0.70 to \$1.00 per square foot. To achieve equivalent R-value with EPS, you need slightly more thickness — about 2.5 inches of EPS to match 2 inches of XPS at R-10 — so the cost difference narrows but EPS still typically comes out cheaper.

Vapour permeability differs slightly: XPS at 2 inches has a permeance of roughly 1 perm, while EPS at 2 inches is approximately 2 to 5 perms depending on density. In most NB applications, both products function as adequate vapour retarders at the thicknesses used for code-compliant assemblies.

For **insulating between rafters or in cathedral ceilings**, neither XPS nor EPS is ideal alone — spray foam or a combination assembly is usually preferred. But for sheathing over exterior walls (continuous exterior insulation), both products work well, with EPS increasingly favoured for its lower environmental footprint and lower cost at the required thickness.

When selecting between the two for your NB home, consider the application location, long-term moisture exposure, your environmental priorities, and the installed cost at the required R-value. An insulation professional familiar with NB conditions can help you make the right call. New Brunswick Insulation and the New Brunswick Construction Network directory list qualified local contractors across the province.

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Can I use rigid foam board insulation on the exterior of my Fredericton home? | Insulation IQ?

Yes, exterior rigid foam board insulation is not only possible on a Fredericton home — it is one of the most effective upgrades you can make in New Brunswick's cold Climate Zone 6 environment. Fredericton routinely sees winters with sustained temperatures well below -20°C , and exterior continuous insulation addresses thermal bridging through your wall studs in a way that cavity insulation alone simply cannot.

How exterior rigid foam works is straightforward in principle: rigid foam panels are fastened directly over your existing wall sheathing, creating a continuous thermal barrier that wraps the entire above-grade envelope. This eliminates the stud-to-stud heat loss that accounts for 15–25% of heat escaping through a conventionally framed wall. In a Fredericton home with 2x6 stud framing and R-20 batt insulation in the cavity, adding just 2 inches of exterior **polyisocyanurate (polyiso)** or **extruded polystyrene (XPS)** can push the effective wall assembly well past R-30, dramatically reducing heating bills that NB Power customers already feel acutely during January and February.

The **New Brunswick Building Code** (aligned with the National Building Code 2015 edition as adopted provincially) requires attention to two issues when adding exterior foam: first, the vapour barrier placement, and second, wall cladding support. When you add foam outside the sheathing, your original polyethylene vapour barrier remains valid inside the stud cavity as long as the exterior foam is thick enough to keep the interior of the sheathing above the dew point. As a rule of thumb for Climate Zone 6, you want at least 40% of the total wall R-value located outside the stud cavity. With 2x6 framing and R-22 batts, that means roughly 2.5 inches of XPS (approximately R-12.5) or 2 inches of polyiso (approximately R-13 at moderate temperatures). Getting this ratio right is critical — too little exterior foam leaves the sheathing cold enough to accumulate moisture and develop **mould** or rot over time.

Fastening and cladding are the practical challenges. Your siding — whether vinyl, fibre cement, or wood — cannot simply be attached to foam; it needs a solid substrate. The standard approach is to run **vertical strapping** (typically 1x4 or 2x4 pressure-treated wood furring strips) through the foam and into the studs with long screws (100–150mm depending on foam thickness), creating a rainscreen cavity behind the cladding. This strapping also gives you something solid to nail or screw siding into. The rainscreen gap improves drying potential and is considered best practice in wet Maritime climates like Greater Fredericton.

In terms of materials, **EPS (expanded polystyrene)** is the most affordable at roughly \$0.35–\$0.55 per board-foot of R-value installed; XPS runs \$0.50–\$0.70 per board-foot; and polyiso is typically \$0.45–\$0.65 but delivers more R-value per inch. On a typical 1,500 sq ft two-storey Fredericton home, exterior foam plus new cladding can range from \$18,000 to \$40,000 depending on the cladding product chosen — but the Canada Greener Homes Grant has

historically offered up to \$5,000 toward insulation upgrades combined with an EnerGuide audit, and NB Power's Home Energy Savings Program offers rebates for envelope improvements. Both programs require pre- and post-project energy assessments, so book your EnerGuide evaluation before starting work.

One permit note: adding exterior foam and re-cladding almost always requires a **building permit** in Fredericton. The City of Fredericton's building inspection department will want to see that the wall assembly meets code requirements for vapour control and fire protection — rigid foam within a wall assembly exposed to interior spaces must typically be covered with at least 12.7mm drywall as a thermal barrier, but exterior foam under siding does not face the same fire exposure concern as interior foam.

For homeowners in Fredericton looking to maximise comfort and efficiency, exterior rigid foam board is a highly recommended strategy. New Brunswick Insulation professionals familiar with Zone 6 assemblies can assess your existing wall construction and recommend the right foam thickness, type, and strapping detail before any cladding comes off.

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Q8

Does rigid foam board need to be covered with drywall in NB basements? | Insulation IQ?

Yes, in the vast majority of New Brunswick basements, rigid foam board insulation must be covered with a **thermal barrier** — and 12.7mm (½-inch) drywall is the standard material used to satisfy that requirement. This is not an optional finishing step; it is a fire protection requirement under the **National Building Code of Canada** as adopted in New Brunswick, and it applies to any exposed foam plastic insulation used in a space accessible to building occupants.

The reason comes down to the combustion properties of rigid foam products. **EPS (expanded polystyrene)**, **XPS (extruded polystyrene)**, and **polyisocyanurate** all ignite and produce dense, toxic smoke when exposed to flame. The Building Code requires that foam plastic insulation in interior spaces be separated from the living area by a material with sufficient fire resistance to allow occupants time to evacuate — hence the 12.7mm drywall requirement. This is referred to as a "**thermal barrier**" in code language (not to be confused with a vapour barrier), and it must be continuous, covering all exposed foam surfaces including edges and corners.

