

Certificate no: CMNZ10026

Version: Revision 3

Original issue date: 14 April 2022

Version date: 14 September 2023

1. Certificate Holder Details



Cupolex Solutions Ltd

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2. Product Certification Body

BRANZ Limited

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New Zealand

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Complaints: The complaints process for this certificate can be found here:

<https://www.branz.co.nz/codemark-info/complaints-and-appeals/>

Product Certificate

CUPOLEX® ecodome™ System

3. Description of Product

The CUPOLEX® ecodome™ System is a concrete floor system which includes plastic, dome-shaped concrete void formers to create concrete slab-on-ground floors. Concrete is placed over the modular pod void formers to create a waffle raft slab. The system consists of CUPOLEX® ecodome™ Pods, Beton Stops, Flat Stops, Reinforcing Chairs and Load Spreaders which are all identified by the CUPOLEX® brand on the individual components. The concrete used with the CUPOLEX® ecodome™ System is specified by the Reference Document or by the Chartered Professional Engineer.

4. Intended use of Product

The CUPOLEX® ecodome™ System is a concrete floor system intended for use within slab-on-ground floors on ground with design considerations of:

- on 'good ground' and 'TC1' type ground within the 'Canterbury earthquake region', as defined by the Acceptable Solutions and Verification Methods for NZBC Clause B1 Structure, using design details from the Reference Document; and,
- on ground with an ultimate bearing capacity of minimum 200 kPa pressure (as defined in the Reference Document) and with all other classification details of 'good ground' and 'TC1' type ground, using design details from the Reference Document; or,
- on 'TC2' type ground within the 'Canterbury earthquake region' or moderately to highly expansive soils, when subject to Specific Engineering Design by a Chartered Professional Engineer.

5. New Zealand Building Code Provisions

COMPLIES WITH THE FOLLOWING PROVISIONS OF THE NEW ZEALAND BUILDING CODE (NZBC)

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. Loads arising from self-weight, imposed gravity loads, earthquake, wind, differential movements and time dependent effects including creep and shrinkage (i.e. B1.3.3 (a), (b), (f), (h), (m) and (q)).

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years and B2.3.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.3.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1.

CONTRIBUTES TO THE FOLLOWING PROVISIONS OF THE NZBC:

Clause H1 ENERGY EFFICIENCY: Performance H1.3.1 and H1.3.2E.



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6. Conditions and Limitations of Use

The CUPOLEX® ecodome™ System is a concrete floor system intended for use within slab-on-ground floors for either timber-framed buildings within the scope limitations of NZS 3604, or steel-framed buildings within the scope of limitations of NASH Standard Part 2, or other similar light weight constructions where floor slabs are subject to Specific Engineering Design; and within the following conditions and limitations:

- Built on ground with an ultimate bearing capacity of minimum 200 kPa pressure (as defined in the Reference Document) and with all other classification details of 'good ground' or 'TC1' type ground within the 'Canterbury earthquake region'; or,
- When built on 'TC2' type ground within the 'Canterbury earthquake region' or moderately to highly expansive soils, the CUPOLEX® ecodome™ System is subject to Specific Engineering Design as well as to verification and assessment by a Chartered Professional Engineer.
- Compliance with H1 Energy Efficiency is dependent on the CUPOLEX® ecodome™ System and project-specific details (including supplementary insulation where required) complying with:
- NZBC Acceptable Solution H1/AS1 Fifth Edition and Verification Method H1/VM1 5th Edition for all housing, and buildings up to 300 m²; or,
- NZBC Acceptable Solution H1/AS2, First Edition and H1/VM2, First Edition for buildings greater than 300 m²; or,
- for building consent applications submitted before 3 November 2022, NZBC Acceptable Solution H1/AS1 Fourth Edition, Amendment 4 for all buildings within the scope of this certification.

Reference Documents:

This Product Certificate must be read in conjunction with:

- CUPOLEX ecodome, Technical Manual, Version 1.6.22.

7. Health and Safety Information

Wet concrete is a highly alkali substance and all necessary protective clothing should be worn when handling, placing and working with concrete.

Care must be taken when walking across the installed pods to avoid slipping or mis-stepping

8. Basis for Certification

How the performance requirements in the Building Code were met for each of the provisions. Where used as part of a system, the specific contribution to compliance.

- The following evaluations have been carried out on the CUPOLEX® ecodome™ System to determine compliance with the NZBC:
- A structural assessment has been undertaken on the CUPOLEX® ecodome™ System by BRANZ technical experts.
- A durability and hazardous building materials assessment has been undertaken on the CUPOLEX® ecodome™ System by BRANZ technical experts.



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- An assessment of the CUPOLEX® ecodome™ System against the weathertightness requirements of the NZBC has been completed by BRANZ technical experts.
- Site inspections have been carried out by BRANZ to assess the installation of the CUPOLEX® ecodome™ System against the Reference Document.
- The Reference Document has been examined by BRANZ and found to be satisfactory.
- BRANZ has assessed the Product Quality Plan for the CUPOLEX® ecodome™ System under which the responsibilities are assigned as follows:
- The quality of supply to the market is the responsibility of Cupolex Solutions Ltd.
- Chartered Professional Engineers are responsible for the specific design of the system.
- Cupolex Solutions Ltd trained and approved installers are responsible for the installation of the CUPOLEX® ecodome™ System.

