



Southwest  
New Brunswick  
Service Commission

# Fire-rated drywall and fire separations

In the world of commercial construction, fire separations are a major construction element. That doesn't mean that a reasonably skilled carpenter or builder can't create fire separations if needed, but a little extra knowledge, care and attention is required.

## What's a fire separation?

Simply put, a fire separation is a wall or floor/ceiling assembly that is somewhat more resistant to the impact of fire than a regular wall assembly. On the whole, a fire separation is intended to protect one area of a building from fire in another. The basic intent of Code-required fire separations is to contain a blaze for enough time that

- building occupants can exit safely, and
- fire crews can arrive, assemble, and launch containment efforts before significant building damage takes place.

A vast majority of fire separations are rated to withstand fire for 45 minutes. In large commercial construction, and in some special circumstances, fire separations have to be more robust, with requirements to withstand fire for one or two hours, if not longer.

- Examples of fire separations include (but aren't limited to):
- Between separate apartments in a multi-suite building
- Between floors in commercial buildings
- In exit enclosures, including stairs
- Surrounding special rooms such as janitor's closets
- On the inside of walls that are close to a neighbouring property line or building (see "[spatial separation](#)")

## How is a fire separation built?

For the most part, fire separations are constructed using a special type of fire-resistant drywall. While ordinary drywall is considered to be somewhat resistant to fire, it actually breaks down fairly quickly when exposed to the high temperatures of a blaze. The fire-resistant products, however, are designed to be more resistant to the impact of heat, and will last longer when exposed to fire. But a fire separation is more than just drywall: it's about how the wall or floor-ceiling is constructed, and

sometimes, it's not as intuitive as one may think. For example, it might seem like a fire separation built with steel studs would have a greater resistance to fire than a wood-stud wall, but that's not actually the case. This is because the steel studs transfer heat from one side of the wall to the other far more quickly than wood studs will.

This is why things can grow somewhat complicated when fire separations are involved. But there's some good news: in large-scale commercial buildings, a professional designer has to submit plans, and that designer will be responsible for ensuring the plans detail how all required fire separations will be constructed.

In general, a building unit required to have a fire-rated fire separation is called an "assembly," and there are three ways that an assembly can be given a fire-rating.

- ULC-tested assembly: in this case, the designer will pore look through many examples of various wall/ceiling assemblies that have been tested to a very rigorous standard to determine its fire resistance. In this case, the builder will be given a very strict "recipe" for how to put the assembly together, and there must be no deviations whatsoever, in any of the materials: if the assembly specified states use of Georgia Pacific 5/8" Type X drywall, *then only that brand and thickness of drywall can be used.*
- Code-accepted assemblies: for smaller commercial buildings, the building Code itself has a list of generic assemblies that will provide a given fire-rating. In these cases, different brands of material can be used – so if the assembly says "5/8 Type X gypsum" then a 5/8 Type X made by U.S. Gypsum could be used, as could a 5/8 Type X board made by Certainteed.
- Appendix D: There's a part of the Code that's like a witch's brew guide for fire-rated assemblies. Appendix D is a general, catch-all method for calculating modest fire-rated assemblies. It too, allows for some generic assemblies, and is not brand-specific.

### **A warning about Type "C" drywall**

In the past, there have been situations where contractors have used Type "C" drywall in place of a Type "X" product without calling our office first, and it has led to some challenges. Type "C" drywall is relatively new, and is not mentioned in either the 2010 or 2015 version of the National Building Code. Its Appendix D doesn't recognize the material at all, and the Code book's pre-built recipes for small buildings only recognize Type "X" drywall. That means use of a Type "C" product has to be under the restrictive conditions of a ULC-tested assembly. Certainteed and Georgia Pacific – the two most prominent Type C wallboard manufacturing companies – only have a handful of rated assemblies using Type C products. Simply put, if you want to use Type "C" products, *call us first* – because the last thing anyone wants is to see a whole bunch of expensive drywall installed, only to have us come along and say that it won't work because of a technicality.

## Resources:

[Certaineed systems manual.](#)

[US Gypsum Canadian systems manual.](#)

[Georgia Pacific systems guide.](#) (Note: some of these assemblies may not be acceptable in Canada.)

[National Building Code, 2015 edition.](#) Pages 1099-1175 include general assemblies for Part 9 buildings; pages 620-625 are key parts of Appendix D calculation methods.