In a typical New Brunswick basement — whether in Moncton, Saint John, or Miramichi — the most common approach is to install **2-inch or thicker XPS or EPS** directly against the concrete foundation wall, then construct a **2x4 wood stud wall** roughly 25–50mm in front of the foam (or directly against it), and apply drywall to the studs. This sequence achieves several goals at once: the foam handles the continuous thermal layer and acts as the capillary break against the concrete; the stud wall provides a chase for wiring and plumbing; and the drywall provides both the required thermal barrier and your finished wall surface.

There is one notable exception in the Building Code: certain **intumescent coatings** applied directly to foam can substitute for drywall if the product has been tested and listed as a thermal barrier equivalent. These coatings are available from specialty suppliers and can be useful when drywall installation is awkward — such as on irregular concrete walls or around structural columns. However, they are considerably more expensive and less commonly used in residential NB basements than standard drywall.

Another exception worth knowing: if the basement is an **unoccupied mechanical room or crawl space** with no habitable use and limited access, the thermal barrier requirement may be relaxed under certain code interpretations. However, for any finished or semi-finished basement where people will spend time, the drywall cover is mandatory and will be inspected.

Vapour control is a separate but related concern. New Brunswick's climate requires careful vapour management in basement assemblies. When rigid foam is installed against the concrete wall at a thickness of at least 2 inches (R-10 for XPS or approximately R-8 for EPS), the foam itself acts as both the insulation and the vapour retarder — eliminating the need for a separate polyethylene vapour barrier on the interior face. Adding a poly vapour barrier between the foam and the drywall in this configuration is actually counterproductive, as it can trap moisture. The drywall simply goes on the studs with standard interior latex paint.

From a cost perspective, covering rigid foam with drywall in a typical NB basement (say, 800–1,000 sq ft of wall area) adds roughly \$1,200–\$2,500 in materials and labour for the drywall component, on top of the foam itself which typically runs \$1.80–\$2.80 per square foot installed for 2-inch XPS. The combined cost of a properly insulated and drywalled basement wall assembly in New Brunswick generally falls between \$4,500 and \$9,000 for a standard bungalow foundation — and the comfort improvement and heating savings make it one of the best investments in a cold climate.

If you are planning a basement insulation project and want to make sure the assembly complies with NB Building Code, connect with a qualified insulation professional through New Brunswick Insulation or the New Brunswick Construction Network. Getting the details right the first time avoids costly rework during inspection.

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Q9

How do I attach rigid foam insulation to concrete foundation walls in Moncton? | Insulation IQ?

Attaching rigid foam insulation to concrete foundation walls in Moncton requires a bit more care than most homeowners expect, primarily because concrete is porous, can be damp, and doesn't accept fasteners the way wood framing does. The good news is there are several reliable methods, and the right choice depends on whether you plan to leave a stud wall in front of the foam or attach it independently.

The most common approach in Moncton basements is to use **construction adhesive** designed for foam-to-concrete applications, supplemented with **concrete screws and large-diameter washers** for mechanical retention. Products like PL Premium Foam or similar polyurethane-based adhesives bond rigid EPS or XPS to concrete effectively and remain flexible as the foundation experiences minor seasonal movement. Apply the adhesive in a full-coverage or serpentine bead pattern to the back of the foam panel — avoid spot applications, as this leaves hollow sections where the panel can flex or delaminate. Press the panel firmly against the wall and hold or brace it for a few minutes until the adhesive grabs.

For mechanical fasteners, **Tapcon concrete screws** (at least 50mm embedment into concrete) are the standard choice. Use them with large-diameter plastic washers or metal fender washers to distribute load across the foam face without cutting through. A 2-inch XPS panel requires screws long enough to pass through the foam and

achieve adequate concrete bite — typically 90–100mm screws for 2-inch foam, or 130–150mm for 3-inch foam. Pre-drill the foam and concrete with the appropriate masonry bit before driving the screw. In a Moncton basement, a good rule of thumb is one screw per 2–3 square feet of foam panel area, in addition to the adhesive.

If you are building a **stud wall in front of the foam** — which is the typical finished basement approach — you have more flexibility. The foam can be loosely adhered or even just friction-fit between the concrete and the stud wall, with the stud wall itself holding the panels in place once it is built tight to the foam face. Many contractors in Moncton simply glue the foam panels with a modest amount of adhesive, build the stud wall immediately in front, and let the assembly self-support. This works well as long as the bottom plate of the stud wall is fastened to the slab and the top plate is secured to the floor joists or sill.

Surface preparation matters more than most homeowners realise. Concrete foundation walls in older Moncton homes — particularly those built before 1980 — often have efflorescence (white mineral deposits), crumbling mortar, or minor cracks. Brush off any loose efflorescence with a stiff brush before applying foam. Significant moisture intrusion through the foundation wall must be addressed before insulation is installed; no adhesive or foam product will fix an actively leaking wall, and trapping moisture behind rigid foam against wet concrete will lead to **mould**, wood rot, and deterioration of the foam bond over time. If you see water staining or active seepage, investigate the exterior drainage situation — a Moncton home's **weeping tile** system may need attention first.

One product category worth knowing: **dimple mat** or drainage mat (such as Delta-MS) is sometimes installed between the concrete and the foam in high-moisture situations. It creates a small air gap that allows any incidental moisture to drain down to a floor drain rather than being absorbed by the wall or foam. This adds cost — roughly \$1.00–\$1.50 per square foot for the dimple mat material — but provides valuable protection in a wet basement environment.

