

# FLOOR LININGS AND FLOOR COVERINGS – CRITICAL RADIANT FLUX (CRF) AND TESTING FOR CRITICAL HEAT FLUX (CHF IN kW/m<sup>2</sup>) AT EXTINGUISHMENT AND NON-CONFORMING BUILDING PRODUCTS

EFFECTIVE FROM JANUARY 2026

A person who designs, manufactures, imports, supplies or installs floor linings and floor coverings is a **person in the chain of responsibility** and must ensure the **building products** they design, manufacture, import, supply or install, are not **non-conforming building products** (NCBP). This includes ensuring the **building product** meets **relevant regulatory provisions** and complying with relevant duties, such as to provide **required information**.

Under Queensland's non-conforming building product laws, a **building product** is any material or other thing associated with, or that could be associated with, a building.

A building product is a **non-conforming building product** for an **intended use** if:

- it is not, or will not be, safe; or
- it does not, or will not, comply with the **relevant regulatory provisions**, including the National Construction Code (NCC); or
- the product does not perform, or is not capable of performing, for the use to the standard it is represented to perform by or for a person in the chain of responsibility for the product.

The **relevant regulatory provisions** under the *Queensland Building and Construction Commission Act 1991* (Qld) (QBCC Act) include the *Building Act 1975* (Qld) (Building Act) and *Plumbing and Drainage Act 2018* (Qld) (PD Act) which respectively incorporate Volume One and Volume Two of the NCC as the **Building Code of Australia (BCA)**, and Volume Three of the NCC as the **Plumbing Code of Australia (PCA)**. A building product must comply with the NCC as a **relevant regulatory provision**.

**Required information**, for a **building product**, means information about the product that for each **intended use** of the product, states or otherwise communicates, among other things, the suitability of the product for the intended use. All building products, imported into, or manufactured in Australia, and supplied into Queensland, must have *evidence of suitability* as prescribed in the NCC.

When floor linings and floor coverings are installed in a Class 2 to 9 building, the NCC Performance Requirements are found in NCC Volume One. The relevant performance requirement is C1P4 – Safe conditions for evacuation.

The **Performance Requirements** for safe conditions for evacuation, in a building or structure must:

- maintain tenable conditions during occupant evacuation, a material and an assembly must, to the degree necessary, resist the spread of fire and limit the generation of smoke and heat, and any toxic gases likely to be produced, appropriate to—

- (a) the evacuation time; and
- (b) the number, mobility and other characteristics of occupants; and
- (c) the function or use of the building; and
- (d) any active fire safety systems installed in the building.

These *Performance Requirements* are deemed to have been satisfied in part, if clause C2D11 Fire Hazard Properties has been complied with.

NCC clause C2D11 specifies that floor linings and floor coverings must comply with Specification 7.

Specification 7 sets out the requirements in relation to the fire hazard properties of linings, materials and assemblies in Class 2 to 9 buildings. S7C3 Floor linings and floor coverings states:

- (a) a **critical radiant flux** not less than that listed in Table S7C3; and
- (b) in a building not protected by a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification 17, a maximum smoke development rate of 750 percent-minutes; and
- (c) a group number complying with S7C6(b), for any portion of the floor covering that is continued more than 150 mm up a wall.

Table S7C3 sets out the minimum **critical radiant flux** (CHF in kW/m<sup>2</sup>) of floor linings and floor coverings.

**Critical radiant flux** (CRF) as defined in the NCC means –

**“the critical heat flux at extinguishment (CHF in kW/m<sup>2</sup>) as determined by AS ISO 9239.1”.**

AS ISO 9239.1 defines **critical heat flux** as the –

**“heat flux at which the flame extinguishes (CHF) or the heat flux after the test period of 30 min (HF-30), whichever is the lower value (i.e. the flux corresponding with the furthest extent of spread of flame within 30 min)”.**

According to section 7.2.4 of the standard test procedure outlined in AS ISO 9239 Section 7.2, the test shall be terminated after 30 minutes, unless the sponsor requires a longer test duration.

