

Ensuring Compliance for Under Slab Insulation:

A Specifier's Guide



**Fletcher
Insulation**

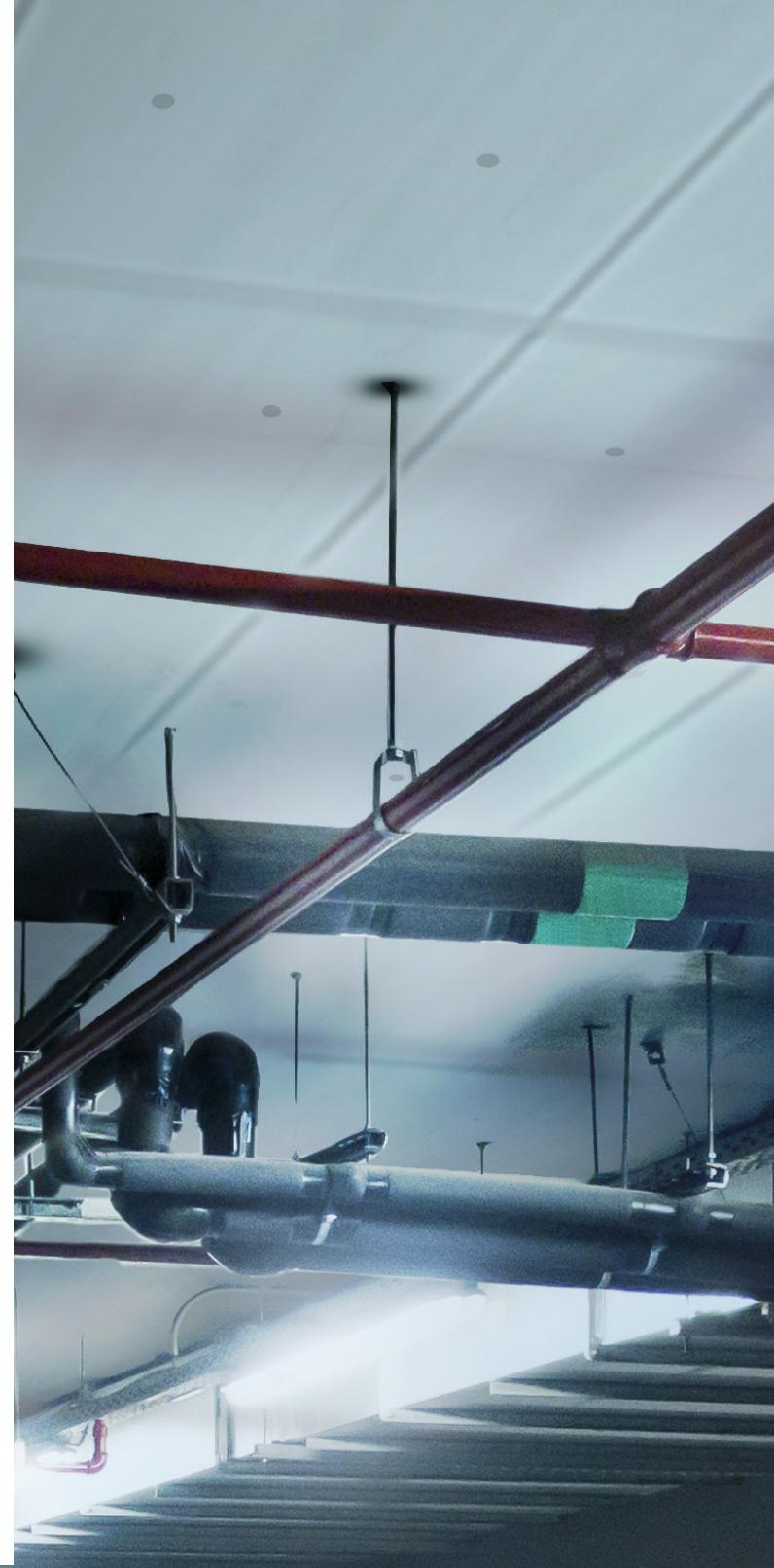
Building Better, Together

INTRODUCTION

The last few years has seen a compliance crisis in Australian construction. Significant breaches and acts of negligence have occurred and been widely publicised, with the fallout affecting all sectors of the industry. But compliance breaches are not always driven by wilful negligence - all it takes is a mistake of fact or ignorance towards relevant standards to specify and install non-compliant products in construction. Products that were compliant at one time may no longer satisfy the updated requirements in the relevant codes and guidelines, or products that are compliant may be installed in incorrect applications. For this reason, it's imperative that designers and specifiers stay up to date with the relevant guidelines.