For **foam thickness**, Moncton's Climate Zone 6 designation and the NB Building Code's energy requirements suggest a minimum of R-10 (approximately 2 inches of XPS or 2.5 inches of EPS) for basement walls, with R-14 to R-20 being more energy-optimal for a high-performance renovation. The cost difference between 2-inch and 3-inch XPS is modest — roughly \$0.30–\$0.50 per square foot in material — but the long-term heating savings on a Moncton home that runs NB Power heat throughout the winter makes the upgrade worthwhile.

For a professional assessment of your specific foundation wall condition and the best attachment method for your Moncton basement, reach out to an insulation specialist listed through New Brunswick Insulation or the New Brunswick Construction Network.

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Is polyiso rigid foam board effective in cold New Brunswick temperatures? | Insulation IQ?

Polyisocyanurate, commonly called **polyiso**, is one of the most efficient rigid foam board products available — but it has a well-documented performance characteristic that New Brunswick homeowners and builders need to understand before choosing it for cold-climate applications. The short answer is: polyiso is excellent in many NB applications but should be used carefully in locations where it will be continuously exposed to very cold temperatures.

The thermal drift issue with polyiso is real and supported by decades of building science research. At room temperature (around 20–24°C), polyiso delivers its rated R-value — typically **R-6 to R-6.5 per inch**, which is the highest of any common rigid foam product. However, at sustained temperatures below approximately -4°C, the blowing agents trapped in polyiso's closed-cell structure begin to condense, and the effective thermal resistance drops. In laboratory testing and real-world measurements, polyiso at -20°C (a temperature Fredericton, Moncton, and Saint John routinely see in January and February) can perform at only R-4 to R-5 per inch — a significant reduction from its rated value.

This means **polyiso rated at R-20 (3+ inches)** installed in a fully exposed exterior application — such as on the outside face of a wall or roof deck in New Brunswick — may only deliver the thermal equivalent of R-14 to R-16 on the coldest winter days. That is still a meaningful amount of insulation, but it means calculations based on the label R-value will overestimate performance in extreme cold. By contrast, **XPS (extruded polystyrene)** at R-5 per inch is more thermally stable across the temperature range, and **EPS (expanded polystyrene)** at R-3.8–4.2 per inch actually improves marginally at colder temperatures.

So when is polyiso the right choice in New Brunswick? The answer comes down to **temperature exposure**. In applications where the foam will be kept relatively warm — such as **roofing systems** (installed above the roof deck where daytime solar gain keeps temperatures elevated), **interior wall applications**, or **above-grade walls** where the foam is protected by cladding and only partially exposed to outdoor air — polyiso performs excellently and its high R-per-inch rating is a genuine advantage. On a flat commercial roof in Moncton, polyiso is the industry standard precisely because it delivers high R-values with less thickness and weight.

For **NB basement walls**, polyiso is generally not recommended. Basement applications keep the foam in direct contact with cold concrete that may be at or below 0°C through much of the winter, placing the foam in exactly the temperature range where polyiso underperforms. XPS or EPS are better choices for basement foundation walls across New Brunswick.

For **above-grade exterior continuous insulation** (the continuous foam layer added outside the sheathing on a wall), polyiso is a reasonable choice if properly designed. Some building scientists recommend applying a **temperature-correction factor** of 15–20% to polyiso's R-value when sizing it for Climate Zone 6 applications. Using a corrected R-value of approximately **R-5 per inch** (instead of R-6.5) for polyiso in NB exterior wall calculations will give more realistic performance estimates and help ensure the assembly behaves as designed in a Fredericton or Campbellton winter.

Cost-wise, polyiso boards typically run **\$0.80–\$1.20 per square foot** for 2-inch panels, which is comparable to XPS. The trade-off between polyiso and XPS for above-grade NB walls is essentially a wash once the temperature correction is applied — you may need slightly more polyiso thickness to achieve the same corrected R-value as XPS. For roofing and interior applications where full rated performance is realised, polyiso's density and R-per-inch advantage make it excellent value.

NB Power rebates and the Canada Greener Homes Grant both recognise insulation upgrades by R-value added, so choosing a product that delivers its rated R-value in NB conditions will maximise your rebate eligibility. When specifying polyiso for an exterior application and submitting for rebates, use the temperature-corrected R-value to avoid overstating performance in your EnerGuide audit documentation.

For guidance on selecting the right rigid foam type for your specific New Brunswick project — whether it is a foundation wall, an attic hatch, an exterior re-cladding, or a low-slope roof — consult with a qualified insulation contractor through New Brunswick Insulation or the New Brunswick Construction Network.

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Q11

Can rigid foam insulation be used under a basement floor slab in NB? | Insulation IQ?

Rigid foam insulation under a basement floor slab is not only possible in New Brunswick — it is one of the most important and underutilised insulation measures available to NB homeowners, particularly in new construction. In Climate Zone 6, the ground beneath a basement slab sits at a relatively stable temperature of around 6–10°C year-round, but in winter that is still cold enough to create a significant heat sink when an uninsulated concrete slab is in direct contact with it. Adding rigid foam below the slab breaks that contact and meaningfully improves comfort in any finished basement space.

The only rigid foam product suitable for under-slab applications is **EPS (expanded polystyrene)** or **XPS (extruded polystyrene)**. **Polyiso is not appropriate** under slabs because it is moisture-sensitive and not rated for the compressive loads and damp conditions present beneath a concrete floor. Both EPS and XPS are moisture-resistant, dimensionally stable, and available in **compressive strength-rated grades** specifically designed for under-slab use.

Compressive strength is the key specification. Sub-slab foam must support the weight of the concrete slab above it — typically 100mm (4 inches) of concrete — plus all live and dead loads from the finished space. For a standard residential basement in Moncton or Fredericton with typical floor loads, a minimum compressive strength of **140 kPa (20 psi)** is required, and most building professionals recommend **210 kPa (30 psi)** rated EPS or XPS for added margin. Standard EPS used for wall insulation is typically rated at only 70 kPa and is NOT suitable under slabs. Look for products labelled as **Type II EPS** (for walls and roofs, 70 kPa) versus **Type IV EPS** (for under-slab, 140 kPa) or higher grades.

