

FIRE RETARDANT TREATED WOOD IN CANADA:
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Traditionally, Canadians have relied upon our building codes for fire safety design. However, the codes only specify the levels of life safety required for occupancies; they do not provide formulae for achieving these safety levels. That role is left to the architects, engineers and designers of the buildings. In many situations, one of the options available to designers of today's fire resistant buildings is the use of fire retardant treated (FRT) wood, instead of non-combustible materials. For example, fire separations between units in lowrise, multi-family residences can be constructed with gypsum protected FRT wood studs instead of concrete blocks. Similarly, distances between adjacent wood frame buildings can be reduced if FRT wood is used in construction of the adjacent exterior walls. Due to the cost savings and increased spatial utilization that accompanies these alternatives, increasingly they are being used by building designers.

In Canada, two of the most widely used fire retardants for treatment of wood are DRI-CON and IROTHERM. Dri-Con treated wood is used for interior applications, Irotherm for the exterior ones.

Although building codes permit the use of FRT wood soffits in residential buildings and require that all wood used in balconies, stairs and landings outside of the primary exits of residential buildings have Class I flame-spread ratings, there are very few exterior FRT wood products used in Canada. Almost all of the exterior FRT wood products produced in Canada are shingles, shakes and siding materials being exported to the U.S.A. In addition, limited amounts of exterior FRT wood is required for utility companies, nuclear power plants and military specifications.

Most of the FRT wood produced in Canada is intended for interior applications. Although most of it is used in industrial situations, the market for FRT wood building materials is growing. A few years ago, there were only three or four Canadian wood treaters producing FRT wood products. Now, there are more than twice that number.

Fire retardant coatings continue to make inroads into markets for FRT wood. Several coatings manufacturers are aggressively pursuing markets for exterior FRT wood products, including FRT roof covering materials.

Forintek has noted a definite increase in the frequency with which Canadian building code officials are specifying the use of flame-spread rated building materials. However, most builders show a great reluctance to use FRT wood, preferring instead to use FR coatings, even when informed that the pressure treated material is superior. Most architects and builders believe that FRT wood is too expensive or simply not available in Canada.

Forintek has learned that some FR coatings can increase the fire resistance of structural wood assemblies by at least thirty minutes. This is a very significant finding at a time when the wood industry is trying to increase its share of the building materials market for construction of larger non-residential and commercial buildings.

In the area of new FRT wood products, I regret to report that there has been no discernable progress in the development of a combination wood preservative-fire retardant treatment for wood. In fact, at this time I am not aware of any current research on the subject.

Problems still exist with the structural durability of some FRT wood. Over the years, acid hydrolysis can weaken some FRT wood products to such an extent that they can no longer perform their structural function. There is growing concern in the southern U.S.A. where a large amount of FRT plywood roof sheathing has been used. Research is underway at the U.S. FPL to investigate the magnitude of this problem. The chemicals that render FRT wood flame-spread resistant do not necessarily increase the structural fire endurance of wood. In fact, as this problem illustrates, the exact opposite can occur. Research is being carried out to solve the problem, but an answer appears to be some years away.

In 1984 there were more than 70,000 fires in Canada. Besides the 600 deaths, the annual cost of fire in Canada is \$6 billion. With numbers like this, the need for greater fire safety is not going to disappear. Use of FRT wood alone is not the answer to greater fire safety in wood frame buildings; however, when integrated into proper building designs, FRT wood can provide an integral part of the solution to fire safety.