



## CELLULOSE INSULATION: A Sweater for Your Unity Home

At Unity we rely on two main strategies for creating high performance building enclosures: robust insulation and meticulous air sealing. They've been compared to a sweater and windbreaker: the insulation keeps heat in the home during cold weather, and the air sealing prevents heat loss via drafts. Well-installed insulation is fundamental to having a home that is comfortable, healthy, energy-efficient and durable.



A wide variety of insulation materials are available, each of which has advantages for particular applications. When it comes to insulating walls and roofs—the primary components of the building enclosure—common options include cellulose, fiberglass, foam and mineral wool. Cellulose is Unity's go-to choice for these areas because of how it's made, how it's installed and how it performs.

### How Cellulose Is Made

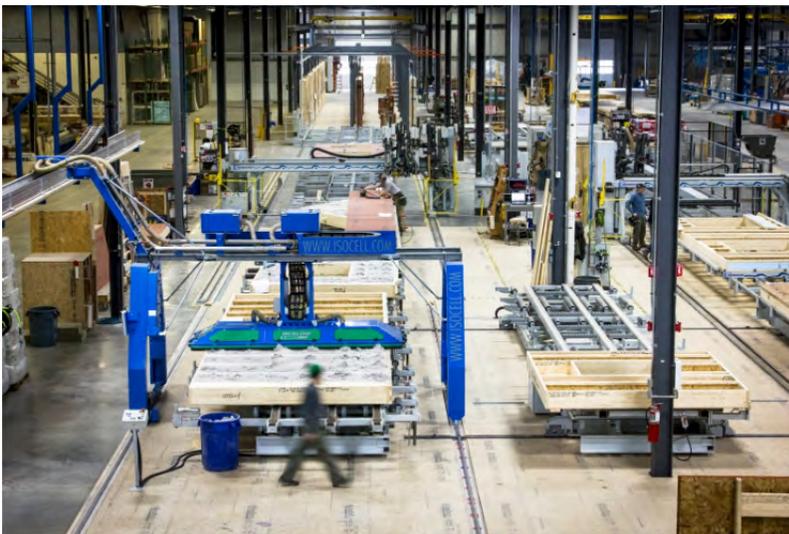
Cellulose insulation is a very sustainable material because it is made primarily from recycled paper such as newsprint that would otherwise end up in landfills or burned. When incorporated into insulation, the carbon in the cellulose is sequestered, rather than being released as a greenhouse gas. The energy required to produce cellulose insulation—its “embodied energy”—is quite low compared to other materials such as fiberglass and foam. And most cellulose manufacturing is regional, providing jobs and utilizing local recycling programs.



*Recycled paper becomes insulation (cima.org)*

The process of transforming old newspapers into high quality insulation is straightforward. The paper is chopped into small pieces and turned into fibers. These fibers are treated for fire resistance with chemicals such as borax that are considered safe for humans, but help to repel insects and other pests. The cellulose is then compressed into dense bales, and it's ready for shipping.

## How We Install Cellulose



*Insulation equipment at Unity's wall panel line*

Whereas most homes are insulated on job sites in conditions that may be less than optimal, at Unity we can ensure high quality insulation because we install it with automated equipment in the controlled conditions of our shop. We have two computerized insulation lines, one for wall panels and one for roofs, that allow us to fill each panel completely with the proper density of insulation.

The insulating equipment scrapes the dense cellulose bales to loosen them, agitates the fibers to fluff them up, and then blows them through a large metal platen that rests on top of the open panel. Based on information from the digital model of the home, the computer controlling the equipment knows how much cellulose to install in each bay to achieve the desired density.



*Quality Control: confirming cellulose density*

In addition to checking the insulation visually and by “feel,” we periodically confirm the density by weighing core samples taken from insulated panels. A density of 3.5 to 4.0 pounds per cubic foot provides excellent insulation and prevents settling.



*Cellulose blown in through platen*

Once the cellulose has been “dense packed” into the wall and roof panels, we install a continuous exterior layer of insulating sheathing made from a different form of cellulose—wood fiberboard—to secure the insulation in place. For roof panels, we may install the finished roof surface such as sheetrock or boards, and for wall panels, we install windows and doors into the panels before carefully bundling and shrink-wrapping the panels for shipping to site.

For projects that call for truss-framed roofs rather than insulated roof panels, we still specify cellulose as the insulation, but it is blown into the truss space on site as loose fill insulation.



*Tobey is a fan of cellulose!*

## Cellulose Performance In Your Home



In addition to being a very “green” material that is well-suited for off-site installation, cellulose delivers specific benefits in finished homes. Unlike fiberglass or foam, cellulose is “hygroscopic,” meaning that it has the capacity to absorb and release moisture. This buffering quality helps to moderate humidity levels within the home, and prevent damage should any moisture enter the walls or roof. Thanks to its density and consistency, cellulose also provides excellent sound attenuation. Thick cellulose-filled walls and triple-glazed windows help to make each Unity Home a quiet refuge.

### Additional Information

[Green Building Advisor primer on cellulose insulation](#)

[Planet Save on the ABCs of cellulose insulation](#)

[Cellulose Insulation Manufacturer’s Association](#)