

# Applegate Cellulose Insulation, Fire Safety, and You

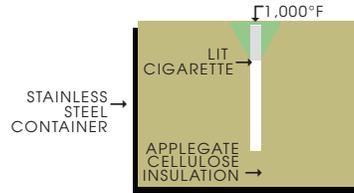
Cellulose insulation is the only building material commonly treated with fire retardants. It must comply with Consumer Product Safety Commission (CPSC) fire safety criteria and the American Society for Testing and Materials (ASTM) Standard C-739 that require two tests: smoldering combustion and critical radiant flux.

Applegate provides an extra level of assurance by using a proprietary, two-stage process that injects dry and liquid fire retardants into the fibers—BurnBarrier™. The result is exceptional insulation that complies fully with all necessary fire safety requirements and wraps buildings in a protective, permanent, fire-resistant shield.

**BURNBARRIER™**

## Smoldering Combustion

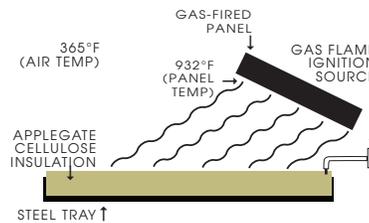
According to the CPSC: “this test is intended to determine whether the smoldering will continue in the insulation [once started]. A lighted cigarette is the ignition source. . . [it] has a sufficiently high temperature (approximately 1,000°F) to initiate smoldering. Burning of the cigarette proceeds undisturbed for at least 2 hours or until the smoldering is no longer progressing, whichever is longer. In order to pass the test, the [insulation] must have a weight loss of 15% or less and must not exhibit flaming.”



## Critical Radiant Flux

The CPSC admits that the critical radiant flux test creates “the most severe” conditions. It includes all of the following simultaneously:

1. Scorching test chamber: 356°F
2. Extremely hot radiant panel: 932°F
3. Ignition source: open gas flame

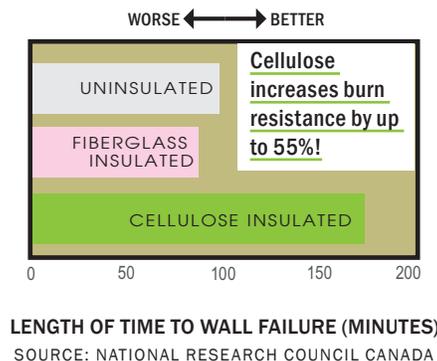


To pass this test, cellulose must self-extinguish according to parameters set by the government.

## Safer Homes & Buildings

These tests subject Applegate insulation to extraordinary conditions that are virtually unimaginable in real buildings. For example, the 356°F critical radiant flux chamber is approximately 200° hotter than ever recorded in an attic!

Cellulose insulation not only excels in laboratory tests, it actually provides up to 55% better fire resistance than fiberglass. The fire resistance performance of an assembly with glass fiber insulation in the wall cavity was slightly lower than that of a non-insulated assembly.<sup>1</sup>



## Permanent Assurance

Applegate Cellulose Insulation's ability to add fire resistance is not limited to fire retardants, it also limits the amount of oxygen which can support a fire. Applegate Insulation gives occupants additional time to reach safety during a fire, unlike fiberglass which can actually decrease the amount of time a fire needs to destroy a wall. That's right! Applegate Cellulose Insulation greatly restricts the amount of oxygen available to support combustion, preventing a chimney effect in which hot air and fire can race up a wall to a ceiling or attic where the fire can endanger the entire home.

The safety and peace of mind cellulose insulation provides has been researched by prestigious institutions such as the Oak Ridge National Laboratory, the American Society for Testing and Materials, Underwriters Laboratories, Tennessee Technological University, the Department of Energy, and the Consumer Product Safety Commission. In fact, the most comprehensive studies determined that fire retardants in cellulose insulation provide assurance for literally hundreds of years.



Applegate Insulation proudly offers a Lifetime Warranty.



