PRODUCT GUIDE

Closed-Cell vs Open-Cell Spray Foam Explained

R-value, moisture control, sound, and cost, compared side by side, and where each foam belongs in a Minnesota home.

Two foams, two different jobs

Both open-cell and closed-cell spray foam air-seal and insulate, and both outperform fiberglass batts at stopping the air leakage that drives heat loss in a Minnesota home. The difference is in their structure. Open-cell foam is light and spongy with cells that stay open, while closed-cell foam is dense and rigid with cells packed tightly shut. That structural difference changes everything about how each foam behaves: its R-value per inch, whether it controls moisture, how it handles sound, and what it costs. Neither is better across the board. The right foam depends on the part of the house being insulated, and the best projects often use both.

R-value: closed-cell insulates more per inch

Closed-cell foam delivers roughly R-6 to R-7 per inch, the highest of any common insulation. Open-cell foam runs about R-3.5 to R-4 per inch. That means closed-cell reaches a given R-value in less thickness, which is why it is the go-to where cavity depth is limited, like rim joists and basement walls. Where there is plenty of depth to work with, such as an open wall or a vaulted roof, open-cell foam has room to reach the same R-value with more thickness, and it does so at a lower cost.

Moisture and sound: where each one pulls ahead

Closed-cell foam acts as a vapor retarder at typical installed thicknesses, so it controls moisture as it insulates. That makes it the right choice for rim joists, crawl spaces, basements, and metal buildings, where keeping warm indoor air off cold surfaces prevents condensation. Open-cell foam is not a vapor retarder, so it is not suited to those moisture-critical spots. Open-cell foam has its own edge: its soft, open structure absorbs airborne sound very well, which makes it popular for interior walls, ceilings, bedrooms, and media rooms. It is also excellent at filling deep, irregular cavities completely.

- Choose closed-cell for moisture control, vapor retarding, and shallow cavities.
- Choose open-cell for sound dampening and sealing large interior areas affordably.
- Closed-cell adds rigidity and strength; open-cell fills deep cavities completely.
- Rim joists and basements lean closed-cell; interior walls and ceilings lean open-cell.

How the two compare

Property	Closed-Cell Foam	Open-Cell Foam
R-value per inch	R-6 to R-7	R-3.5 to R-4
Vapor retarder	Yes, at typical thickness	No

Property	Closed-Cell Foam	Open-Cell Foam
Sound dampening	Standard	Strong
Typical cost per board foot	$1.00 to $2.50	$0.45 to $1.50
Best suited to	Rim joists, crawl spaces, basement walls, metal buildings	Interior walls, ceilings, vaulted roofs, sound control

Cost figures are general industry ranges for reference only, not a Trust Works Company price quote. Actual pricing depends on the specific project.

Most homes are better with both

In practice, the smartest approach is rarely one foam everywhere. We reach for closed-cell foam in rim joists, crawl spaces, and basement walls where moisture control and a high R-value in a shallow depth matter, and open-cell foam in interior walls, ceilings, and vaulted roofs where air sealing and sound control are the priority and closed-cell would be an unnecessary premium. That is how you get the best performance for the money: match each foam to the assembly rather than overspending or underbuilding. Both foam types are subject to Minnesota's foam plastic requirements for thermal barriers and fire ratings under Minnesota Rules Chapter 1322 and the Minnesota Residential Code, covered in full in our companion document, Minnesota Insulation and R-Value Code Reference.