

About Spray Polyurethane Foam Insulation

Spray polyurethane foam (SPF) has become popular for its insulation value and air barrier qualities. It is used in insulation applications as barriers in buildings. It can help control condensation within buildings and has other environmental benefits. Spray-applied to a substrate, it expands about 150 times to form a semi-rigid, non-structural plastic.

Sealing Characteristics

Field experience shows that properly installed SPF can help significantly improve the energy efficiency of buildings when used as an air leakage control and insulation system. Since it is applied as a liquid, it expands in all directions, filling and effectively sealing hundreds of cracks in walls, ceilings, corners, joints, and penetrations that would otherwise allow air ingress.

Thermal Barriers

All SPF plastic insulation is required by building codes to have a 15-minute thermal barrier covering the insulation on interior applications. Spray foam, like most other organic materials, is combustible. It is formulated with flame retardants to decrease the flame spread as measured by ASTM International E 84, *Test for Surface Burning Characteristics for Building Materials*, and other tests.

Safety and Health Issues

Cured SPF is relatively inert and has not been cited as a problem to allergy sufferers or to those with chemical sensitivities.

Installation

Excess foam can be trimmed easily with saws or knives, however, most applications do not require full stud thickness, meaning trimming is usually unnecessary.

Sound Absorption

SPFs have air barrier qualities that can help reduce noise from outside the building.

Ozone Depletion

In the late 1980s, the industry converted to a blowing agent with low ozone depleting properties, and spray foam providers are now moving toward non-ozone depleting blowing agents.

Energy Comparisons

Case study #1	Sacramento, CA Comparable single story 2,400 square foot homes Several addresses apart on same side of street Gas and electric bills Feb to Dec, 2003	
Traditionally insulated home:	Closed-cell spray foam insulated:	Closed-cell spray foam energy savings:
<ul style="list-style-type: none"> • Utility bills - \$2,239 electric - \$477 gas - \$2,716 total • Monthly average utilities - \$247 • Average utility prices - Gas \$0.95 per therm - Electric \$0.17 per kWh 	<ul style="list-style-type: none"> • Total gas and electric - \$1,107 electric - \$306 gas - \$1,413 total • Monthly average utilities - \$128 • Average utility prices - Gas \$0.93 per therm - Electric \$0.13 per kWh 	<ul style="list-style-type: none"> • 48% reduction in utility bills - \$118 per month average savings - \$1,422 per year; \$42,645 over 30 years • How much extra financing could you afford on a 30 year mortgage with an extra \$118 per month? - \$19,758 at 6% - \$17,805 at 8%

Case study #2	Roanoke, VA 2,240 square foot ranch Liquid propane gas heat Low fuel consumption got supplier's attention Monitored propane usage Aug '00 to Jul '01	
Ten similar homes with traditional insulation:	Closed-cell spray foam insulated:	Closed-cell spray foam energy savings:
<ul style="list-style-type: none"> • Total propane consumption - Average was 769 gallons 	<ul style="list-style-type: none"> • Total propane consumption - 321 gallons 	<ul style="list-style-type: none"> • 58% reduction in propane usage vs. average of ten comparable homes - 30% savings vs. next best home - 74% savings vs. worst home • Estimated savings - \$896/yr with propane at \$2 per gal - Mortgage value of \$12,444 at 6%

Case study #3	Atlanta, GA Comparable residences 1,800 sq. ft. Less than two miles apart Similar occupancy	
Traditionally insulated home:	Closed-cell spray foam insulated:	Closed-cell spray foam energy savings:
<ul style="list-style-type: none"> • Monthly average utilities \$143.76 • Cost of insulation \$2,350 	<ul style="list-style-type: none"> • Monthly average utilities \$89.64 • Cost of insulation \$5,200 	<ul style="list-style-type: none"> • 38% reduction in utilities - \$54.12 per month average saving • Added mortgage cost \$2,850 - \$17.10 per month added mortgage payment at 6% interest • Extra cash in homeowner's pocket \$37.02 per month