

New Updates to NFPA 285 Could Affect Future Exterior Wall Assembly Designs

The need to meet strict energy requirements means architects need new, more versatile insulation materials, such as stone wool for exterior wall assemblies. Using combustible materials poses challenges to the fire-related provisions in the Building Code, including passing the NFPA 285 standard. Non-combustible stone wool insulation can play a key role in developing NFPA 285-compliant wall assemblies, while also helping to meet energy code requirements.

The NFPA 285 test standard is updated every three years, and the latest update occurred in 2019. The 2021 International Building Code references the 2019 version. As states and municipalities update their building codes, the 2019 NFPA 285 test could become a factor for future projects.

What is NFPA 285?

The NFPA 285 “Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components” is a test used to evaluate flame propagation on an exterior wall assembly subjected to a standardized fire exposure. An important thing to remember about NFPA 285 is that it evaluates exterior wall assemblies and not individual components.

Ways to choose materials that avoid triggering

- Avoid using combustible components;
- Choose a weather-resistant barrier that meets 2015 IBC 1403.5, Exception 2;
- Choose a noncombustible insulation, such as stone wool; and
- Choose noncombustible claddings per table 1404.2 of the IBC, such as brick, concrete, stucco or steel

There are different triggers for NFPA 285 testing.

The version of the building code being used for the project, along with the cladding, insulation and building type all play a role in whether the wall assembly triggers the need for NFPA 285 testing. The first step is to check the version of the local or state level code the project jurisdiction is using, and the version of NFPA 285 referenced.

Triggers for NFPA 285 testing include:

- Foam plastic or other combustible insulation materials can require testing
- Combustible exterior cladding, such as metal composite materials (MCM) and high pressure laminates (HPL) on buildings over 40 feet tall
- Combustible weather resistant barriers on buildings over 40 feet tall



Example full wall assembly, including ROCKWOOL Cavityrock and ROCKWOOL Comfortbatt



How is the test conducted?

A testing laboratory builds a two-story concrete structure with an opening on the lower floor to represent a window. The wall assembly, which must be a minimum of 18 feet tall and 13 feet 4 inches wide, is attached to the window side of the two-story concrete structure.

- Testing technicians ignite a burner inside the first-story room and let it burn for five minutes to represent ignition of room contents.
- Testers ignite a second burner located outside the first-story wall opening to represent flashover of room contents.
- Both burners remain ignited for another 25 minutes. After extinguishing the burners, technicians observe the assembly for heat and flame spread for another 10 minutes

2019 NFPA 285 test updates

The 2019 changes to the standard are designed to increase transparency and widen the scope of the test for building inspectors, helping them understand exactly what they should look for when inspecting an exterior wall assembly. The changes include the following:

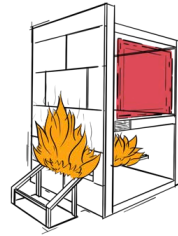
- **Applicable to load-bearing exterior walls:** The update removed the words “non-load-bearing” from the test name. The test assembly doesn’t have to have an applied load but is built as if load-bearing.
- **Added construction types:** The test can now be applicable to building Types I-IV, defined by the International Building Code.
- **Combustible Construction:** The test wall construction now can include combustible materials, such as heavy timber and fire-retardant treated wood.

How is the test evaluated?

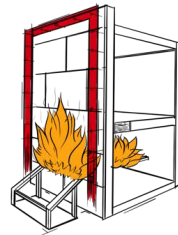
The test evaluates flame propagation characteristics:

- Over the exterior wall surface
- Within the combustible core or components
- Over the interior surface from one floor to the next
- Laterally to adjacent compartments

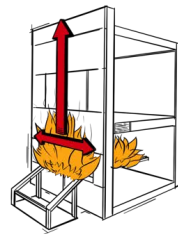
Test evaluators look for the following:



There should be no flame propagation in the second floor.

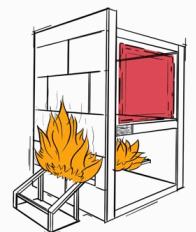


Externally, the flames should not reach 10 feet above the window’s top or 5 feet laterally from the window’s centerline.



Inside and outside the wall assembly, the thermocouples should not exceed 1000°F during the test.

- **Wall joints:** The test wall assembly now requires specific locations for two joints in the exterior veneer and other components within the assembly when panels are used, specifically:
 - One continuous vertical joint from the top of the window opening to the top of the wall — must be 1–2 inches from the window centerline
 - One continuous horizontal joint between 1 and 3 feet above the top of the window
- There are exceptions for brick, exterior insulation finishing systems (EIFS) and stucco.
- **Window header, jamb and sill:** Construction of these components should be closed using the material, such as aluminum sheet metal or steel, that will be used in construction of the building.

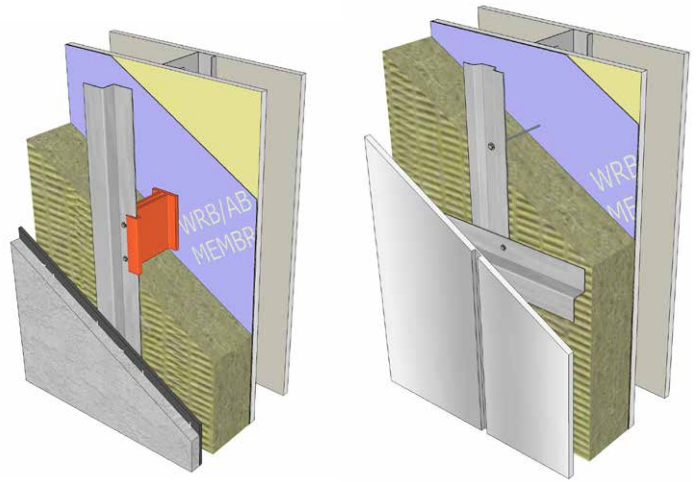




ROCKWOOL fire-rated exterior wall assemblies

NFPA 285 testing is time-consuming and expensive. Using noncombustible stone wool exterior continuous insulation is one way to reach NFPA 285 compliance, especially when you need to balance the demands of increasingly strict energy-efficiency code requirements with the fire safety code.

ROCKWOOL Comfortboard® 110 and Cavityrock® assemblies meet the requirements of the NFPA 285 fire test method. These assemblies provide architects the option to choose from a greater range of cladding and weather-resistant barrier options because stone wool protects vulnerable components behind it.



View the NFPA 285 listings using ROCKWOOL Cavityrock and ROCKWOOL Comfortboard 110



Third-party tested

If you are designing a new exterior wall assembly, ROCKWOOL stone wool products can help the assembly achieve NFPA 285 compliance. ROCKWOOL solutions have been tested by accredited third-party laboratories to meet the conditions of acceptance for NFPA 285.

These tests show that stone wool products do not ignite, burn, support combustion or release flammable vapors when subjected to fire or heat. They achieve a zero rating on both Flame Spread and Smoke Development.

For more information on ROCKWOOL's NFPA 285 tested assemblies or how to incorporate ROCKWOOL stone wool into your design, contact ROCKWOOL Technical Innovation through our **contact form** or at **techservice@rockwool.com**.