



Note: The following information refers specifically to spray-applied thermal and acoustic insulation materials that may be left exposed or covered after installation.

To be installed in a building, both combustible and non-combustible exposed spray-applied insulation must meet flame spread and smoke development criteria.

These are:

- Flame spread ≤ 25 ;
- Smoke development ≤ 450 ;

when assessed according to recognized test protocols (in Canada and the U.S. ULCS-102 and ASTM E-84 are commonly used).

However, these can be considered to be secondary classifications after the issue of combustibility versus non-combustibility is determined. This is because some regulatory authorities, architects, specification writers and/or building owners are reluctant to install a combustible product in an exposed location even if it meets flame spread and smoke development criteria.

Basically, only inorganic materials, or those containing very small quantities of organic compounds, can be tested and classified according to criteria for noncombustibility (e.g. ASTM E-136).

Spray-applied thermal and acoustic insulation materials presently available on the Canadian and U.S. markets consist of:

- Cellulose-based: These products are made of either new or recycled shredded paper (generally recycled newspapers) and are **always** rated as combustible products. They are installed using organic water-based adhesives that are also classified as combustible, so that the **entire installed assembly consists of combustible material**. Low flame spread and smoke development ratings are achieved by the addition of fire retardant chemicals that may, or may not, be permanent. In fact, one prominent cellulose manufacturer warns that, under certain high humidity conditions, the fire retardant in their product may need to be replenished from time to time.

For some people, the fact that fire retardants in cellulose products may not be permanent calls into question the long term safety of the material. They ask the following questions:

- a) If the fire retardant leaches out, are its flame spread and smoke development ratings compromised and, if so, by how much?
 - b) If the ratings are compromised, will the installation deteriorate to the point at which it will actively support combustion?
 - c) Will the fire retardant actually be replenished in an occupied building when it may cost a great deal of money to do so?
- Fibreglass-based: These products consist of specially produced glass fibres mixed together with a very small amount of organic waterbased adhesive at the time of installation. Because these products do include an organic component, however small, they must be tested for flame spread and smoke development. The presence of an organic adhesive can result in the apparent anomaly of a noncombustible product exhibiting very minor flame spread and/or smoke development characteristics when tested according to the relevant protocols.
 - Mineral fibre-based (rock wool, slag wool): These products consist of mineral fibres mixed with small amounts of organic adhesives. These materials qualify as non-combustible, but despite the fact they are in decline in the market because of their inability to effectively meet the requirements of new, more stringent energy codes.

Note: For a general comparison of the performance capabilities of spray-applied cellulose, fibreglass and mineral fibre insulation materials please see our information sheet titled:

Spray Applied Fibreglass Versus Spray Applied Cellulose