

FIBER GLASS VS. SPRAY FOAM INSULATION: COMPARING THE FACTS



MAKE AN INFORMED INSULATION CHOICE.

With every construction project, homebuilders put their reputations on the line. That's why it's important for builders to feel confident their product choices assure jobsite safety for their contractors—and safe, cost-effective and comfortable homes for the homeowners.

It is essential to understand the differences between the two most common forms of insulation—fiber glass and spray polyurethane foam (SPF). There are a variety of claims about these products' thermal and acoustical properties, as well as how the products help builders add value while building safely and sustainably. The pages that follow present the facts about both insulation options to help builders make an informed choice.



VS.



Important Facts about Fiber Glass Insulation

- ✓ Easier and safer to install, reducing downtime and increasing productivity on the job.
- ✓ Provides high R-Values for optimal comfort in every climate – helps homes maintain stable temperatures.
- ✓ Helps reduce unwanted noise in the house and provides moisture/mold resistance, so homeowners can enjoy the comforts of home with peace of mind.
- ✓ From starter home to custom home, an array of versatile solutions means homeowners can choose the best performance level and the right value for their construction budget.
- ✓ The responsible choice — safe to manufacture, install and use when recommended work practices are followed.

INSTALLED IN
90% OF HOMES¹

FIBER GLASS IS A LEADER IN THE INSULATION INDUSTRY



KNOW THE RISKS WITH SPF:

SPF requires proper handling and mixing of two hazardous chemicals on the jobsite. There's a risk of fire from spontaneous combustion, and also potential for off-gassing that may cause adverse health issues.

FIBER GLASS	SPRAY POLYURETHANE FOAM (SPF)
<p>Little potential for off-gassing, requires minimal safety equipment. Recommended equipment includes gloves, protective eyewear and an optional dust mask.</p>	<p>Potential for off-gassing that may cause adverse health effects. Extensive Personal Protective Equipment (PPE), including full-face supplied air respirators and chemical protective clothing during installation is recommended.²</p>
<p>Unfaced fiber glass does not contain chemical fire retardants required in other insulation types;³ resists melting up to 1300°F (704°C).⁴</p>	<p>Requires combining hazardous chemicals on the jobsite. Applying too much SPF per pass without allowing time for foam to cool poses a fire hazard from spontaneous combustion.⁵</p>
<p>Easy to install with minimal training.</p>	<p>Because SPF requires the handling and mixing of two different chemicals, extensive training is recommended prior to working with SPF; training programs are available through U.S. Occupational Health and Safety Administration (OSHA), the Centers for the Polyurethane Industry (CPI), and Spray Polyurethane Foam Alliance (SPFA), as well as SPF manufacturers.⁶</p>
<p>Exposures are low; fibers may cause a mechanical irritation to skin, nose and throat.</p>	<p>Exposure to isocyanates in SPF may cause skin, eye and lung irritation, asthma and “sensitization.” Evacuation of other trades from the entire structure is required during installation. There is no recognized safe level of exposure to isocyanates for sensitized individuals; isocyanates have been reported to be the leading attributable chemical cause of work-related asthma; both dermal and respiratory exposures can trigger adverse health responses.⁷</p>



KNOW THE RISKS WITH SPF:
 Spray Polyurethane Foam (SPF) must be properly installed in adherence to manufacturer's guidelines regarding outside temperatures/humidity to assure performance, e.g., excessive moisture in framing can compromise SPF's thermal performance.

FIBER GLASS	SPRAY POLYURETHANE FOAM (SPF)
<p>Easy to achieve a full cavity installation; delivers consistent R-Value throughout the entire cavity for the life of the home.</p>	<p>Requires proper mixing of chemical components and strict adherence to manufacturer's guidelines regarding outside temperatures and humidity. Excessive moisture in the framing, for example, may lead to cracks in between the foam and framing, which may compromise thermal performance.⁹</p>
<p>According to the NAHB (National Association of Home Builders) Research Center and several other independent tests, when fiber glass is paired with standard air sealing practices, including taped house wrap or caulk, air infiltration is effectively reduced to near zero.⁹</p>	<p>No cavity insulation alone, as established by the NAHB¹⁰ and other studies,¹¹ is capable of providing a continuous whole-home air barrier.</p>
<p>Fiber glass has a Sound Transmission Class (STC) of 39.¹²</p>	<p>Closed cell spray foam has an STC of 37.¹³</p>

0% R-VALUE LOSS OR SETTLING WITH BATTS
 PERFORMS FOR THE LIFE OF THE BUILDING





PRODUCTIVITY

KNOW THE RISKS WITH SPF:

SPF requires proper Personal Protective Equipment to install, and creates downtime as other trades must evacuate the jobsite during installation and wait up to 24 hours for the SPF to completely dry/cure.

FIBER GLASS

Requires nearly **0% downtime** because there's no drying or curing time required.

Other trades can **safely continue working** during installation.

Batts are available in pre-cut sizes that fit standard wall cavities and wall heights – increasing productivity and reducing cleanup requirements; they can also be easily cut to fit any size cavity and small spaces.

Batts are lightweight and compression packaged, speeding jobsite handling and installation while minimizing warehouse requirements and transportation demands.

SPRAY POLYURETHANE FOAM (SPF)

Requires **8 to 24 hours to fully cure**.¹⁴

Requires **evacuation of the entire structure**. Some manufacturers recommend 24 hours before people can safely enter the building.¹⁵

Open-cell SPF may require trimming, which can result in as much as 20% waste.¹⁶ The waste (which is not recyclable) must be swept up and removed from the jobsite.

