

Felt & Fire

Flame Retardancy

Flame retardancy is the capacity of a substance to minimize the devastating impact of a fire on people and the environment. Though flame retardancy is a crucial feature for nonwoven textiles in the building industry, not all fabrics are created equal. In fact, some of the most common nonwovens on the market require modification with toxic chemical agents to meet federal fire standards. This raises concerns for human health and environmental sustainability.

In this context, felt made of 100 percent wool presents a major advantage for interior design applications. Wool felt is inherently fire retardant, does not require treatment with potentially harmful chemicals, and delivers a host of health, environmental, and aesthetic benefits for buildings and spaces.

Why Wool

As nonwovens increasingly replace woven textiles, the demand for cheaper synthetic materials such as polypropylene and nylon has increased worldwide. To pass flame specs, these highly flammable plastics are treated with a concoction of chemicals. Based on growing bodies of research, many of these flame retardants are now considered toxic, bioaccumulative, and linked to infertility, birth defects, hormone disruptions, cancer, and other health risks. For this reason, natural nonwovens such as wool felt have garnered global recognition as the industry returns to ecological solutions and green design materials.

Of the most common textile fibers - including cotton, rayon, polyester, acrylic, and nylon - merino wool demonstrates the highest natural resistance to fire. When exposed to strong heat, wool smolders and self-extinguishes, and unlike synthetic fibers, it does not melt, drip, or stick to the skin. When felted, wool becomes even less hospitable to combustion.

Several factors contribute to the inherent flame retardancy of wool felt:

- Wool has a high water and nitrogen content
- Wool can absorb 30 percent of its weight in moisture (compared to five percent for synthetics and eight percent for cotton)
- The keratin in wool fibers gives wool a 100 degree higher flash point than it would have by itself
- The scaly membrane structure of each wool fiber enables it to prevent the spread of flame and produce less smoke and toxic gas than synthetic fibers when exposed to heat
- When felted, the wool fibers are so close together they create an air-tight environment, thus curtailing the spread of flames

For these reasons, wool textiles are suited to make protective apparel for firefighters, military, and anyone else exposed to fire or explosives.

Trial by Fire

Flame retardancy is a required feature of interior finishes, furnishings, and decorative materials to slow flame spread, reduce smoke density, and prevent ignition. While all fabrics will burn under the right conditions, flame retardancy reduces a material's flammability and burning behavior in three key aspects:

1. Susceptibility to ignition
2. Speed and distance of flame spread
3. Smoke development

Interior Felt's Designer Felts have been tested by Exova Canada Inc. according to the CAN/ULC S102 "Test for Surface Burning Characteristics of Building Materials and Assemblies." This standard test determines the permitted uses of the material in various buildings, locations, and elements of a space.

Our Designer Felt has an average Flame Spread Rating (FSR) of 25 and an average Smoke Development Classification (SDC) of 175. Due to its relatively low flammability, Designer Felt is acceptable for application in most building locations according to the National Building Code of Canada. Our Designer Felt meets Class A requirements.

Advantages of Wool Felt for Interiors

There are many advantages in incorporating wool felt into an interior design plan. Wool felt significantly reduces the speed of flame spread and consequently provides a much longer potential escape time compared with other natural nonwovens. Its low rate of smoke development and comparatively low heat makes it easier to escape a fire or put it out with a handheld extinguisher.

The superiority of wool felt for interior surfaces and furnishings is due not only to its inherently low flammability, but also to its other natural strengths:

- Resilience
- Durability
- Acoustic insulation
- Softness
- Liquid repellency
- Cushioning
- Bacterial obstruction
- Filtering of airborne contaminants

- Biodegradable and recyclable
- Renewably sourced

About Interior Felt

Interior Felt has been built upon a company of felting expertise spanning five generations and 150 years. Our passion and experience provide resourceful solutions for your design inspiration. Interior Felt manufactures and supplies around the world with facilities in North America and Germany. To learn more about Interior Felt and its products, visit www.interiorfelt.com.