Soffit insulation is one such area. Following changes to AS5637.1:2015 - *Determination of fire hazard properties: Wall and ceiling linings* in the updated National Construction Code (NCC) of 2016, some insulation products that were previously compliant with deemed to satisfy provisions became non-compliant, pending testing¹ in accordance with the new requirements. When the three-year concession period for manufacturers to update their certifications ended in 2019, not all soffit insulation products on the market had been tested in accordance with the updated requirements.

This whitepaper will take a detailed look at the changes to testing requirements and why this can be an issue for specifiers. It will also look at the current NCC requirements surrounding group numbers and finish with an examination of how rigid glasswool board can satisfy these requirements.





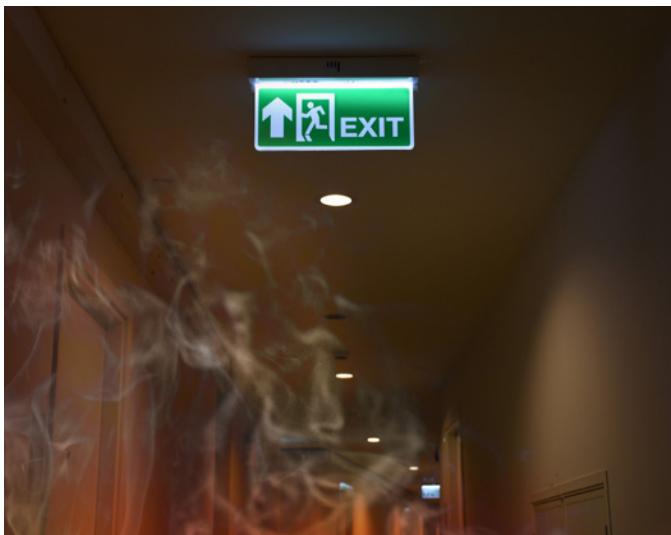
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BACKGROUND TO CHANGES TO THE NCC

As part of the building envelope, suspended slabs must be insulated in order to comply with the National Construction Code (NCC) section J requirements.² It has long been a requirement that insulation products used as a wall or ceiling lining must comply with a designated Group Number, based on application and building class. A Group Number is determined in accordance with AS5637.1 - *Determination of fire hazard properties: Wall and ceiling linings*. The NCC 2016 referenced the 2015 iteration of AS5637.1, which stated that in order to achieve a Group Number, unless the material performance correlation between corn calorimeter test and room test results were known, all products were required to be tested in line with the AS ISO 9705 standard full room fire test.³ The test requires materials to be tested in a specific test room with the material on the ceiling and three walls of the test room.⁴

Prior to this, some insulation products may have been tested only in their intended applications - soffit insulation, for example, would likely have been tested only in ceiling⁵ applications. The NCC 2016 built in a three-year grace period to allow manufacturers to move their existing stock and have their products tested under the updated standard.⁶

It is noncompliant to supply product into a soffit insulation application without the appropriate Group Number as determined in accordance with the standard. This means that as of May 2019 when the updated NCC came into effect, any under slab or soffit insulation products which had not been tested in line with AS 5637.1 were no longer deemed compliant. However, this does not necessarily mean they were removed from sale, and in September 2019 the Australian Construction Industry Forum released an alert to specifiers and construction professionals to be on the lookout for noncompliant materials as importers and manufacturers sought to liquidate their remaining stock.⁷



UNDERSTANDING THE CURRENT REGULATORY FRAMEWORK

The NCC requirements for wall and ceiling linings (which include under (suspended) slab insulation) are prescriptive and outline the minimum performance a product must achieve in order to comply. Specification C1.10 (section 4) of the Building Code of Australia Vol 1 2019 (BCA) contains wording as follows:⁸

Wall and ceiling linings:

