

## *How does flame spread of insulation and/or interior finish affect fire insurance rates or loss costs?*

In a previous bulletin, we discussed how exterior walls affect fire insurance rates or loss costs by comparing buildings with various types of non-combustible walls. In the case of the metal walls, the use of some types of insulation and/or interior finish can affect the wall classification to the extent that the wall may classify as "frame." Such a classification might well result in a loss cost comparison as follows:

<b>Wall Classification</b>	<b>*Net Building loss cost</b>	<b>*Net Content loss cost</b>
Noncombustible (metal panels, unprotected columns)	1.08	1.40
Combustible - Frame	1.67	1.73

\*CAUTION - These loss costs are for comparison purposes only and should not be quoted as actual rates or loss costs that might apply within any rating jurisdiction.

How can this frame classification be avoided? The most direct and easiest answer is to use insulation and/or interior finish material which is recognized in the ISO Specific Commercial Property Evaluation Schedule as either Noncombustible or Slow Burning. Noncombustible materials must have a flame spread rating of 0. Slow Burning materials must have a flame spread of 25 or less, and in the case of "Special Damage" materials, such as cellular or foam plastic, must also have an acceptable thermal barrier, such as 1/2 inch gypsum board, or be listed as having passed one of the acceptable wall or ceiling panel tests.

Perhaps we should stop at this point and define "flame spread." Flame spread is the relative rate of flame propagation across a burning surface. It is most often measured by use of a standard laboratory tunnel test with results compared on a scale where inorganic reinforced cement board is 0 and red oak is 100. The higher the flame spread number, the faster the relative spread of flame across the burning surface.

The Life Safety Code (NFPA101) groups interior finish materials into the following classifications:

<b>Class</b>	<b>Flame Spread</b>	<b>Smoke Developed</b>
A	0 to 25	0-450
B	26 to 75	0-450
C	76 to 200	0-450

Use of ordinary damage materials with flame spread of 25 or less will normally have minimal effect on the ultimate insurance rate. There will be no change in classification of construction, nor will there be significant deficiency charges applied for interior finish. However, use of unprotected or unlisted materials such as foam plastic, foam rubber, straw or similar materials with high combustibility or high loss susceptibility will result in charges being applied even though the flame spread may be below 25.

The use of unprotected or unlisted foam plastic insulation or interior finish or of insulation or interior finish with flame spreads in excess of 25

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will normally have a material effect on the final insurance rate or loss cost. This effect can be only as severe as deficiency charges for interior finish, or at the other end of the scale, it can reclassify the building as (in the example shown previously) a frame building. Generally, if the material is applied to the interior of walls or underside of roofs and does not constitute part of the wall or roof support system, it would not affect the building classification but would generally increase the rate or loss cost due to the interior finish charge and increases in structural charges for wall materials. The deficiency charges range from 10% to 225%. The spread here would be dependent upon the actual material used, the extent of its use and whether it is protected by acceptable thermal barriers with not less than a 15-minute finish rating.

The use of combustible interior finish can also result in an otherwise noncombustible occupancy being treated as combustible, thus directly affecting the contents rate or loss cost. It should be pointed out that such interior finish charges would similarly apply to buildings with masonry walls if they were sheathed with combustible materials on the interior. As has been cautioned in the other insurance bulletins, it is well to point out that the treatment of metal buildings with respect to insulation and/or interior finish does vary from rating jurisdiction to rating jurisdiction and, therefore, you should, with the help of your broker, your ISO contact, or rating bureau contact, discuss treatments applied in your region.

<sup>1</sup>Insurance Bulletin No. 5 - What effect does exterior wall construction or column protection have on insurance rates or loss costs?

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