9. Supporting Documentation for Certification

- Acceptable Solutions and Verification Methods for New Zealand Building Code Clause B1 Structure, First edition (Amendment 20), 29 November 2021.
- Acceptable Solutions and Verification Methods for New Zealand Building Code Clause H1 Energy Efficiency, Fourth edition (Amendment 4), 28 November 2019.
- BRANZ Durability Opinion TP13275-001, issue date 12 May 2021. The CUPOLEX® ecodome™ System was assessed to meet the relevant NZBC durability requirement.
- BRANZ Technical Opinion TP13275-001-01, issue date 28 April 2021. The CUPOLEX® ecodome™ System was assessed to meet the relevant NZBC structural requirements.
- H1 Energy Efficiency, Acceptable Solution H1/AS1, Energy efficiency for all housing, and buildings up to 300 m2, Fifth edition, 29 November 2021.
- H1 Energy Efficiency, Verification Method H1/VM1, Energy efficiency for all housing, and buildings up to 300 m2, Fifth edition, 29 November 2021.
- H1 Energy Efficiency, Acceptable Solution H1/AS2, Energy efficiency for buildings greater than 300 m2, First edition, 29 November 2021.
- H1 Energy Efficiency, Verification Method H1/VM2, Energy efficiency for buildings greater than 300 m2, First edition, 29 November 2021.
- NASH Standard Part 2:2019 Light Steel Framed Buildings.
- NZS 3604:2011 Timber-framed buildings.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.



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- The Building Regulations 1992.

10. Supporting Information About Description

PRODUCT SPECIFICATION

The components of the CUPOLEX® ecodome™ System supplied by Cupolex Solutions Ltd are:

- CUPOLEX® ecodome™ Pods - H200 and H260 – 100% recycled polypropylene injection moulded concrete void formers.
- Beton Stops - adjustable concrete stop ends, used to make adjustments on edge beams and around plumbing or where there is not enough space to incorporate a full CUPOLEX® ecodome™ Pod.
- Flat Stops – 100% recycled polypropylene injection moulded forms that fit where Beton Stops are not required, to enclose the pod on the outer edges.
- Reinforcing Chairs – C100 – plastic reinforcement chairs used for the accurate placement of perimeter and internal reinforcing bars.
- Load Spreader – a polypropylene reinforcement column used in the reinforcement of CUPOLEX® ecodome™ Pods.

11. Supporting Information About Intended Use

ASSESSMENT REQUIREMENTS

The system design is dependent on the underlying ground conditions and soil bearing capacity which shall be assessed prior to the design of the system.

DESIGN REQUIREMENTS

For ground with an ultimate bearing capacity of minimum 200 kPa pressure (as defined in the Reference Document) and with all other classification details of 'good ground' and 'TC1' type ground, the structural engineering requirement for the CUPOLEX® ecodome™ System is accounted for in the Reference Document which shall be followed. The CUPOLEX® ecodome™ System must be appropriately designed by a Chartered Professional Engineer for 'TC2' type ground within the 'Canterbury earthquake region' or moderately to highly expansive soils, with due allowance made for the underlying ground conditions and soil bearing capacity. It is recommended in all cases that a geotechnical investigation of the subject site be carried out to inform the structural design. Pipes penetrating concrete or under buildings must be installed in accordance with NZBC Verification Method G12/VM1, NZBC Acceptable Solution G12/AS1, NZBC Acceptable Solution G13/AS2 and NZBC Acceptable Solution G13/AS3, as applicable.

INSTALLATION REQUIREMENTS

Installation shall be carried out in accordance with the Reference Document and the design requirements specified by the Reference Document or the Chartered Professional Engineer, including site preparation, piped service penetration, damp-proof membrane placement, boxing and reinforcing (if required).

MAINTENANCE REQUIREMENTS

Conventional maintenance procedures typical of concrete slabs may be used for slabs constructed using the CUPOLEX® ecodome™ System.



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All exposed perimeter surfaces shall be inspected and cleaned at least annually, and any damage repaired immediately. Protective coatings must be maintained throughout the life of the building, in accordance with the coating proprietor's instructions, to ensure the ongoing protection of the slab.

BUILDING CODE

B1 STRUCTURE

The CUPOLEX® ecodome™ System, when designed and constructed in accordance with the Reference Document and specifically designed by a Chartered Professional Engineer (where applicable), meet the requirements of NZBC Clause B1 as listed above.

B2 DURABILITY

The CUPOLEX® ecodome™ System, when designed, installed and maintained in accordance with the details given in the Reference Document, meet the requirements of NZBC Clause B2.3.1 (a), not less than 50 years and B2.3.2.

E2 EXTERNAL MOISTURE

The CUPOLEX® ecodome™ System, when installed and maintained in accordance with the details given in the Reference Document, meet the requirements of NZBC Clause E2.3.3.

H1 ENERGY EFFICIENCY

The CUPOLEX® ecodome™ System is considered a slab-on-grade for use with the tables in the NZBC Acceptable Solutions or the Verification Method to ascertain the relevant R-value for a given foundation design and its contribution to the buildings energy efficiency.

12. Supporting Information About Conditions and Limitations of Use

All conditions and limitations provided as stated in this Product Certificate.

Signatures

A handwritten signature in blue ink, appearing to read "Claire Falck".

Claire Falck
CEO, BRANZ Limited

All CodeMark certificates that are current must be registered with MBIE. MBIE maintains a register of valid product certificates. [Please find the register here.](#)



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If the certificate is not listed on this register or it appears as (SUSPENDED), it is not a valid CodeMark certificate and does not have to be accepted by a building consent authority as establishing compliance with the New Zealand Building Code.



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