For **new construction** in New Brunswick, the most practical approach is to lay the rigid foam directly on the compacted granular base before the vapour barrier and concrete are poured. A common assembly from ground up is: compacted granular fill ? rigid foam (EPS or XPS, minimum 2 inches / R-10) ? 6-mil polyethylene vapour barrier ? 100mm concrete slab. The foam is typically cut to fit tightly, with joints staggered if using two layers to eliminate thermal bridging at seams. In high-performance new builds, 3–4 inches of sub-slab foam (R-15 to R-20) is becoming standard in NB as builders work toward better energy efficiency targets under the 2020 National Building Code.

For **existing homes** — the more common scenario for NB homeowners renovating a basement — sub-slab insulation is only possible if the slab is being demolished or replaced. If you are opening up the floor for a drain tile installation, repairing heaving, or undertaking a full basement renovation that includes a new floor pour, adding rigid foam under the new slab at that time is highly recommended and relatively low-cost to incorporate (typically \$1.50–\$3.50 per square foot in materials for 2-inch XPS or EPS). If the existing slab is sound and not being replaced, the practical alternative is **insulation above the slab** — either sleepers with EPS between them and a

plywood subfloor above, or a product like **dimple mat** plus insulated subfloor panels.

The **NB Building Code** (Division B, Part 9) currently requires a vapour barrier under slabs in contact with the ground — this is mandatory regardless of whether foam is used. When sub-slab foam is included, the vapour barrier is typically placed above the foam (between the foam and the concrete), which protects the underside of the slab from ground moisture.

Energy rebate eligibility for sub-slab foam is worth investigating. The Canada Greener Homes Grant and NB Power's Home Energy Savings Program have focused primarily on above-grade envelope improvements, but whole-home EnerGuide modelling does capture sub-slab improvements in the energy model. A certified energy advisor will quantify the improvement as part of a pre- and post-retrofit assessment, which can contribute to your overall grant eligibility.

The comfort improvement from sub-slab insulation is often described by homeowners as the most noticeable single change they made to their basement — cold floors in finished basements are a constant complaint in New Brunswick homes built before the 1990s. If you are planning a basement renovation that involves any slab work, speak with an insulation specialist through New Brunswick Insulation or the New Brunswick Construction Network to make the most of the opportunity.

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Q12

What R-value does 2-inch rigid foam provide and is it enough for NB code? | Insulation IQ?

A 2-inch sheet of rigid foam insulation provides varying thermal resistance depending on which type you choose, and understanding these differences is essential before deciding whether it meets New Brunswick's building code requirements. **Expanded polystyrene (EPS)** at 2 inches delivers approximately R-8, **extruded polystyrene (XPS)** provides roughly R-10, and **polyisocyanurate (polyiso)** achieves approximately R-12 to R-13 at the same thickness. These are nominal values — polyiso in particular loses some performance in cold conditions, which matters significantly in New Brunswick's **Climate Zone 6** winters.

New Brunswick follows the National Building Code of Canada, with the 2015 NBC adopted provincially and updated provisions carrying forward. For most residential applications, code-prescribed minimum insulation levels are substantially higher than what 2 inches of rigid foam alone can deliver. **Basement walls** require a minimum of RSI 1.96 (approximately R-11) for the above-grade portion, with the full wall assembly typically targeting R-15 to R-20 to be competitive with energy standards and to qualify for incentive programs. **Above-grade walls** have a prescriptive requirement under the NBC of RSI 3.08 (roughly R-17.5) in Climate Zone 6, meaning 2 inches of rigid foam alone is insufficient as a standalone wall insulation solution.

That said, rigid foam is very rarely used as a sole insulation source in a wall or basement assembly — it functions most powerfully as a **thermal break** layered over or inside other insulation. A common and code-compliant approach in New Brunswick basements is to combine 2 inches of XPS against the foundation wall (R-10) with a 2x4 stud wall filled with R-14 or R-15 mineral wool or batts, achieving a total assembly value in the R-24 to R-25 range. This significantly exceeds code and positions the homeowner well for **NB Power efficiency rebates** and the **Canada Greener Homes Grant**.

For attics and roofs, 2 inches of rigid foam in isolation is never sufficient — the NBC and energy programs targeting Climate Zone 6 call for attic insulation in the range of R-50 to R-60 for high-performance buildings, and even the minimum prescriptive levels are around R-40 for ceilings. Rigid foam in attic or cathedral ceiling assemblies is used strategically, for example as a vent baffle or as part of a hybrid assembly, not as the primary thermal layer.

Where 2 inches of rigid foam **is** effectively used as a standalone solution is in specific retrofit scenarios — adding continuous exterior insulation over an existing wall assembly, for instance, where the existing wall cavity already contains batt insulation. Adding 2 inches of polyiso (R-12.5) to an existing R-12 wall brings the total closer to R-24, meaningfully exceeds code for the above-grade wall, and importantly moves the **dew point** outward, reducing condensation risk inside the wall cavity during Fredericton or Moncton winters.

One important detail for New Brunswick homeowners: when adding exterior rigid foam, the NBC requires that the ratio of exterior to interior insulation is sufficient to keep the sheathing warm enough to avoid condensation. In Climate Zone 6, the exterior insulation should represent at least 40–50% of the total wall R-value for safe sheathing temperatures. Two inches of polyiso over a standard 2x6 wall (R-20 cavity) meets this threshold reasonably well.