However, the Governing Requirements listed in NCC clause A4G2 states, **“The NCC overrules any difference between the NCC (including the ABCB Housing Provisions) and a primary referenced document, including any secondary referenced document.”**

To clarify, the allowance of the test to terminate after 30 minutes, may not be to extinguishment as per the NCC definition of **critical radiant flux** (the **critical heat flux** at extinguishment (CHF in kW/m<sup>2</sup>)). Under AS ISO 9239.1, a test terminated after 30 minutes can still give a figure that can be defined as **critical heat flux**. However, this is designated as (HF-30). A test terminated at extinguishment in AS ISO 9239.1 is designated as (CHF). Only a test to extinguishment can give a figure that can be defined as **critical radiant flux** (CRF) in the NCC.

Therefore, it is important for all practitioners and persons in the chain of responsibility to check any evidence of suitability regarding an achieved critical heat flux and ensure it is to the NCC definition for CRF, that is, CHF tested to extinguishment (CHF in kW/m<sup>2</sup>), to meet the **Deemed-to-Satisfy** (DtS) provisions of the NCC. Otherwise, a **Performance Solution** may be required.

All building products imported into, or manufactured in Australia, must have evidence of suitability as prescribed in the NCC.

Compliance with the NCC is achieved by complying with the Governing Requirements and the Performance Requirements.

Under NCC 2022 Section A, Part A5 on design and construction documentation, subsection A5G1 – Suitability, it is required that, **“a building and plumbing or drainage installation must be constructed using materials, products, plumbing products, forms of construction and designs fit for their intended purpose to achieve the relevant requirements of the NCC.”** To be considered fit for purpose, these elements must be backed by suitable evidence in accordance with NCC A5G2, A5G3 or A5G4, and must be properly constructed or installed.

For more information refer to the NCC 2022 parts:

- A5G2 Evidence of suitability—Volumes One, Two and Three [2019: A5.1]; and
- A5G3 Evidence of suitability—Volumes One and Two (BCA) [2019: A5.2]

The Australian Building Codes Board (**ABC**B) have produced a Handbook for Evidence of Suitability. The Handbook provides a framework for guidance in selecting the appropriate forms of evidence using a risk-based approach.

## Further Information

A person in the chain of responsibility must ensure the building products they import, manufacture, supply, install, or design are not non-conforming building products, or otherwise risk incurring significant penalties. This includes ensuring the building product meets relevant regulatory provisions which includes accompaniment of required information such as the evidence of suitability as provided for by the NCC 2022.

## Definitions

A **building product**<sup>1</sup> is any material or other thing associated with, or that could be associated with, a building.

**Associated with**<sup>2</sup> in relation to a building, means incorporated into, or connected to, a building by the carrying out of relevant work.

**Relevant work**<sup>3</sup> means—

- (a) building work under the *Building Act 1975* (Qld) other than work mentioned in section 5(2) of that Act; or
- (b) plumbing work under the *Plumbing and Drainage Act 2018* (Qld) directly connected to a building; or
- (c) drainage work under the *Plumbing and Drainage Act 2018* (Qld) directly connected to a building.

A building product is a **non-conforming building product**<sup>4</sup> for an intended use if—

- (a) the association of the product with a building for the use—
  - (i) is not, or will not be, safe; or
  - (ii) does not, or will not, comply with the relevant regulatory provisions; or
- (b) the product does not perform, or is not capable of performing, for the use to the standard it is represented to perform by or for a person in the chain of responsibility for the product.

**Intended use**<sup>5</sup> for a building product, means a use for which the building product is intended to be, or is reasonably likely to be, associated with a building.

**Relevant regulatory provisions**<sup>6</sup> means —

- (a) in relation to relevant work mentioned in the definition relevant work, paragraph (a)—the building assessment provisions under the *Building Act 1975* (Qld); or
- (b) in relation to relevant work mentioned in the definition relevant work, paragraph (b) or (c) - the *Plumbing and Drainage Act 2018* (Qld).

