



# Loss Control TIPS

## Technical Information Paper Series

*Innovative Safety and Health Solutions<sup>SM</sup>*

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## Special Building Material: Cellulose Insulation

### Introduction

The origin of cellulose insulation can be traced as far back as a patent issued in Great Britain in 1893. It was first introduced into the United States after World War I, but did not gain popularity until the mid 1970s.

Cellulose insulation is made from ground up newspaper and other pulp materials that are usually treated with flame-retardant chemicals. Cellulose insulation has three primary functions in building construction. It is used as a *thermal insulator*, *acoustical barrier* and a *fire-retardant coating* (thermal barrier).

### Methods of Installation

The three principal methods of installing cellulose insulation in buildings are:

- Loose Fill
- Spray-On
- Boardstock

#### Loose Fill

This method consists of either manually pouring in place, or pneumatically blowing in place, cellulose insulation into wall or ceiling cavities. The material may be blown into existing exterior walls by drilling holes in siding materials between wall studs and fire stops. Some loose fill materials intended for installation in walls are impregnated with adhesives which allow the insulation to become rigid enough to resist settling.

#### Spray-On

This method of insulating involves pneumatic application of cellulose materials that are impregnated with adhesives material to the exposed interior horizontal and vertical surfaces of walls and ceilings. Spray-on cellulosic materials are sometimes referred to as "wet process" materials, since this type of material must be suspended in or mixed with water to activate the adhesive, then sprayed to deposit the liquid on a surface.



## **Boardstock**

This method involves cellulosic materials that are compressed and formed into rigid boards or panels. The panels may be manufactured with or without surface coatings, facings, or decorative finishes. This type of insulation is cut to size and manually attached to walls and ceilings.

## **Hazards Associated with Cellulose Insulation**

The primary fire hazards associated with cellulose insulation when used in buildings are:

- Low Resistance to Fire
- Covering of Electrical Components
- Corrosion of Electrical and Metallic Parts
- Fungi
- Moisture Vapor
- Starch

### **Low Resistance to Fire**

The resistance to ignition by fire has been improved by the addition of fire retardant chemicals. The most common chemicals used for this purpose are boron compounds, but aluminum, calcium, and sodium compounds are also used. The limitation of the chemical retardant is that the chemical sometimes separates from the cellulose material, leaving it with its original low resistance to fire.

### **Covering of Electrical Components**

When cellulose compounds are used to fill walls or cover attic floors, they may also cover existing electrical fixtures, such as recessed lighting, thus capturing a substantial amount of heat. Electrical fixtures are usually cooled by convection. When the insulation covers the heated surfaces, cooling by convection is impossible, and the electrical component may overheat. This could cause a fire.

### **Corrosion of Electrical and Metallic Parts**

The fire retardant chemicals used in cellulose insulation may leach out and deposit on adjacent electrical and metallic parts. Some of these chemicals are corrosive to metals, and may ultimately cause physical damage.

### **Fungi**

Excessive growth of fungi could result in the loss of efficiency for the insulation, and possible physical damage to a structure.

### **Moisture Vapor**

Excessive moisture in attic insulation could lead to deterioration of structural components.

### **Starch**

The presence of starch in cellulose insulation may lead to a potential source of nutrients for insects or rodents.

## Controlling Risks

### Get All the Information

For blown-in insulation, obtain information about the type of cellulose insulation and the manufacturer's name. A reputable contractor will post an "attic card" and/or provide an owner with a statement of compliance. Refer to Underwriters Laboratories' *Building Materials Directory* under "Loose-Fill Insulation" (BPHX) to check the listing. Underwriters Laboratories tests flammability, environmental, and physical characteristics of the insulation.

### Maintain Clearances

Take special precautions to assure that proper clearances are maintained around electrical and heat-producing devices. Cellulose insulation should not be installed within 3" of a recessed fixture, wiring compartment, or ballast, and should not be installed above a fixture so as to entrap heat and prevent the free circulation of air. Also, it should be kept away from exhaust flues of furnaces, water heaters, space heaters, or other heat-producing devices.

### Choose Installation Locations Carefully

Cellulose insulation should not be installed in locations subject to dampness, high humidity or rapid air movement, such as in ventilating equipment.

### Use a Licensed Contractor

Installations should be applied by a contractor licensed by the manufacturer. Improper installation practices have been a significant contributing factor in building fires.

For more information, contact your local Hartford agent or your Hartford Loss Control Consultant. Visit The Hartford's Loss Control web site at <http://www.thehartford.com/corporate/losscontrol/>

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