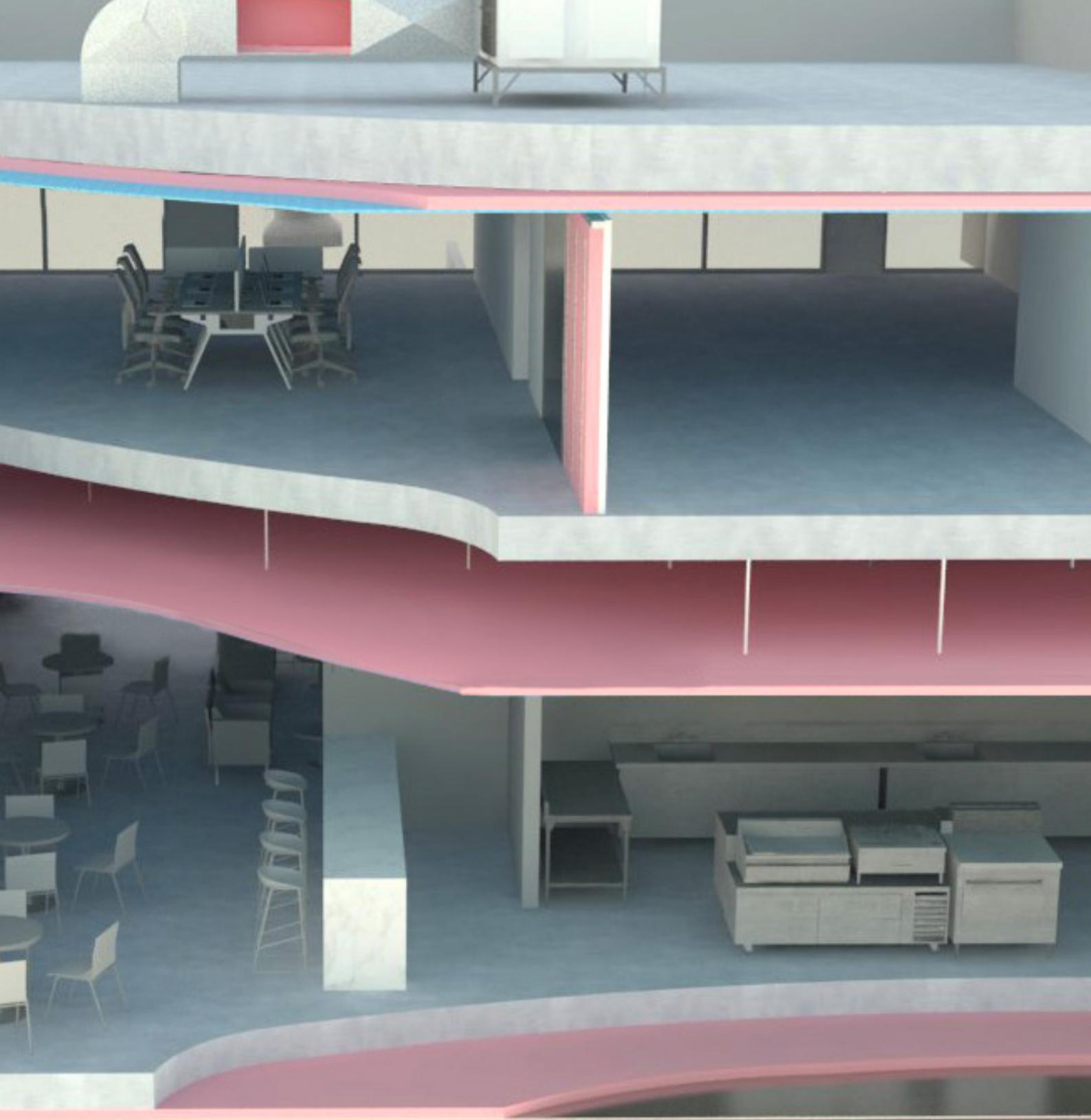
- a) *A wall or ceiling lining system must comply with the group number specified in Table 3 and for buildings not fitted with a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification E1.5 have:*
 - i) *a smoke growth rate index not more than 100; or*
 - ii) *an average specific extinction area less than 250m²/kg.*
- b) *A group number of a wall or ceiling lining and the smoke growth rate index or average specific extinction area must be determined in accordance with AS 5637.1.*

As referenced in the NCC, AS5637.1:2015 - *Determination of fire hazard properties: Wall and ceiling linings* contains all the testing requirements for determining the relevant Group numbers.

