

HOMEOWNER RESOURCE

Homeowner's Guide to Spray Foam Insulation

What spray foam is, how it works, where it goes, and what it means for your home and your energy bill.

What spray foam insulation actually is

Spray polyurethane foam (SPF) is created on site by mixing two liquid chemical components, an isocyanate and a polyol resin, in a spray gun. The mixture reacts and expands into a solid foam within seconds of leaving the gun, filling the cavity it is sprayed into and bonding to the surrounding framing. Once cured, that foam does two jobs at once: it insulates against heat flow, and it air-seals the gaps and cracks that ordinary batt or blown-in insulation cannot reach.

That combination matters more than it sounds. According to the U.S. Department of Energy, air leakage alone can account for 30 to 40 percent of a home's total heat loss. Insulation slows heat moving through a material, but it does very little to stop heat riding out on moving air. A material that air-seals and insulates in a single application is built to address both parts of that problem at once, which is the main reason spray foam performs differently than fiberglass or cellulose in a cold climate like Minnesota's.

Two types of spray foam, two different jobs

Spray foam comes in two structural types, and the difference matters for where each one belongs in a house.

- **Closed-cell foam** is dense and rigid, with tightly packed cells. It delivers roughly R-6 to R-7 of insulating value per inch, the highest of any common insulation material, and it acts as a vapor retarder at typical installed thickness. That makes it the standard choice for rim joists, crawl spaces, basement walls, and other spots where cavity depth is limited and moisture control matters.
- **Open-cell foam** is light and spongy, with cells that stay open. It runs about R-3.5 to R-4 per inch, costs less per board foot, and its soft structure absorbs airborne sound well. It is not a vapor retarder, so it suits interior walls, ceilings, and vaulted roofs where there is depth to work with and sound dampening is a bonus.

Most well-built projects use both: closed-cell where moisture control and a high R-value in a shallow space matter most, and open-cell where sealing a large interior area affordably is the priority. A full comparison lives in our companion document, [Closed-Cell vs Open-Cell Spray Foam Explained](#).

Where spray foam is typically installed

- **Attics.** Minnesota's climate calls for some of the highest attic R-value targets in the country. Sealing and insulating the attic floor or roofline stops warm, moist indoor air from reaching the cold roof deck, which is also a leading cause of ice dams.
- **Rim joists and band joists.** This narrow band where the foundation meets the floor framing is one of the most common sources of drafts and cold floors in older Minnesota homes, and closed-cell foam is well suited to its shallow, irregular cavities.

- **Crawl spaces.** Sealing and insulating a crawl space keeps cold, damp ground-level air away from the floor above it, rather than trying to vent that moisture out to the exterior.
- **Basement walls.** Closed-cell foam applied to above-grade and below-grade basement walls insulates and controls moisture in the same step.
- **New construction and pole barns.** Spray foam can be specified into open wall and roof cavities before drywall or interior finish goes up, or into a post-frame building's metal skin.

What the process looks like

A typical attic, crawl space, or rim joist project is completed in a single day. The crew arrives, confirms the scope with you, masks off nearby surfaces, sets up ventilation, and sprays the target areas. Because the foam is manufactured on site through a live chemical reaction, occupants and pets stay out of the treated area during spraying and for a re-entry period afterward, typically 24 to 72 hours depending on the product and the size of the job. The full detail on that timing is covered in our companion document, *Installation Day: Preparation and Safety*.

What it means for your energy bill

According to ENERGY STAR, a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy, homeowners who air seal and add insulation in attics, floors, and crawl spaces save an average of 15 percent on heating and cooling costs, or about 11 percent on total energy costs. That is a general average across many homes, not a promise for any specific project, since every house and every heating season is different. The fairest way to see a change is to compare a bill against the same month a year earlier, not against last month, since that accounts for how cold a particular stretch of winter actually was.

What spray foam does not change about your responsibilities

Spray foam does not need to be topped off or replaced the way settling batt or blown-in insulation sometimes does, once it is properly installed it does not sag or lose loft over time. It is also not a substitute for proper attic ventilation where ventilation is required by code; the two work together rather than replacing each other. Minnesota's residential energy code (Minnesota Rules Chapter 1322) also requires foam plastic insulation to be covered by an approved thermal or ignition barrier in most occupied and unoccupied spaces. Our companion document, *Minnesota Insulation and R-Value Code Reference*, covers those requirements in detail.

Sources cited in this document: U.S. Department of Energy, Guide to Home Insulation (DOE/EE-0340); ENERGY STAR, Methodology for Estimated Energy Savings; Minnesota Rules Chapter 1322, Residential Energy Code.