In summary, 2-inch rigid foam provides R-8 to R-13 depending on type, and **is not sufficient on its own** to meet NBC prescriptive requirements for most applications in New Brunswick. It performs best as part of a layered assembly. For project-specific guidance on your home's wall, basement, or ceiling assembly, the professionals listed on **New Brunswick Insulation** can assess your existing assembly and recommend an approach that meets or exceeds code while maximizing available rebates.

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How do I seal joints between rigid foam boards in my Dieppe basement? | Insulation IQ?

Sealing the joints between rigid foam boards in your Dieppe basement is one of the most important steps in achieving an effective air barrier — and it's a detail that gets skipped or done incorrectly far too often. Air leakage through unsealed foam board seams can dramatically reduce the effective performance of the insulation, allow warm interior air to reach the cold foundation wall, and create conditions for **condensation and mould growth** in the wall cavity. Getting this right matters especially in Dieppe's winter climate, where temperature differentials between the warm basement interior and the cold foundation wall can exceed 40°C.

The most reliable and widely used method for sealing rigid foam board joints is **canned polyurethane spray foam (low-expansion)**. A single-component low-expansion foam, applied in a bead along every seam and around the perimeter of each board where it meets the floor, walls, ceiling, or adjacent boards, expands to fill gaps and cures into a rigid, airtight seal. Use low-expansion foam specifically — high-expansion foam can bow or displace the boards if applied in excess, and is harder to control in tight seams. Once cured, excess foam can be trimmed flush with a utility knife.

An alternative for boards with tongue-and-groove edges (common in some XPS and polyiso products) is **acoustical sealant or foam-compatible construction adhesive** applied at the joint before the boards are pressed together. Tongue-and-groove profiles reduce the seam gap significantly, but the sealant ensures continuity. For **EPS boards**, which typically have square-cut edges, a combination of spray foam at the seams and acoustic sealant at the perimeter is a dependable approach.

Foil tape (aluminium foil tape rated for foam) is also used on rigid foam seams, particularly on polyiso, which often comes with foil facers. Apply the tape flat with firm pressure, ensuring full adhesion. Foil tape alone can work well on clean, dry, indoor surfaces — but it is less forgiving if the foam surface has any dust, moisture, or irregularities, and over time some tapes can delaminate in temperature-cycling environments like a basement wall. For this reason, spray foam is generally preferred as the primary seam sealant, with foil tape as a supplementary layer if desired.

Pay special attention to **penetrations and perimeter conditions**. Pipes, wires, or structural elements passing through the foam layer must be sealed individually with spray foam or caulk. The bottom edge of the foam where it meets the concrete floor slab is a particularly common air leakage point — run a continuous bead of acoustic sealant or spray foam along this joint. Similarly, the top edge where the foam meets the rim joist area or sill plate should be fully sealed; the rim joist zone is one of the highest heat-loss areas in a New Brunswick basement and deserves careful attention.

For horizontal joints between stacked boards — if you're doing two layers of foam on a tall basement wall — **stagger the joints** so the seams in the second layer don't align with those in the first. This automatically improves airtightness and thermal performance even before you seal the seams, because there's no direct through-path for air or heat.

If you're applying the foam directly against the **poured concrete or block foundation wall**, ensure the wall surface is clean and reasonably dry before installation. Foundation walls in the Dieppe and Greater Moncton area can have mineral deposits or efflorescence on the surface — brush these off before adhering the boards. Adhesives and foams bond poorly to chalky or wet concrete, and any gap between the foam and wall face creates a potential condensation zone.

Finally, if your basement assembly will include a stud wall in front of the rigid foam (the recommended approach for a finished basement), the foam layer's air-sealing quality is your first and most critical defence. The drywall and vapour barrier on the stud wall provide a second layer, but the foam seams are where much of the basement's airtightness is established. Doing this correctly in Dieppe can have a measurable impact on heating costs, comfort, and long-term moisture control.

For a thorough basement insulation project, the contractors listed on **New Brunswick Insulation** can guide you on material selection and proper installation details specific to your home's foundation type.

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Q14

Does rigid foam board create a moisture barrier on NB foundation walls? | Insulation IQ?

Rigid foam board does act as a significant **vapour retarder** on New Brunswick foundation walls, but whether it functions as a full moisture barrier depends on the type of foam used, how it's installed, and what you mean by moisture barrier. Understanding this distinction is critical for avoiding condensation problems, mould growth, and long-term structural damage in a climate as demanding as New Brunswick's.

All three major types of rigid foam — **EPS (expanded polystyrene)**, **XPS (extruded polystyrene)**, and **polyiso (polyisocyanurate)** — have low vapour permeance ratings compared to fibrous insulation materials, meaning they slow the movement of water vapour through the wall assembly. XPS is the least permeable of the three, with a permeance of roughly 0.5 to 1.0 perms at 2 inches, placing it in the Class II vapour retarder category under the NBC. EPS at the same thickness is somewhat more vapour-open, at around 2 to 4 perms depending on density, and polyiso with foil facers can approach near-impermeability (under 0.1 perms). For comparison, 6-mil polyethylene — the traditional vapour barrier — sits at about 0.06 perms.

For **foundation walls** specifically in New Brunswick, which fall under Climate Zone 6, the goal is to keep the dew point well inside the warm-side foam layer, away from the cold concrete. When you install rigid foam directly against the foundation wall, you are insulating the cold surface, which means the foam itself becomes the warm side and the concrete stays near outdoor temperature. In this configuration, the foam acts as a **warm-side vapour control layer**, and because the concrete is now the coldest element, condensation risk inside the foam-to-concrete interface is low as long as the foam is sufficiently thick and the seams are properly sealed.