Under AS5637.1, group numbers are assigned based on performance when subjected to testing as follows:

- Group 1—material that does not reach flashover when exposed to 100 kW for 600s followed by exposure to 300 kW for 600s.
- Group 2—material that reaches flashover following exposure to 300 kW within 600s after not reaching flashover when exposed to 100 kW for 600s.
- Group 3—material that reaches flashover in more than 120s but within 600 s when exposed to 100 kW.
- Group 4—material that reaches flashover within 120s when exposed to 100 kW.

Test methods to achieve a Group Number are set out in AS ISO 9705. AS ISO 9705:2003 - *Fire tests—Full-scale room test for surface products* specifies the test method to evaluate the reaction of wall and ceiling products in a controlled small-room fire scenario, which starts under well-ventilated conditions in a corner of a specified room with a single open doorway. The test involves a propane burner placed in the room emitting a heat output of 100 kW for 10 minutes, and 300 kW for an additional 10 minutes. In addition to establishing flashover points, the test analyses combustion gases and smoke production.⁹ To achieve a Group 1 rating, the material must not reach flashover during the test.



AVOIDING NON-COMPLIANT PRODUCTS

One of the easiest ways to be sure that the insulation product specified is fully compliant is to specify Group 1 products wherever possible. While Group 2 and 3-rated materials may be suitable in some applications, by opting for Group 1-rated materials, specifiers can be confident that the product will offer the best possible performance in the intended application. In some applications, particularly those in unsprinklered buildings, and for any fire-isolated exits and control rooms, nothing less than Group 1 will satisfy the requirements.¹⁰ When it comes to insulation, products that perform better will ultimately save lives in a fire emergency, meaning that from an ethical standpoint, specifiers should always opt for the highest-performing solution available for the given application.

Specifiers should also double check any claims made by the manufacturer to ensure that the testing has been carried out in accordance with the updated standard. In order to achieve a Group Number, testing must have been carried out at a National Association of Testing Authorities accredited laboratory for the AS ISO 9705 test method.

Specifiers can also request to see fire test reports from the laboratory to confirm that the product was tested to AS 5637.1. The test should state both Group Numbers for tested products, as well as SMOGRARC indexes.



Pink® Thermal Slab- Glasswool Insulation Board for Soffit applications

RIGID GLASSWOOL BOARD FOR UNDER (SUSPENDED) SLAB SOFFIT APPLICATIONS

Rigid glasswool board is ideal for under (suspended) slab applications as it achieves a Group 1 rating in accordance with AS5637.1. It is also classified as non-combustible under AS 1530.1-1994 (R2016) - *Methods for fire tests on building materials, components and structures: Combustibility test for materials*.

In addition to its excellent fire resistance, it is incredibly lightweight and has good flexibility, making it an ideal material for installation in under (suspended) slab soffit applications.¹¹ As an insulation material, glasswool displays excellent thermal resistance and acoustic performance, significantly reducing both airborne and structure-borne noise.

Glasswool provides excellent sustainability outcomes for a wide range of residential, commercial and industrial applications. It is made of predominantly recycled materials, and the small percentage that is newly fabricated consists of abundant naturally occurring substances, meaning that the extraction and refinement of these materials is energy conservative and not damaging to the natural environment. Through its high thermal performance, glasswool board insulation significantly reduces energy consumption, along with decreasing heating and cooling costs for clients.

As with all soffit insulation products, specifiers should ensure that any suppliers they engage with can supply the relevant test certificates in line with the requirements of NCC 2019 prior to specification.

