

THE IMPACT OF INSULATION AND INTERIOR FINISHES ON FIRE INSURANCE RATES

The use of some types of insulation and/or interior finishes can affect a wall classification to the extent that the wall may classify as a "frame."

| Wall Classification | Net Building Rate |
|--|-------------------|
| Noncombustible (metal panels, unprotected columns) | 1.08 |
| Combustible - Frame | 1.67 |

Note: These rates are for comparison purposes only and should not be quoted as actual rates 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 that is recognized in the Insurance Services Office (ISO) Special Commercial Property Evaluation Schedule (SCOPEs) as either noncombustible or slow burning. Noncombustible materials must have a zero flame spread rating. Slow burning materials must have a flame spread of 25 or less. Items categorized as Special Damage materials, such as cellular or foam plastic, must have an acceptable thermal barrier (such as 1/2 -inch gypsum board) or be listed as having passed either the full scale enclosed fire test or the enclosed corner room fire test.

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. Results are 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 spread of flame across the burning surface.

Find out how insulation and finish choices for interior partitions, offices, and mezzanines can impact the class rating of a building.





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

| Class | Flame Spread | Smoke Developed |
|----------|--------------|-----------------|
| I or A | 0 to 25 | 0-450 |
| II or B | 26 to 75 | 0-450 |
| III or C | 76 to 200 | 0-450 |

The use of unprotected or unlisted Special Damage materials such as foam plastic, foam rubber, straw or similar materials with high combustibility or high loss susceptibility may result in additional charges even if the flame spread is below 25.

Final insurance rates may also be affected by the use of unprotected or unlisted Special Damage insulation or interior finishes or those with flame spreads in excess of 25. Deficiency charges may apply and there is potential that the building could be reclassified.

In addition to interior finishes, you, the contractor and the owner must consider how the building is built out. While metal buildings will normally be rated as Class 3 – Noncombustible when low flame spread insulation and finishes are used, the construction of interior partitions, offices, and mezzanines can have a negative impact on the class of the building. See the following examples that show how this can happen.

Example 1: Different Wall Materials

This one-story building in an industrial park is 120 feet by 60 feet with a wall height at the side walls of 10 feet. The front of the building has been converted into office space and the rear is for storage and minor production. When originally built, the walls and roof were metal siding on metal studs with low flame spread insulation on the interior. It qualified as a construction Class 3 structure. After moving in, the owner installed a dividing wall between the office and the storage/production area. Wood paneling was attached to the metal studs in the office to a height of eight feet and a drop-panel ceiling was installed. The office area is 20 feet by 120 feet. Does the creation of a frame assembly change the construction class of this building?

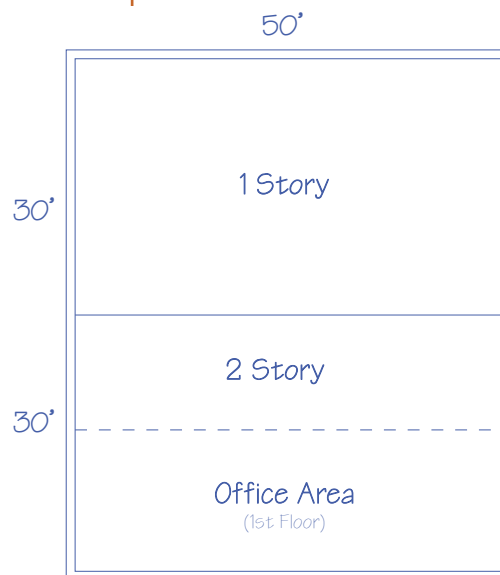
| | |
|--|------------------------------|
| Total Exterior Wall Area (360' perimeter x 10' high) | 3,600 square feet |
| Combustible Assembly Wall Area (160' exterior perimeter x 8' high) | 1,280 square feet (35.6%) |
| Noncombustible Wall Area (160' exterior perimeter x 2' high) + (200' perimeter x 10' high) | 2,320 square feet (64.4%) |



Because the combustible wall area makes up more than one-third of the total wall area, this building must be rated as a construction Class 1 rather than a Construction Class 3. If the owner had used gypsum wall board instead of paneling, the building would have also maintained its original Class 3 construction rating.

Example 2: Differing Floor and Roof Materials

This structure was designed as a one-story, 3,000 square foot (50 foot by 60 foot) building with 20 foot high metal walls and a metal roof. The roof and walls were insulated with slow burning insulation. The front office area was gypsum wall board on metal studs. The owner needed more storage and requested that the builder add a 50 foot by 30 foot mezzanine over the one-story front office and extend the mezzanine 10 feet into the rear production area. This mezzanine is $\frac{3}{4}$ -inch plywood on top of steel joists – a combustible assembly. Prior to this change, the insurance agent determined that the building would be rated a noncombustible construction Class 3 building. Does this change alter the construction class of the building?





| | |
|--|-------------------------------|
| Total Floor and Roof Area (50' x 60') + (50' x 30') | 4,500 square feet |
| Combustible Floor Area (50' x 30') | 1,500 square feet (33.33%) |
| Noncombustible Roof Area (50' x 60') | 3,000 square feet (66.67%) |

The answer is based on the combination of the floor and roof area since the exterior walls are all noncombustible metal with low flame spread insulation.

Because the exterior wall and roof construction make up 66.67% of the combined roof and floor area in this building, the construction class does not change. According to the ISO SCOPES manual, if the roof and floor area of a building is more than two-thirds noncombustible, the rating will not be downgraded. Therefore, the building retains its construction Class 3 rating. If the combustible storage area had been a few feet more in area, the building class would have dropped to a Class 1.



Metal buildings will normally be rated as a Class 3...