However, rigid foam board **alone does not seal out bulk water** coming through the foundation. If your foundation wall in Fredericton or Saint John has active water infiltration — cracks, seeping joints, or hydrostatic pressure from the soil — foam board will do nothing to stop it. Rigid foam must be installed against a **dry, waterproofed foundation**. Addressing any bulk water intrusion through exterior waterproofing, interior drainage, or crack injection is a prerequisite, not an afterthought.

There is also an important consideration about where you place the **additional vapour barrier** in a finished basement assembly. The traditional New Brunswick approach of installing 6-mil poly on the warm side of a stud wall (between the insulation and the drywall) creates a **double vapour barrier** if you've already installed XPS or foil-faced polyiso against the foundation. Trapping moisture between two impermeable layers can cause serious problems if any construction moisture or minor infiltration is present. The current best practice for insulated foundation walls in New Brunswick is to rely on the rigid foam (particularly 2 inches or more of XPS or foil-faced polyiso) as the primary vapour control layer, omit the poly vapour barrier on the interior stud wall, and use vapour-permeable batt insulation in the stud cavity. This allows the assembly to dry inward if needed.

The **NBC and NB Building Code** do not mandate a specific approach to vapour control on basement walls beyond achieving the required thermal performance and managing condensation risk. The prescriptive approach calls for vapour barriers in above-grade wall assemblies but allows engineered alternatives for below-grade applications.

Many New Brunswick insulation professionals now follow the approach outlined in the **Building Science Corporation** and **NRC** guidance that recognises foam board as a functional vapour control layer.

In practical terms: if you install 2 inches of XPS against your foundation wall with sealed seams and perimeter spray foam, you have a capable vapour retarder. Combined with a stud wall with R-14 or R-15 batts and no interior poly, the total assembly manages vapour effectively and outperforms the old poly-on-studs approach for long-term durability.

For specific guidance on your Moncton, Fredericton, or Saint John basement, the insulation professionals listed on **New Brunswick Insulation** or the **New Brunswick Construction Network** can evaluate your foundation type and recommend an assembly that manages both vapour and bulk water appropriately.

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Q15

What is the cost of rigid foam board insulation per sheet in Saint John NB? | Insulation IQ?

Rigid foam board insulation prices in Saint John and throughout New Brunswick have remained relatively stable following the volatility of recent years, though regional supply chain factors and the local building supply market do create some variation compared to central Canadian pricing. Understanding what you should expect to pay per sheet — and what drives those price differences — helps you budget accurately and evaluate quotes.

The most commonly purchased sheet size is **4 feet by 8 feet (4x8)**, which is the standard format available at building supply retailers in the Saint John area. Prices vary significantly by foam type and thickness:

EPS (expanded polystyrene), the white beaded foam, is the most affordable option. A 4x8 sheet of 1-inch EPS (approximately R-4) typically retails in the \$15 to \$22 range in New Brunswick. Two-inch EPS (R-8) runs approximately \$28 to \$40 per sheet. EPS is widely available and is the go-to choice for budget-conscious basement insulation projects where vapour permeance is not a concern.

XPS (extruded polystyrene), the pink, blue, or green dense foam depending on brand, commands a premium over EPS due to its higher R-value per inch, lower vapour permeance, and better resistance to moisture absorption. A 2-inch XPS sheet (R-10) typically costs \$38 to \$55 per sheet at Saint John building supply retailers. The **1-inch XPS** (R-5) runs approximately \$20 to \$32 per sheet. **3-inch XPS** (R-15) is less commonly stocked and may need to be ordered; expect \$65 to \$85 per sheet when available.

Polyisocyanurate (polyiso), often sold with foil facers and primarily used in roofing and cathedral ceiling applications, is generally priced between the two. Two-inch polyiso (nominally R-12 to R-13) is priced similarly to 2-inch XPS or slightly higher, ranging from \$40 to \$60 per sheet depending on the facer type and brand. Polyiso is less commonly found in general-purpose big-box format in New Brunswick and is more typically ordered through roofing and commercial insulation suppliers.

Keep in mind that a **4x8 sheet covers 32 square feet**. For a 1,000-square-foot basement wall area, you're looking at roughly 32 sheets of the primary insulation layer, not counting waste, cuts, and perimeter conditions. At \$45 per sheet for 2-inch XPS, that's approximately \$1,440 just in materials for one layer. Most basement projects in Saint John also include spray foam for sealing, fasteners or adhesive, and a stud wall assembly on top — total material costs for a properly insulated 1,000 sq ft basement wall area often run \$3,500 to \$6,500 in materials alone.

Buying in bulk or bundled quantities can reduce per-sheet costs meaningfully. Some Saint John-area suppliers offer contractor pricing or reduced rates on full pallet quantities. If you're doing a large project — a full basement plus crawlspace, or adding continuous exterior insulation to the entire house envelope — it's worth asking about volume pricing or ordering through a local insulation contractor who has wholesale accounts.

For projects where you're targeting eligibility for the **NB Power Save-Smart program** or the **Canada Greener Homes Grant**, the type and amount of foam you choose will directly affect your rebate eligibility. Greener Homes in particular requires pre- and post-retrofit EnerGuide assessments, and the insulation upgrades must meet minimum improvement thresholds. Foam board used as part of a basement insulation upgrade or as continuous exterior wall insulation is an eligible measure, and the grant covers up to \$600 for basement insulation improvements and up to \$5,000 for exterior wall insulation upgrades — potentially offsetting a significant portion of your material and labour costs.

For the most accurate current pricing in Saint John, contact local building supply retailers directly, as prices fluctuate with freight and demand. The professionals listed on **New Brunswick Insulation** can also advise on the

most cost-effective material selection for your specific project scope.

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Can I use rigid foam insulation in a cathedral ceiling in New Brunswick? | Insulation IQ?

