

IGNIS LABORATORY ASSESSMENT

VELUX FCM SKYLIGHT NON-COMBUSTIBILITY COMPLIANCE

ASSESSMENT

IGNE-25142-01R I01R00

1 Introduction

Ignis Labs has been engaged to evaluate the application and compliance of the Velux FCM Skylight in accordance with the requirements of the National Construction Code Volume One Building Code of Australia 2022 (BCA) for application in Class 2-9 buildings where non-combustible construction is required. It has also been assessed for use within Class 1 and 10 construction against the skylight requirements of the National Construction Code Volume Two BCA 2022. The Velux Skylight system is a roof window system comprising of an aluminium frame, glazing elements, and related adhesive tape and sealants. Only the Velux FCM fixed skylight with a steel or aluminium curb has been considered as part of this assessment.

In accordance with BCA Clause C2D10, the external walls of buildings of Type A or B construction, including all components incorporated within them are to be non-combustible. The BCA provides concessions for selected elements of the external wall. The components of the Velux Skylight system have been reviewed for its compliance with Clause C2D10 for non-combustible construction, as well as C2D14 for ancillary elements.

The Velux FCM Skylight system is comprised of the following components:

- Rubber gasket
- Double insulated glazing unit
- Aluminium frame
- Aluminium or steel curb
- Steel flashing

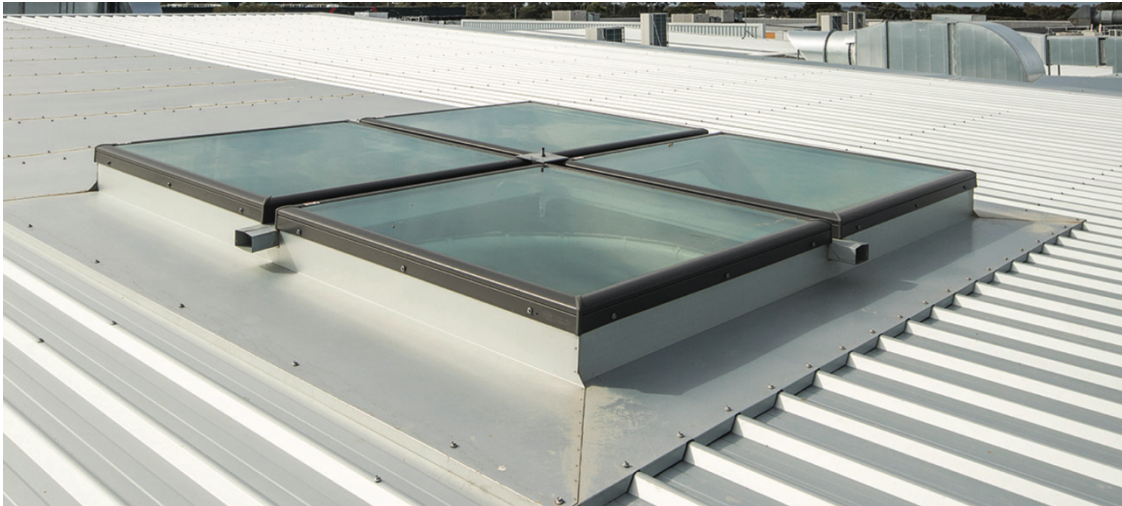
This evaluation applies to the Velux Skylight system for use as a window system where non-combustible construction is required.

2 Description

The Velux Skylight system consists of aluminium framing sections supporting a double glazed unit and fitted directly to the roof with flashing fitted around the perimeter of the skylight.

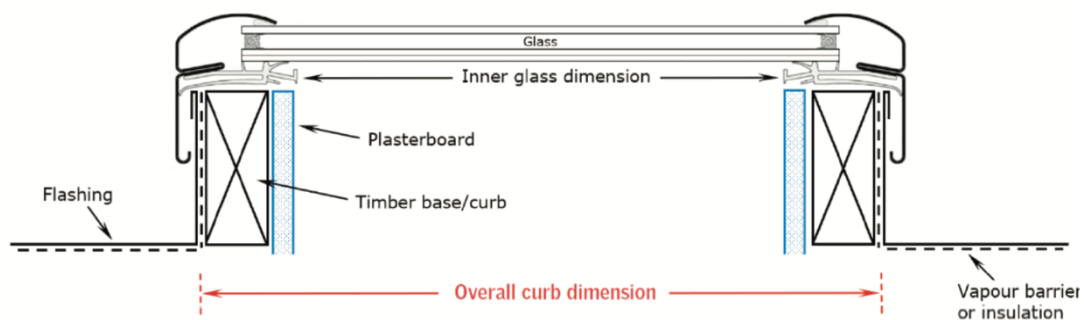
The following figures detail the construction of the subject Velux Skylight.

FIGURE 1:
VELUX FCM SKYLIGHT ASSEMBLY



Source: Velux

FIGURE 2:
VELUX FCM SKYLIGHT ASSEMBLY – ASSEMBLY DETAIL



Source: Velux

It is noted that the above detail shows a timber curb protected with plasterboard. For applications where non-combustible construction is required, the curb is to be composed of steel or aluminium.

