



NATIONAL FIBER CEL-PAK INSULATION

Professional Cellulose for Cellulose Professionals

Cellulose Insulation and Fire Safety

Studies of both actual demonstration fires have shown that the dense fiber structure and fire retardants in cellulose insulation slows the spread of fire through a building, giving occupants more time to escape and firefighters more time to save the structure. During the manufacturing process, cellulose fibers are permanently impregnated with a boric acid fire retardant. Cellulose insulation achieves a Class-A noncombustible rating and passes a strict battery of Federal 16 CFR Part 1209, ASTM E-84 smoldering, ASTM E-970 flame spread and ASTM E-119 fire endurance testing. Testing by Oak Ridge National Labs (1990)¹, US Testing Company (1991)², UL (1993)³ and US Borax (1994)⁴ all established that the fire retardant chemicals do not degrade over time and are permanently bound to the cellulose fibers.

1978 "Big Burn Demonstration"⁵

- Fiberglass insulated building
 - Ceiling failed at 20 minutes
 - Building burned to the ground in less than 2 hours
- Cellulose insulated building
 - Ceiling failed at 70 minutes
 - All four walls left standing, fire burned itself out after 3 hours

1994 NRCC National Fire Laboratories⁶

- Fire resistance of wall insulated with fiberglass is slightly worse than a non-insulated wall
- Fire resistance of wall insulated with cellulose is 11% to 55% better than a non-insulated wall

1998 NRCC National Fire Laboratories⁷

- Cellulose increases the fire resistance twice as well as fiberglass in a floor/ceiling assembly

1999 Omega Point Laboratories

- Cellulose insulated wall performed 77% better than uninsulated wall⁸
 - E-119 testing (1hr, 2hr firewalls) on Electrical box placement⁹
 - 24" Minimum Spacing for Fiberglass
 - 3.5" Minimum Spacing for Cellulose

References

1. Chiou, N., and Yarbrough, D., "Permanency of Boric Acid Used as a Fire Retardant in Cellulosic Insulation", *Energy and Buildings*, 14 (1990)
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3. England & Assoc. and Underwriters Laboratories, study for Suncoast Insulation (1993)
4. Perm, Donald J., and Shen, Kelvin K., US Borax, "Study on the Permanence of Borates in Cellulosic Insulation," *Proceedings of the Tenth International Conference on Thermal Insulation* (1994)

5. The Big Burn" *Insulators Guide*, September (1978)
6. National Research Council Canada, *Results of Fire Resistance Tests on Small-Scale Insulated and Non-Insulated Gypsum Board Protected Wall Assemblies* (July 1994)
7. National Research Council Canada, *Fire Resistance of Floor Assemblies in Multi-Family Buildings* (Sept 1998)
8. Omega Point Laboratories, *Project 16094-105450* (1999)
9. Omega Point Laboratories, *Project 16094-105449* (1999)

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