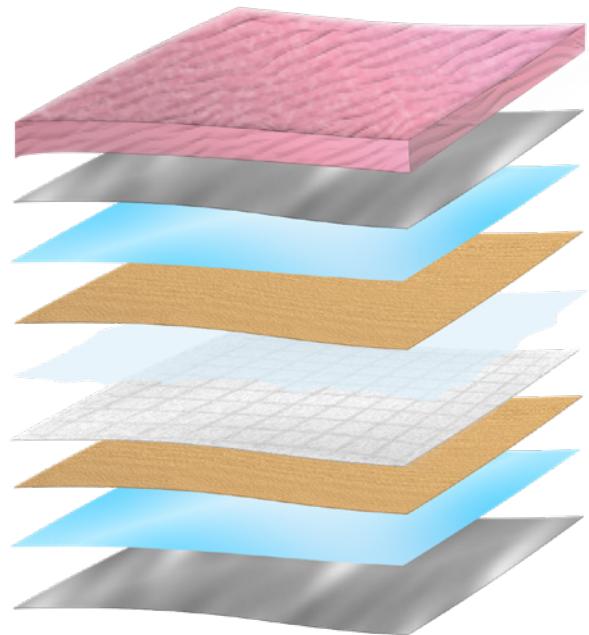




FLETCHER INSULATION

With the combined knowledge of over 90 years' experience at the forefront of insulation technology development in Australia, Fletcher Insulation provides high performance thermal and acoustic insulation solutions to the Australian architecture and design industry. With an unwavering commitment to compliance and quality, Fletcher Insulation prides itself on providing the best value and quality advice to customers. With a wide range of products for projects across the residential, commercial and HVAC sectors, Fletcher Insulation is able to tailor its solutions to meet the needs of designers and specifiers.

Fletcher Insulation's Pink Thermal Slab is an Australian-made under slab Soffit insulation solution manufactured from up to 85% recycled content. Comprising a rigid glasswool board combined with a Sisalation® reflective foil laminate adhered to one side, it is ideal for use in commercial under slab soffit applications where thermal properties are pivotal in controlling temperature fluctuations of concrete roofs, floors and walls. It provides excellent fire performance for wall and ceiling lining applications, achieving an AS ISO 9705 Group 1 NCC 2019 fire classification in accordance with AS5637.1. It is available in various thicknesses to meet the specifications of any project, providing optimal energy efficiency performance for a range of system designs.



Pink Thermal Slab product layers

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- ³ Australian Building Codes Board. "NCC 2016 Volume One: Section A General Requirements - Specification A1.3 Documents Adopted by Reference". Published 2016. Accessed 20 May 2020. <https://ncc.abcb.gov.au/ncc-online/NCC/2016-A1/NCC-2016-Volume-One/Section-A-General-Requirements/Specification-A13-Documents-Adopted-By-Reference/1-Schedule-Of-Referenced-Documents?inlineLink=%7BC34D61F2-B4DC-4F23-801B-D7840F6CC987%7D>
- ⁴ Warrington Fire. "Fire hazard properties of internal wall and ceiling linings". Accessed 20 May 2020. <https://www.warringtonfire.com/resources/fire-hazard-properties-of-internal-wall-and-ceiling-linings>
- ⁵ Insulation Australasia. "Industry Alert:2019 NCC Fire Compliance Requirements for Soffit Insulation". 2019. Accessed 20 May 2020. <http://www.insulationaustralia.org/wp-content/uploads/2019/08/Insulation-Australasia-Industry-Alert-NCC-May-2019.pdf>
- ⁶ Above n3.
- ⁷ Above n1.
- ⁸ Australian Building Codes Board. "NCC 2019 Volume One: Section C - Fire Resistance". Accessed 6 April 2020. <https://ncc.abcb.gov.au/ncc-online/NCC/2019/NCC-2019-Volume-One/Section-C-Fire-Resistance/Specification-C110-Fire-Hazard-Properties/4-Wall-And-Ceiling-Linings?inlineLink=30118934-74a5-4290-bd41-b4a17f745060>
- ⁹ Flame Retardants. "ISO 9705:1993(E) - THE ROOM/CORNER TEST". Accessed 6 April 2020. <http://fr.polymerinsights.com/testing/flammability/iso-9705>
- ¹⁰ Above n6.
- ¹¹ Marhoon, I. & Rashid, A. "Mechanical and Physical Properties of Glass Wool-Rigid Polyurethane Foam Composites". Al-Nahrain University. College of Engineering Journal (NUCEJ) Vol.18 No.1, 2015 pp.41 - 49. Accessed 6 April 2020. <https://pdfs.semanticscholar.org/43de/58f678753d25cad492a04609af336bf67821.pdf>

All information provided correct as of June 2020