



# Fiber Glass and Mineral Wool Insulation as an Alternative to Sprinkler Systems

## Reduce Construction Costs Using Fiber Glass and Mineral Wool Insulation to Omit Sprinklers in Concealed Spaces

There are three basic approaches used in building codes to provide fire safety - detection, suppression, and containment. No single measure guarantees protection in a fire event. Balanced fire protection design blends detection (e.g. fire alarm systems) with active fire suppressions, notably fire sprinklers, and passive measures such as fire-resistive building materials like fire blocking, firestopping, fire-rated floors, walls and doors; pressurized stairways; and other compartmentation elements.

Sprinkler systems are an “active” suppression measure because they are activated either mechanically or electronically in the event of a fire. Active systems typically have moving parts which require maintenance and periodic inspection to assure they will function properly when needed. “Passive” fire protection systems are designed to contain fires, or slow their spread, by means of fire-resistant walls, floors and opening protection, as well as protecting the building from collapsing prematurely due to a fire. Non-combustible insulation materials like fiber glass, rock and slag wool are commonly used in passive fire protection systems.

The North American Insulation Manufacturers Association (NAIMA) strongly supports balanced fire protection, which utilizes integrated safety layers including active protection (such as a suppression systems), along with built-in passive fire and smoke protection features, and detection features to facilitate early

notification and safe egress. Passive fire protection systems, including fireblocking material, are installed to resist the free passage of flames and smoke to other areas of the building through concealed spaces. Fiber glass, rock and slag wool insulation materials are ideally suited for this purpose because they are noncombustible (i.e. contribute minimal fire loading), flexible and low-cost. These products can easily fill voids and concealed spaces where fire and smoke could otherwise progress through a building. It is important that passive measures remain in place and are repaired or replaced when alterations or maintenance is done on the building.

The National Fire Protection Association NFPA 13 Standard for the Installation of Sprinkler Systems specifies the minimum requirements for the design and installation of automatic sprinkler systems in buildings. Building codes require sprinkler systems in many commercial and residential buildings. NFPA 13 recognizes the use of passive fire protection systems and includes specific provisions which allow sprinklers to be omitted in the concealed spaces of buildings when other specific requirements are met.

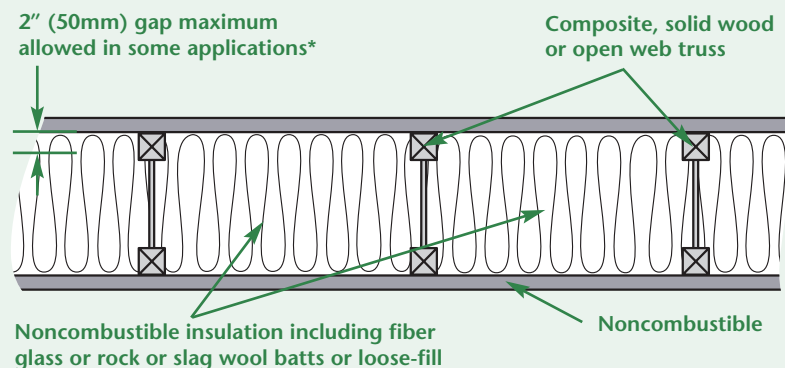
Chapter 8 of the 2013 edition of NFPA 13 addresses sprinkler installation requirements. **Section 8.15.1.2 Concealed Spaces Not Requiring Sprinkler Protection** provides several exceptions for concealed spaces which do not require sprinkler installation. The following sub-sections deal specifically with insulated spaces above ceilings.

- **8.15.1.2.7** Concealed spaces filled with noncombustible insulation shall not require sprinkler protection.
- **8.15.1.2.7.1** A maximum 2 in. (50 mm) air gap at the top of the space shall be permitted.
- **8.15.1.2.8** Concealed spaces within wood joist construction and composite wood joist construction having noncombustible insulation filling the space from the ceiling up to the bottom edge of the joist of the roof or floor deck, provided that in composite wood joist construction the joist channels are firestopped into volumes each not exceeding 160 ft<sup>3</sup> (4.53 m<sup>3</sup>) to the full depth of the joist with material equivalent to the web construction, shall not require sprinkler protection.

- **8.15.1.2.17\*** Concealed spaces formed by noncombustible or limited-combustible ceilings suspended from the bottom of wood joists and composite wood joists with a maximum nominal chord width of 2 in. (50.8 mm), where joist spaces are full of non-combustible batt insulation with a maximum 2 in. (50.8 mm) air space between the roof decking material and the top of the batt insulation shall not require sprinklers.

These exceptions allow the builder to eliminate sprinklers within the ceiling cavities when noncombustible insulation, including either batt or loose-fill materials, fills those cavities. Please refer to the NFPA 13 standard for a complete list of concealed spaces not requiring sprinkler protection. NFPA 13R Standard for the Installation of Sprinkler

**Figure 1: NAIMA Recommendations For Insulated Spaces Above Ceilings**



NAIMA's recommendation is to fill the cavity between the ceiling finish and the subfloor with noncombustible fiber glass or rock or slag wool insulation.

This diagram was developed by NAIMA for clarity.

Systems in Low-Rise Residential Occupancies and NFPA 13D Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes contain similar allowances for omitting sprinklers in concealed spaces. Refer to those documents for the specific details.

These exceptions should be brought to the attention of your customers and builders since they may receive direct benefits in the way of reduced material and installation costs, by reducing the number of sprinklers that must be installed in certain buildings. Additionally, have the design reviewed and approved by a knowledgeable design professional and local building official.

The ICC family of building codes, including the International Residential Code (IRC), International Building Code (IBC), and International Fire Code (IFC), recognize these exceptions and often refer to NFPA Standard 13 within the individual codes.

\* NOTE: NFPA 13 - 2013 contains an allowance for a 2" air gap between the insulation and the subfloor, prior versions of the standard do not contain this allowance.

### About NAIMA

NAIMA is the association for North American manufacturers of fiber glass, rock wool, and slag wool insulation products. Its role is to promote energy efficiency and environmental preservation through the use of fiber glass, rock wool, and slag wool insulation, and to encourage the safe production and use of these materials.

NAIMA, continuing its members' commitment to safety, has established a renewed Product Stewardship Program, which embodies the components of the earlier OSHA-NAIMA Health and Safety Partnership Program (HSPP). The HSPP was a comprehensive eight-year partnership with OSHA, which NAIMA completed in May 2007, and now NAIMA incorporates these safe work practices in NAIMA's Product Stewardship Program.

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