Must be properly stored before and during use on the jobsite. Improper storage conditions can reduce shelf life and make the components unusable. It is also important to store incompatible materials separately. Storing drums in a secured, cool area away from direct sunlight, excessive heat and general storage areas helps protect them. Ventilate the storage space as described by the manufacturer and locate the storage space away from possible sources of ignition.¹⁷





KNOW THE RISKS WITH SPF:
 SPF has a high cost of entry with required training and equipment, and its installed cost is nearly 4 times as much for the same R-Value as fiber glass.

 **VALUE/COST**

FIBER GLASS	SPRAY POLYURETHANE FOAM (SPF)
<p>Nearly one quarter the installed cost of the same R-Value of SPF. Installed cost for R13 is on average \$.48 (USD) per sq. ft.</p>	<p>Nearly 4 times the installed cost for the same R-Value as fiber glass. Installed cost for R13 of SPF is \$1.90 (USD) per sq. ft.¹⁸</p>
<p>Offers the industry's widest range of products and performance levels for nearly every application need, achieving an optimal R-Value at a low cost.</p>	<p>Comes in open-cell or closed-cell; closed-cell SPF is denser, providing a higher R-Value at the same thickness and a higher cost than open-cell.¹⁹</p>
<p>Low cost of entry. No special equipment needed.</p>	<p>High cost of entry. A SPF rig can cost upwards of \$90,000.²⁰ Requires specialized equipment, personal protective equipment, spray guns, hoses, proportioning machine and a mobile generator typically brought to the job site in a mobile spray rig.</p>



KNOW THE RISKS WITH SPF:
 SPF has little or no recycled content. Most products cannot be recycled, and there are no standard accepted removal or remediation practices.

 **SUSTAINABILITY**

FIBER GLASS	SPRAY POLYURETHANE FOAM (SPF)
<p>Made from sand, an abundant and renewable mineral resource and an average of 50% (up to 60%) recycled post-consumer glass product.²¹</p>	<p>In manufacturing SPF, the product contains little or no recycled content.²²</p>
<p>Batts can be removed from an existing building and re-installed, making them among the few reusable forms of insulation and demonstrating lasting sustainable performance.</p>	<p>According to the Environmental Protection Agency (EPA), there are no standard accepted removal and/or remediation practices for SPF.²³</p>
<p>Since 1992, NAIMA members' plants have diverted more than 46.3 billion pounds of recycled materials from the waste stream.²⁴</p>	<p>On the jobsite, SPF cannot be recycled. Many products have no recycled content and are non-recyclable for uses other than as filler at the end of a life cycle.²⁵</p>



THE FACTS PRESENT A CONVINCING CASE FOR FIBER GLASS INSULATION.

Now that you've read the facts and understand the differences between fiber glass and spray foam insulation, the advantages of fiber glass insulation are clear. For safety, thermal and acoustical performance, productivity, cost-effectiveness and sustainability, fiber glass insulation is the market leader. Make fiber glass insulation a part of your building plans and enjoy peace of mind using a product that's proven to perform for you and your homebuyers.

Get the Facts for a Stronger Business

Learn more about fiber glass insulation at InsulationInstitute.org



- 1: Glen Wilkinson, Beyond R Value, Insulating for the Environment, Environmental Design and Construction Magazine, January-February, 1999.
- 2: According to the EPA, the potential for SPF off-gassing is not fully understood and is an area where more research is needed. http://www.epa.gov/oppt/spf/exposure_potential.html
- 3: Richard T. Bynum, Insulation Handbook (New York- McGraw Hill, 2001), p. 131
- 4: Insulation melting and combustion temperatures found in various manufacturers product data sheets.
- 5: <http://polyurethane.americanchemistry.com/Spray-Foam-Coalition/Guidance-on-Best-Practices-for-the-Installation-of-Spray-Polyurethane-Foam.pdf> p. 27
- 6: <http://polyurethane.americanchemistry.com/Spray-Foam-Coalition/Guidance-on-Best-Practices-for-the-Installation-of-Spray-Polyurethane-Foam.pdf> p. 3
- 7: http://www.epa.gov/oppt/spf/health_concerns_associated_with_chemicals_in_spray_polyurethane_foam_products.html
- 8: http://www.masonknowles.com/docs/troubleshooting_sprayfoam_insulation_jlc2010sept.pdf
- 9: Air Infiltration of Wood Framed Walls
- 10: "Field Demonstration of Alternative Wall Insulation Products." Prepared for the U.S. Environmental Protection Agency by the NAHB Research Center Inc. November 1997
- 11: "Thermal Metric Summary Report," Building Science Corporation, September 2013
http://www.buildingscience.com/documents/special/content/thermal-metric/BSCThermalMetricSummaryReport_20131021.pdf
- 12: <http://www.certainteed.com/resources/Guide%20for%20Residential%20Sound%20Control.pdf>
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- 18: Air Infiltration of Wood-Framed Walls; NAHB 2009, p. 10
- 19: <http://www.thomasnet.com/articles/plastics-rubber/closed-cell-open-cell>
- 20: <http://www.sprayfoamnation.com/buying-mobile-spray-foam-rig>
- 21: "Fiber Glass and Rock Wool Insulation: Materials for a Sustainable Planet," N015, January 2015
- 22: <http://www.buildingenergyvt.com/weatherization-and-insulation/loose-fill-cellulose-insulation/>
- 23: http://www.epa.gov/dfe/pubs/projects/spf/exposure_potential.html#takeaction
- 24: NAIMA, Survey of Pre- and Post-Consumer Recycled Materials in Insulation, 2013.
- 25: Insulation Choices, What You Need to Know About Cost, Health and Environmental Health Considerations; p. 64.