**Required information**<sup>7</sup>, for a building product, means information about the product that —

- (a) for each intended use of the product, states or otherwise communicates the following—
  - (i) the suitability of the product for the intended use and, if the product is suitable for the intended use only in particular circumstances or subject to particular conditions, the particular circumstances or conditions;
  - (ii) instructions about how the product must be associated with a building to ensure it is not a non-conforming building product for the intended use;
  - (iii) instructions about how the product must be used to ensure it is not a non-conforming building product for the intended use;

<sup>1</sup> QBCC Act, section 74AB(1).

<sup>2</sup> QBCC Act, section 74AA.

<sup>3</sup> QBCC Act section 74AA.

<sup>4</sup> QBCC Act section 74AB(2).

<sup>5</sup> QBCC Act section 74AA.

<sup>6</sup> QBCC Act section 74AA.

<sup>7</sup> QBCC Act, section 74AG(7).

(b) complies with the requirements for the information, if any, prescribed by regulation for this definition.

A person is **a person in the chain of responsibility**<sup>8</sup> for a building product if—

(a) the person—

- (i) designs, manufactures, imports or supplies the building product; and
- (ii) knows, or is reasonably expected to know, the product will or is likely to be associated with a building; or

(b) the person installs the product in a building in connection with relevant work; or

(c) the person is an architect or engineer who, in designing a building, specifies that the product be associated with the building.

**Accredited Testing Laboratory**<sup>9</sup> means one of the following—

- (a) An organisation accredited by the National Association of Testing Authorities Australia (NATA) to undertake the relevant tests.
- (b) An organisation outside Australia accredited to undertake the relevant tests by an authority recognised by NATA through a mutual recognition agreement.
- (c) An organisation recognised as being an Accredited Testing Laboratory under legislation at the time the test was undertaken.

**Performance Requirement**<sup>10</sup> means a requirement which states the level of performance which a Performance Solution or Deemed-to-Satisfy Solution must meet.

**Performance Solution**<sup>11</sup> means a method of complying with the Performance Requirements other than by a Deemed-to-Satisfy Solution.

**Deemed-to-Satisfy Solution**<sup>12</sup> means a method of satisfying the Deemed-to-Satisfy Provisions.

**Deemed-to-Satisfy Provisions**<sup>13</sup> means provisions which are deemed to satisfy the Performance Requirements.

**Product Technical Statement**<sup>14</sup> means -a form of documentary evidence stating that the properties and performance of a building material, product or form of construction fulfil specific requirements of the NCC, and describes—

- (a) the application and intended use of the building material, product or form of construction; and
- (b) how the use of the building material, product or form of construction complies with the requirements of the NCC Volume One and Volume Two; and
- (c) any limitations and conditions of the use of the building material, product or form of construction relevant to (b).

## Useful links

[ABCB Handbook – Evidence of suitability](#)

## Disclaimer

The information provided in this fact sheet is for educational purposes only. Although the Queensland Building and Construction Commission (QBCC) endeavours to provide accurate and current information, it does not warrant, represent, or guarantee that the information communicated in this fact sheet is in all respects accurate, complete and current.

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If you have any questions as to how the NCBP laws apply to you, you should obtain appropriate independent professional advice regarding how to discharge your duties under the *Queensland Building and Construction Commission Act 1997* (QBCC Act) and achieve compliance with relevant regulatory provisions for building products. This is especially important if you (or your company) intend to later rely upon that advice to demonstrate satisfaction of your duties under Part 6AA of the QBCC Act or other legislative obligations.

<sup>8</sup> QBCC Act, section 74AE.

<sup>9</sup> NCC 2022 Volume One, schedule 1 Definitions, Glossary.

<sup>10</sup> NCC 2022 Volume One, schedule 1 Definitions, Glossary.

<sup>11</sup> NCC 2022 Volume One, schedule 1 Definitions, Glossary.

<sup>12</sup> NCC 2022 Volume One, schedule 1 Definitions, Glossary.

<sup>13</sup> NCC 2022 Volume One, schedule 1 Definitions, Glossary.

<sup>14</sup> NCC 2022 Volume One, schedule 1 Definitions, Glossary.