*Work brings wealth; talk brings poverty. – Proverbs 14:23*

1. National Research Council Canada. "Fire Resistance Tests"

# Cellulose Insulation Fire Tests

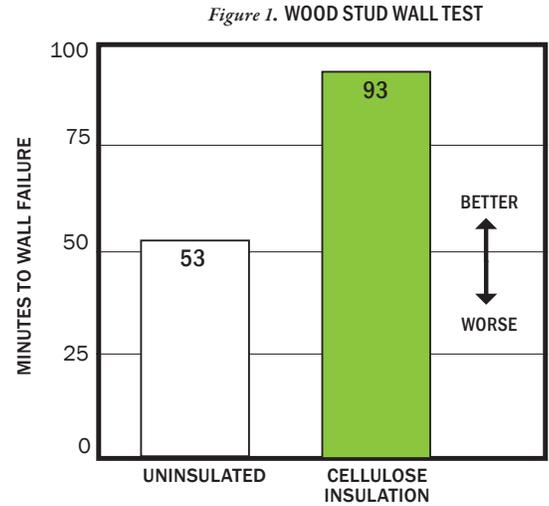
These fire tests provide information relevant to architects, builders, and homeowners. Applegate cellulose insulation is an exceptional thermal and acoustical insulation with excellent fire safety properties. Applegate provides an extra level of assurance by using a proprietary,

two-stage process that injects dry and liquid fire retardants into the fibers—BurnBarrier™. The result is exceptional insulation that complies fully with all necessary fire safety requirements and wraps buildings in a **BURNBARRIER™** protective, permanent, fire-resistant shield.

## ASTM E119-98 Fire Tests

Omega Point, an internationally known NAVLAP certified laboratory, completed ASTM E119-98 Fire Tests on 2"x4" wood stud walls framed 16" OC with 1/2" Type X gypsum wallboard on both sides. The tests were performed on uninsulated and cellulose insulated wall sections.

The results are shown in Figure 1. The cellulose insulated wall section increased the fire resistance of the wall assembly by 77%!

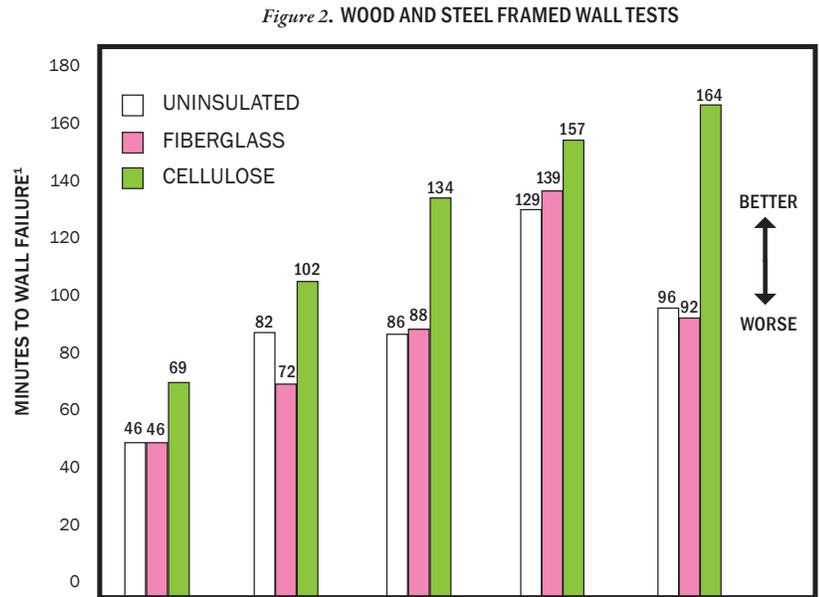


## Multiple Wall Configuration Tests

The National Fire Laboratory of the National Research Council of Canada, one of the premier building material fire testing facilities in the world, conducted fire resistance tests on wood and steel framed wall assemblies. The tests were performed on uninsulated, fiberglass, and cellulose insulated wall assemblies (results right). The cellulose insulation consistently and significantly increased the fire resistance of the walls—by up to 78%!

The failure criteria for the tests were derived from CAN/ULC-S101-M89. The assembly was considered to have failed if a single point thermocouple temperature reading on the unexposed face rose above 356°F or the average temperature of the 5 thermocouples readings under the insulated pads on the unexposed face rose 284°F above the ambient temperature or there was passage of flame or gases hot enough to ignite cotton waste.

The designation shows how many gypsum board layers were on the exposed face (facing the furnace) of the wall assembly during the fire test and how many gypsum board layers were on the unexposed face of the wall assembly.



STUD TYPE	STEEL	STEEL	STEEL	STEEL	WOOD
STUD SIZE	2"x4"	2"x4"	2"x4"	2"x4"	2"x4"
STUD SPACING	24" OC	24" OC	24" OC	24" OC	16" OC
GYPSUM TYPE	1/2" X	1/2" Reg	1/2" X	1/2" X	1/2" X
GYPSUM LAYERS (exposed x unexposed) <sup>2</sup>	1x2	2x2	1x2	2x2	1x2
RESILIENT CHANNEL	no	no	no	no	yes

