10 Shades of Green

Are Some Insulations "Greener" Than Others?

Consumer Update: Insulation Effectiveness Bulletin

"Cellulose insulation should be a preferred insulation material for environmentally concerned builders and designers." *-Environmental Bldg. News*

Insulation is inherently green because it increases the energy efficiency of homes and buildings. But are some insulations "greener" than others? It's worth a look, especially with the strong interest in environmental responsibility.

Performance

Studies have shown that home insulation currently saves 10.41 quadrillion[1] Btu's per year! However, if one type of insulation is more effective than another, it can help save even more energy (and money). Studies at universities, national laboratories, private research facilities and hundreds of homes and buildings have shown that cellulose is from 20% to 50% more effective than fiberglass.[2] Therefore, using the most conservative number of 20%, if cellulose were used in homes instead of fiberglass, there would be an *additional* savings of 2.1 quadrillion Btu's per year - the equivalent of a 51-day supply of gasoline for the entire U.S.[3]

Recycled Content

Insulation can be an excellent, high quality end use for materials that would otherwise be dumped into landfills. Cellulose and fiberglass insulation have recycled contents varying from 0% to 85%. Cellulose contains from 75% to 85% post-consumer recycled newsprint.[4] Fiberglass products contain from 0% to 35% pre-consumer recycled glass.[5]

Manufacturing Energy

The amount of energy consumed to manufacture a product is known as its "embodied energy". Every building product from shingles to concrete is made using energy. Some products can be manufactured using little energy. Others require a great deal.

Cellulose insulation is manufactured in fairly small plants which pass recycled newsprint through a series of fiberizers. This equipment is powered by relatively small electric motors.

Fiberglass is manufactured in monstrous blast ovens which consume vast amounts of natural gas to melt sand and chemical additives into glass. The necessary equipment is enormous in size, complexity, and in its appetite for energy.

Manufacturing fiberglass for a home consumes *six times* more energy than manufacturing cellulose to insulate the same home to the same R-value.[6]

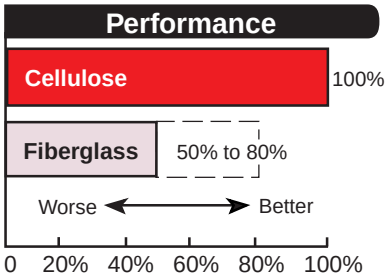
Emmissions

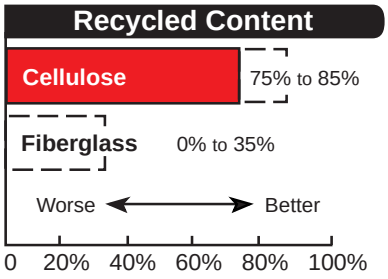
Standing outside a cellulose plant, one can hear humming motors but there are no smoke plumes and no odors because there are virtually zero emmissions.

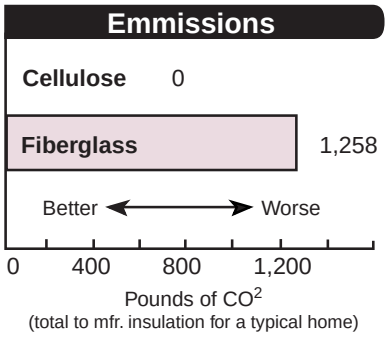
Manufacturing fiberglass generates glass dust and huge quantities of carbon dioxide from natural gas fired blast furnaces (manufacturing fiberglass insulation for just one home generates over 1,200 pounds of carbon dioxide![7]). Fiberglass plants also generate enormous amounts of other chemicals used in its manufacture (formaldehyde, urea, polyvinyl acetate, chlorides, etc.).

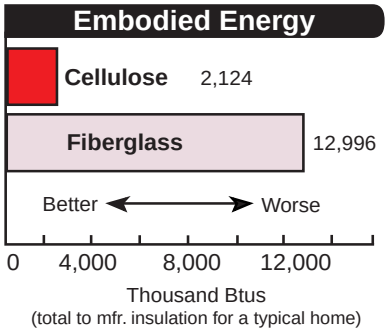
Conclusion

Some insulations are definitely greener than others. There are tremendous differences between cellulose and fiberglass. Even individual homeowners can make a significant environmental impact by choosing the most environmentally responsible, highest performance insulation for just one home. Builders, architects, and insulation contractors who influence the choice of insulation for many buildings have the opportunity to make a profound impact.









Sources

[1] North American Insulation Mfrs. Assoc. (NAIMA); "Fast Facts About Fiber Glass".
[2] University of Colorado, Oak Ridge National Labs.
[3] NAIMA.
[4, 5] Natural Resources Defense Council (NRDC).
[6, 7] Environmental Building News, University of British Columbia School of Architecture.