The following components of the Velux Skylight system have been identified as combustible:

- Rubber gasket

3 National Construction Code Compliance

3.1 Volume 1 Compliance

BCA Clause C2D10 (5)(b) and (d) identifies steel and aluminium as non-combustible respectively, and as such they may be used wherever a non-combustible material is required.

Therefore, all steel and aluminium used in the Velux FCM skylight system satisfies the non-combustible requirements of the BCA Volume 1.

The metal frame is permitted to have a powder coating applied in accordance with AS/NZS 3715 with a film thickness of between 60 and 80 microns and remain suitable for use where non-combustible construction is required. Clause C2D10 (4)(o) states that a paint, lacquer, or similar surface finish is not required to be non-combustible when used in applications requiring non-combustible construction.

In accordance with the provisions of the BCA Clause C2D10 (4) several other building elements are provided concessions to the requirement of being non-combustible when used on the external façade of buildings. The concessions include:

- The glazing unit - Clause C2D10(4)(e): glazing, including laminated glass and associated adhesives.
- The rubber gasket - Clause C2D10(4)(a): gaskets.

3.2 Volume 2 Compliance

Clause H3D4 of the NCC 2022 Volume 2 states that compliance with Part 9.3 of the ABCB Housing Provisions is deemed to satisfy Performance Requirement H3P1 for fire protection for separating walls and floors. Part 9.3.3 relates to skylights that are to be installed within a roof required to have a non-combustible covering.

FIGURE 2:

ABCB HOUSING PROVISIONS PART 9.3.3

— 9.3.3 Roof lights



Combustible roof lights, skylights or the like installed in a roof or part of a roof required to have a non-combustible covering must—

- have an aggregate area not more than 20% of the roof or part of the roof; and
- be not less than 900 mm from the vertical projection of a separating wall extending to the underside of the roof covering.

The Velux FCM skylight meets the requirements the NCC Volume 1 for being suitable for use wherever non-combustible materials are required. The intent behind the concessions listed in Clause C2D10 (5) of Volume 1 of the NCC 2022 is that small amounts of combustible materials, when used within walls required to be constructed entirely of non-combustible materials, will not spread fire due to their relative isolation.

The NCC Volume 2 does not include the same concessions as only the exposed lining of the roof system to be non-combustible and as such the use of exposed combustible components carries the risk of spreading fire to other combustible elements of construction.

The combustible elements of the Velux FCM skylight system are limited to the rubber gasket located around the perimeter of the glazing and covered with the aluminium frame as shown above in Figure 3. Where the Velux skylight is installed within 900 mm

of the boundary, the curb is to be composed of aluminium or steel.

In accordance with Clause 9.2.3 (1)(b) of the ABCB housing provisions, the roof lining above a wall that is required to be fire resting must be non-combustible. The combustible components of the Velux FCM skylight are all located above the non-combustible roof covering, and are separated from potentially combustible elements of the roof and ceiling system by non-combustible materials being steel, aluminium, or glass.

It is considered that the combustible components, being isolated from any potential combustible elements of construction within the roof system, present an equivalent risk of fire spread to the permissible combustible elements detailed in Clause C2D10 (5) of Volume 1 of the NCC 2022. It is therefore deemed that, given the construction and installation details of the Velux FCM skylight, the combustible components do not present a risk for spread of fire and meet the intent of Performance Requirement H3P1 which requires skylights within 900 mm of a separating wall to be non-combustible to prevent spread of flame from an adjacent boundary.

The following limitations are required to apply when the Velux FCM skylight is installed within 900 mm of a boundary:

- The curb must be composed of aluminium or steel.
- The skylight must be fixed closed and non-openable.

3.3 Evidence of Suitability

In accordance with the National Construction Code Clause A5G3 evidence to support that the use of a material, product, form of construction or design meets a Deemed-to-Satisfy Provision may be in the form of a report issued by a an Accredited Testing Laboratory or professional engineer that demonstrates that a material, product or form of construction fulfils specific requirements of the BCA, and sets out the tests the material, product or form of construction has been subjected to and the results of those tests and any other relevant information that has been relied upon to demonstrate it fulfils specific requirements of the BCA.

This report is issued by Benjamin Hughes-Brown, Accredited Laboratory Signatory and Chartered Professional Engineer of Ignis Labs Pty Ltd, 3 Cooper Place, Queanbeyan, NSW 2620 for use under the Deemed-to-Satisfy requirements of the Building Code of Australia 2022. Ignis Labs is accredited by NATA Accreditation Number 20534 with a scope of accreditation including AS 1530.1 relating to combustibility of materials.

This report is by a professional engineer and NATA Signatory of an Accredited Testing Laboratory and serves as a certificate demonstrating evidence of suitability in accordance with BCA 2022 Clause A5G3 (1)(d) and (e).

4 Conclusion

The Velux FCM Skylight system comprising of the components listed above is deemed to comply with the requirements of Clauses C2D10 for non-combustible construction and is therefore permitted for use where non-combustible construction is required within Class 1-10 applications. For Class 1 and 10 applications, the following limitations apply:

- The curb must be composed of aluminium or steel.
- The skylight must be fixed closed and non-openable.



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