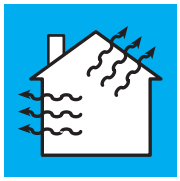
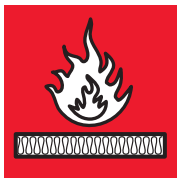
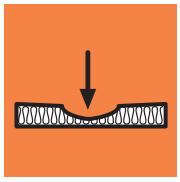
FIBER GLASS VS. CELLULOSE

A SIDE BY SIDE COMPARISON

One way to compare insulation products is to do a side by side comparison. Here we compare the two most common types of insulation: fiber glass and cellulose. The following comparison reveals important differences between the two products, which you should consider before making a final decision.

FIBER GLASS	PERFORMANCE AREA	CELLULOSE
• The ability of fiber glass insulation to provide the desired R-value for a given space equals or exceeds the ability of cellulose insulation. • Fiber glass insulation is offered in different densities, allowing you to achieve different R-values for a given space.	**THERMAL RESISTANCE R-VALUE** 	• Cellulose insulation manufacturers promote their products as having a "higher R-value per inch." This is simply not true given the range of fiber glass products available.
• Fiber glass insulation is made from sand and other inorganic materials which are melted and then spun into glass fibers. • Fiber glass is naturally noncombustible and remains so for the life of the product. It requires no additional fire-retardant chemical treatments. • Unfaced fiber glass insulation also is recognized by building code groups as an acceptable fire stop in residential wood frame walls. (IRC 2009 R302.11.1) • Fiber glass insulation products with facings such as kraft and foil, when installed and in contact with a code approved thermal barrier, do not pose a fire hazard.	**FIRE SAFETY** 	• Cellulose insulation is made of ground up or shredded newspaper which is naturally combustible. In fact, cellulose insulation is regulated as a recognized fire hazard by the Consumer Product Safety Council (CPSC).[3] • To protect against fire hazards, cellulose insulation is heavily treated with fire-retardant chemicals prior to installation. These fire-retardant chemicals can leach out of the cellulose insulation over time. • Tests conducted by the California Bureau of Home Furnishings and Thermal Insulation have demonstrated that some cellulose samples failed the standard fire safety test only six months after installation.[4] • Additionally, smoldering combustion and re-ignition problems are concerns with cellulose insulation should a fire start.[5] • Even properly treated cellulose insulations will burn at about 450°F. That's the surface temperature of a 75-watt light bulb.[6]
• Properly installed fiber glass batts and rolls do not settle. Fiber glass loose-fill insulation will experience minimal settling–less than 1% and will hold its R-value over time. • When manufacturers' installation procedures are employed, fiber glass insulation maintains its thermal performance for the life of the building.	**SETTLING AND LOSS OF R-VALUE** 	• Cellulose manufacturers agree that their products settle over time.[1] Most set the settling rate at about 20%. • When the product is not labeled for installed thickness, the Insulation Contractors Association of America (ICAA) recommends an additional 25% of thickness be added above the labeled settled thickness.

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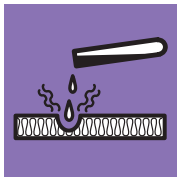
• Insulation made of fiber glass is not absorbent. Under normal conditions all insulation is exposed to humidity in the air. Fiberglass will not wick up and hold water, thus it resists any permanent loss of R-value.	**WATER VAPOR SORPTION – MOLD** 	• Studies conducted in Canada, New England and Ohio demonstrated that wet-spray applications of cellulose insulation do not achieve their advertised R-value until dry and may take as long as two months to dry.[2] In many cases, wet-spray applications may need to remain uncovered until completely dry.
• Fiber glass insulation is not corrosive and contains no chemicals that can corrode pipes and wires.	**RESISTANCE TO CORROSION** 	• Certain chemicals routinely applied as a fire retardant to most cellulose insulation (particularly the sulfates) can cause the corrosion of pipes, wires and fasteners under some conditions.[7]
• The fiber glass insulation industry recycles billions of pounds of pre- and post-consumer glass containers, eliminating the need for millions of cubic feet of landfill space. • Many fiber glass insulation manufacturers have plants that use up to 50% or more recycled materials in their products.	**USE OF RECYCLED MATERIALS** 	• Cellulose insulation is generally made up of about 80% recycled newspapers and 20% fire-retardant chemicals. On the surface, cellulose insulation may appear to be the more environmentally acceptable insulation choice as it is made from shredded newspaper. However, it takes three times more cellulose material by weight than fiber glass to insulate a typical home and that has a direct impact on the environment when you factor in increased shipping, transportation and greenhouse gas emissions. In addition, an average 1,200 square foot attic insulated to R-38 with cellulose insulation would introduce 300 pounds of fire-retardant chemicals into the home.
• Fiber glass insulation is one of the most thoroughly tested building materials in use today. The great amount of medical scientific evidence compiled over more than fifty years by industry, government and independent research organizations supports the conclusion that fiber glass insulation is safe to use when manufacturers' recommended work practices are followed.	**SAFETY** 	• Questions about the health and safety aspects of cellulose insulation persist in the building industry because comprehensive medical scientific testing of the products has never been conducted. Repeated requests by union and contractor groups that such testing be undertaken have been ignored.[13] Given the high levels of exposure measured during cellulose installation, only after results of long-term experiments are available will it be known if cellulose insulation is safe to use.

[1] Arizona ICAA Chapter Request, Insulation Contractors Monthly (May 1995). "Wet-Spray Cellulose - Questions About Drying," Energy Design Update, July 1989 Edition, p.1.
[2] "Effect of Wet-Spray Cellulose on Walls," Energy Design Update, October 1989, p.3.
[3] 16 C.F.R. Part 1209.
[4] California Bureau of Home Furnishings and Thermal Insulation, Long-Term Aging Studies on Loose-fill Cellulose Insulation: Part IV 7V (1991).
[5] Letter to Dale Lewis from Lewis County (Washington State) Public Utility District, March 20, 1991.
[6] Facts #30, Insulation and Fire Safety, The North American Insulation Manufacturers Association (NAIMA).
[7] Corrosiveness Testing of Thermal Insulation Materials - A Simulated Field Exposure Study Using a Test Wall, Report ORNL/Sug. 78-7556/4, September 1988.
[8] Field Demonstration of Alternative Wall Insulation Products. Prepared for the U.S. Environmental Protection Agency by NAHB Research Center, Inc., November 1997.
[9] A Field Study of the Effect of Insulation Types on the Air Tightness of Houses, G.K. Yuill, Ph.D, Pennsylvania State University Department of Architectural Engineering, 1996.
[10] Research and Development Project, "Maple Acres," Union Electric, St. Louis, MO. William Conroy, Division Marketing Supervisor, 1995.
[11] Ibid.
[12] National Research Council of Canada Report, "Gypsum Board Walls: Transmission Loss Data," March 1998, #761.
[13] Arizona ICAA Chapter Request, Insulation Contractors Monthly (May 1995), and Letter to TSCA Public Docket Office from the Laborers' Health and Safety Fund of North America (September 23, 1991).

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