natureTECH™
ENGINEERED GREEN BUILDING SYSTEMS

Cellulose Insulation Compared to Fiberglass Insulation

Fiberglass insulation continues to be the most used insulation material based upon its low up-front cost. Unfortunately, its installed performance is typically poor, leading to high fuel bills, discomfort and durability issues.

Fiberglass insulation is spun from molten glass, making it energy intensive (12,000 btu/lb) to manufacture. Nature-Tech's ProFiber cellulose insulation is processed from cardboard allowing it to achieve an 85%+ recycled content along with a low embodied energy (750 btu/lb).

Thermal (infrared) imagers allow us to observe the installed performance of insulation materials. Fiberglass batts, and low-density attic loose-fill applications, frequently suffer from convection mostly around the perimeter for batts and throughout loose-fill, installations which effectively bypasses its performance. Testing by Oak Ridge National Laboratory in the early 1990's demonstrated a performance reduction of over 30% when the temperature fell to 20ºF. The greater the temperature difference between the inside of the building and the outside, the worse the installed performance of these materials are, at the time when you need it the most. As evident in the Oak Ridge study, the higher density of the cellulose insulation does not allow convection to take place and offers stable insulation performance no matter what the temperature is outside.

Additional studies have shown that the small gaps and voids present around fiberglass batts can reduce its installed performance from R-19 down to R-11. The application methods of cellulose allow it to fully insulate around electrical wires and irregular framing cavities without gaps, allowing it to achieve its rated thermal performance.

Fiberglass insulation frequently acts like a filter, allowing air to pass through the insulation reducing its R-value and resulting in drafts and comfort issues. The higher density of dense pack and spray applied cellulose reduces air leakage and provides better thermal performance from these trapped air pockets.

In the event of a fire, fiberglass frequently melts from the high temperatures, allowing the fire to spread rapidly. Conversely, the higher density of cellulose insulation in a wall application allows it to perform as a code recognized fire block, significantly slowing the progression of a fire and allowing occupants a greater chance to make it out of the building.

Air borne sound transmission is dependent upon the density of the insulation and the presence of gaps. The lower density of fiberglass along with the presence of voids within the insulation allows sound to pass easily through the material, this results in an STC of only 38 in a 2 x 4 wall. The much higher installed density of cellulose, along with its ability to fill around every obstacle, allow for much better sound control, an STC of 41 in a 2 x 4 wall. The higher the STC value, the more effective the insulation is at blocking sound.

For further information, please contact our VP of Insulation Technology Bill Hulstrunk at bhulstrunk@nature-tech.com .