Rigid foam insulation is not only compatible with cathedral ceiling assemblies in New Brunswick — for many situations, it's the most effective solution available, and in some configurations it's the only approach that fully solves the technical challenges a cathedral ceiling presents in **Climate Zone 6**. That said, doing it correctly requires understanding a few non-negotiable principles around ventilation, vapour control, and R-value minimums.

The core challenge of a cathedral ceiling is that, unlike a conventional attic, you have no open space above the insulation to ventilate freely and manage moisture. The insulation sits tight against the roof structure, and any warm, humid interior air that reaches the cold roof sheathing will condense. In New Brunswick winters — where Fredericton regularly sees weeks below -15°C and coastal areas like Saint John experience freeze-thaw cycling — this condensation risk must be addressed at the design level, not corrected later.

The Two Viable Cathedral Ceiling Approaches with Rigid Foam

The first approach is the **vented assembly with rigid foam vent baffles**. In this configuration, rigid foam boards (typically 1-inch EPS or XPS) are cut to fit between the rafters and fastened to create a continuous airspace from soffit to ridge. The rigid foam acts as a vent channel, the rafter bays below are filled with **spray foam or high-density batts**, and the total R-value of the insulated rafter cavity must meet Climate Zone 6 requirements. The NBC prescribes a minimum of RSI 8.67 (approximately R-49) for ceiling/roof assemblies in NB, though typical practice now targets R-50 to R-60. A vented assembly with rigid foam vent channels and 2x10 or 2x12 rafters filled with closed-cell spray foam at R-6.5 to R-7 per inch can achieve this, though deep rafters are needed.

The second and increasingly preferred approach for cathedral ceilings in New Brunswick is the **full-fill unvented (hot roof) assembly using rigid foam above the deck or combined with spray foam below**. In an unvented assembly, rigid polyiso or XPS is stacked on top of the roof sheathing in multiple layers (joints staggered, seams taped or foamed), providing both the primary thermal resistance and the vapour control. For an unvented assembly in Climate Zone 6, the NBC and building science guidance requires that the **exterior rigid foam provide at least 50% of the total assembly R-value** — this ensures the sheathing stays warm enough to avoid condensation regardless of the interior insulation below. For a total assembly targeting R-50, that means at least R-25 of rigid foam above the deck.

Polyiso is the most common choice for above-deck rigid foam in cathedral ceiling applications. At R-5.7 to R-6.5 per inch (nominal), 4 inches of polyiso provides roughly R-23 to R-26, and 5 inches approaches R-29 to R-32. Stacking two layers of 3-inch polyiso (total 6 inches) with staggered joints achieves approximately R-35 to R-39 above the deck, which combined with an inch or two of closed-cell spray foam on the underside of the sheathing

from inside can reach R-50 total with full code compliance.

One important practical consideration for New Brunswick homeowners: **adding rigid foam above the deck** means raising the roof plane and requires adjusting flashings, fascia, soffit, and any roof penetrations. This is best planned during a re-roofing project, which is the typical trigger for this type of upgrade in Moncton, Fredericton, and other NB communities. The incremental cost of adding 4 to 6 inches of polyiso during a re-roof is substantially less than doing it as a standalone project.

For **interior-only retrofit scenarios** — where the ceiling is already drywalled and there's no opportunity to add foam above the deck — the vented baffle approach or filling the rafter bays entirely with **closed-cell spray foam** (which functions as both insulation and vapour retarder) are the most practical paths. Closed-cell spray foam at 5.5 inches in a 2x6 rafter bay delivers approximately R-36, which falls short of NBC targets but may be acceptable as a component of a phased upgrade or for existing buildings where code compliance is grandfathered.

For any cathedral ceiling insulation project in New Brunswick, working with a qualified insulation contractor ensures the assembly meets code, manages vapour correctly for Climate Zone 6 conditions, and qualifies for available **NB Power** or **Canada Greener Homes** incentives. The professionals listed on **New Brunswick Insulation** and the **New Brunswick Construction Network** can help assess your specific roof structure and recommend the right approach.

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Q17

Is foil-faced rigid foam better than unfaced for New Brunswick basements? | Insulation IQ?

For New Brunswick basements, the choice between foil-faced and unfaced rigid foam board matters more than most homeowners realize — and in most situations, **foil-faced polyisocyanurate (polyiso) or foil-faced XPS** offers distinct advantages that make it the preferred choice along basement walls.

Foil-faced rigid foam uses a reflective aluminium facing laminated to one or both sides of the foam core. That facing serves two functions simultaneously: it acts as a **radiant barrier**, reflecting heat back toward the conditioned space, and — critically for NB basements — it functions as an **integrated vapour barrier**. In Climate Zone 6, the NB Building Code (Part 9, Section 9.25) requires vapour control on the warm side of insulation assemblies. Foil-faced foam, when installed with taped seams and lapped against the slab, satisfies that vapour retarder requirement without adding a separate layer of 6-mil poly. That's one fewer step in the installation and one fewer potential weak point in the assembly.

Unfaced rigid foam — whether EPS, XPS, or polyiso — is a capable insulator, but it has a vapour permeance rating that varies by product and thickness. At common thicknesses (1–2 inches), most unfaced EPS is semi-permeable, meaning it slows but does not stop moisture-vapour transmission. In a New Brunswick basement where the concrete wall is in contact with soil that can reach near-saturation during spring thaw or heavy coastal rainfall events like those around Shediac or the Miramichi valley, that difference matters. A semi-permeable assembly requires careful detailing to ensure the dew point never falls within or behind the foam layer. Foil-faced products eliminate that uncertainty.

