

Cellulose Insulation Compared to Mineral Fiber Insulation

Mineral fiber insulation is experiencing a comeback and is available as loose fill, batts and boards. Mineral fiber has excellent fire resistance, but unfortunately suffers from some of the same thermal performance issues as fiberglass insulation.

Mineral fiber is manufactured either from igneous rocks or slag left over from steel manufacturing and has an embodied energy of 6,500 btu/lb. In comparison, Nature-Tech's ProFiber cellulose insulation is made from over 85% recycled cardboard and a manufacturing process using 750 btu/lb.

While the R-value of mineral fiber is higher than fiberglass, the material is still vulnerable to convection around the edges of the batts or boards in cold or hot temperatures which reduce its installed performance. Due to its higher density than fiberglass, the mineral fiber batts are more difficult to install and likely to result in performance robbing gaps when installed around wires, electrical boxes and in irregular shaped cavities. These gaps will result in a R-19 mineral fiber batt having an installed performance of under R-11 in a standard 2 x 6 cavity. Cellulose insulation by contrast does not experience convection, when installed flows around obstructions better and reduces air leakage when dense packed or spray applied resulting in superior installed performance.

The higher installed density of cellulose in enclosed cavities provides better air born sound control than mineral fiber. In a 2 x 4 wall cellulose has an STC of 41 while mineral fiber has an STC of only 38. The higher the STC value, the more effective it is at blocking sound. Plus, the gaps in batt installations provide pathways for sound transmission reducing real world performance.

Even though mineral fiber is a noncombustible material, a 1994 Research Council of Canada report found that cellulose insulation increased the fire resistance of the assemblies tested by over 40% compared to mineral fiber.

Mineral fiber is a valuable insulation material that can be used around hot surfaces such as chimneys and vents in attic applications. The board type insulation products also has the potential for replacing foam board in many applications, including under slab areas.

While mineral fiber outperforms fiberglass insulation in some respects, cellulose insulation offers better thermal, sound and environmental characteristics than either of these competing insulation products.

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