

Polymer-based insulation and fire safety

This information sheet provides an introduction to the use of polymer-based insulation materials for soffits and as part of a rainscreen facade system.

Introduction

Polymer-based insulation materials play an important role in energy efficient buildings.

These materials are commonly used on soffits and as part of the total rainscreen facade system in commercial buildings.

They are more thermally efficient, have better air and water vapour barrier properties, and require less materials and labour than fibrous insulation.

This helps to reduce a building's energy and carbon footprint.

The compliance and fire safety of these building systems is governed by the National Construction Code 2019 (NCC).

This requires approved construction materials that have been installed correctly and maintained in accordance with manufacturer guidelines and all related building and construction codes and standards.



Rainscreen facades and polymer insulation

Figure 1 is a simplified schematic diagram of an insulated rainscreen facade system (cavity fire barrier breaks at each floor level would be included in the full design).

In a rainscreen facade system, cladding provides the outer protective layer that shields the exterior wall from direct rain and may have very little thermal insulation value.

Instead, insulation forms an underlying separate layer against the exterior building wall.

When used in a rainscreen facade system, thermoset polymer insulation boards such as polyisocyanurate (PIR) and phenolic foam enhance thermal insulation and can act as a barrier to prevent air leakage.

These polymer-based insulation boards and steel faced sandwich insulation panels with a PIR core do not melt or drip when exposed to heat and can be used safely as part of a compliant full facade system under the NCC 2019.

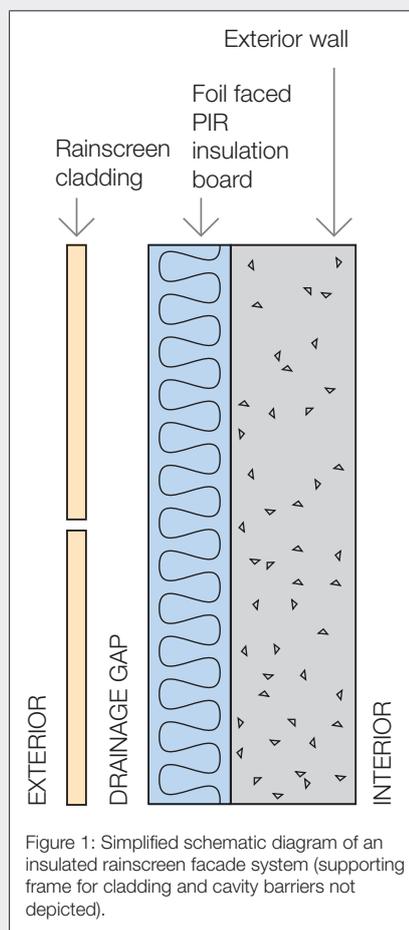


Figure 1: Simplified schematic diagram of an insulated rainscreen facade system (supporting frame for cladding and cavity barriers not depicted).

The fire performance of a facade system cannot be predicted purely based on small-scale fire tests of individual components.

Rather, it depends on the interaction of all components and the compliant installation of these systems in accordance with all local and national codes and standards.

AMBA supports the NCC's focus on performance-based solutions and large-scale fire testing of facades in line with AS 5113: Fire Propagation Testing and Certification of External Walls of Buildings and Verification Method CV3.

This test requires the large-scale evaluation of the fire performance of the full facade system including the rainscreen, insulation and cavity barriers.

Polymer insulation for soffits

For building interiors, effective 1 May 2019, all soffit insulation in commercial buildings must also be compliant with AS 5637.1: Determination of Fire Hazard Properties – Wall and Ceiling Linings.

This is similar to the former AS ISO 9705 fire test, with the exception that the test specimen must now be fixed to three walls and the ceiling of the test room, rather than just the wall or ceiling.

Under this revised test protocol, thermoset polymer insulation materials that do not melt when exposed to heat such as PIR and phenolic foam with foil facers usually achieve a Group Rating of 2 or 3.

Group 2 rated products can be used safely in most building applications excluding fire isolated exits, fire control rooms and un-sprinklered public corridors.

The same thermoset polymer insulation materials with a six-millimetre fibre-cement facing can achieve a Group 1 rating – which provides for use in most applications.

Building professionals considering thermoplastic polymer insulation materials that melt when exposed to heat should request

a copy of a test report for the product under AS 5637.1 from a NATA-certified laboratory.

For a full list of Group Ratings and permitted uses for polymer-based insulation materials, building professionals should consult Table 3 Specification C1.10 in the NCC 2019 Volume One.

Safety is our priority

AMBA's priority is to foster a safe built environment for Australians – ensuring our buildings are designed and constructed to protect the people that construct, live and work in them.

We are committed to working with industry, government, authorities and fire safety professionals to share knowledge and best practice in further advancing the safety of Australian buildings.

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