From an **R-value perspective**, foil-faced polyiso carries the highest R-value per inch of any common rigid foam — approximately **R-6 to R-6.5 per inch** — compared to XPS at around R-5 per inch and EPS at roughly R-3.8 to R-4 per inch. The NB Building Code minimum effective thermal resistance for basement walls in Zone 6 is approximately R-14.8 (RSI 2.6) for the above-grade portion and varies for below-grade, but most energy consultants and blower-door-conscious builders aim for R-20 effective on a full basement wall assembly. Two inches of foil-faced polyiso at the rim joist plus two inches down the wall, combined with interior framing and batt insulation, gets you there comfortably.

There are a few nuances where unfaced foam makes sense. If you're installing **between studs in a wall cavity** where the facing would be hidden and serves no reflective function, or if you're layering multiple sheets and need the layers to adhere or be cut to irregular shapes easily, unfaced EPS is more forgiving and slightly less expensive — typically \$0.65–\$0.95 per square foot for 2-inch unfaced EPS compared to \$1.10–\$1.60 per square foot for 2-inch foil-faced polyiso at NB building supply yards.

Installation details that matter regardless of facing: all seams should be taped with foil tape or a compatible sealant, the bottom edge should sit on (or be sealed to) the concrete slab, and the top should be sealed to the sill plate. In finished basements where the foam will be covered with framing and drywall, the foam must be protected by a 15-minute thermal barrier — typically 12.7 mm (½-inch) drywall — per the NB Building Code fire protection

requirements.

For most homeowners in Fredericton, Moncton, or Saint John retrofitting an existing basement or finishing a new one, foil-faced rigid foam is the cleaner, lower-risk choice. You get a higher R-value per inch, built-in vapour control, and fewer details to coordinate. The modest cost premium over unfaced EPS is well justified given NB's cold winters and the importance of keeping basement assemblies dry for the long term.

If you're planning a basement insulation project and want guidance on which product and thickness suits your specific wall assembly, the professionals listed on New Brunswick Insulation can help you evaluate your options.

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Q18

How does rigid foam board perform against moisture in coastal NB areas like Shediac? | Insulation IQ?

Coastal communities in New Brunswick — Shediac, Bouctouche, Cap-Pelé, Baie-Verte, and the broader Northumberland Strait shoreline — face an insulation challenge that inland cities like Fredericton and Woodstock don't contend with to the same degree. **Salt-laden air, higher average relative humidity, wind-driven rain, and freeze-thaw cycling near the ocean** all combine to create an environment where moisture management is arguably more important than raw R-value. Rigid foam board handles these conditions well, but product choice and installation details determine whether it performs for decades or begins to degrade within a few years.

Extruded polystyrene (XPS) is the product most commonly recommended for coastal and below-grade applications in NB. Its closed-cell structure gives it a very low water absorption rate — ASTM C578 testing typically shows XPS absorbs less than 0.3% of its volume by water immersion over 24 hours. That closed-cell architecture

also means XPS does not wick moisture from concrete or masonry, which is a real concern in coastal foundation walls that may experience lateral moisture pressure during storm surge events or extended wet seasons. XPS maintains close to its full R-5 per inch even after long-term moisture exposure, whereas **expanded polystyrene (EPS)** — while still reasonably moisture-resistant — has a slightly more open bead structure and can absorb marginally more water over time if face protection is damaged.

Polyisocyanurate (polyiso) is more moisture-sensitive than either XPS or EPS. Its R-value per inch is highest under controlled conditions (R-6 to R-6.5), but polyiso has been documented to lose effective R-value in persistently cold or damp conditions — a phenomenon sometimes called **thermal drift in humid environments**. For above-grade wall sheathing on a coastal home in Shediac, foil-faced polyiso is a reasonable choice because the facing protects the foam core and the assembly stays relatively dry behind the cladding. For below-grade or in areas with frequent wetting, XPS or EPS is more reliable.

In a **coastal NB wall assembly**, the concern is not just bulk water intrusion but **interstitial condensation** — moisture-vapour migrating through the assembly from the warm interior toward the cold exterior and condensing within the wall when temperatures drop. The NB Building Code, aligned with NBCC 2020 requirements for Climate Zone 6, requires a vapour barrier on the warm side of insulation (interior side in a heated building). Rigid foam board installed on the **exterior** of the wall sheathing is an effective strategy because it keeps the sheathing and framing warm enough to stay above the dew point, dramatically reducing the risk of condensation within the stud cavity. For a 2x6 wall in Shediac, 2 inches of XPS on the exterior (R-10) combined with R-22 batts in the cavity gives a total effective R-value above R-28 and a sheathing temperature that stays well above the condensation threshold even on a -25°C night.

For **crawl spaces and slabs-on-grade** — common in older Shediac homes near the water — XPS under the slab and along crawl space walls resists ground moisture effectively. A standard detail calls for 2 inches of XPS under the slab (R-10) with lapped 6-mil poly vapour barrier on top, sealed to the foundation walls. This prevents both capillary moisture from migrating up through the concrete and vapour from the soil entering the living space.

Cost-wise in coastal NB, **2-inch XPS** runs approximately \$1.00–\$1.40 per square foot at regional suppliers. For a 1,500 square foot crawl space perimeter and floor, expect material costs in the range of \$1,500–\$2,500 plus labour. NB Power's Home Energy Savings Program and the Canada Greener Homes Grant (for eligible improvements) may offset a portion of those costs when insulation is part of a broader energy upgrade that includes a pre- and post-retrofit EnerGuide assessment.

The bottom line for coastal NB properties: **XPS is the workhorse choice for any application with frequent moisture exposure**, whether that's below-grade walls, under slabs, or exterior sheathing on a wind-exposed coastal facade. Proper sealing of all joints with compatible tape or sealant is non-negotiable in a salt-air

environment. New Brunswick Insulation can connect you with qualified insulation specialists familiar with coastal building assemblies across the province.

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