



Evaluation Report CCMC 13692-R GenStone

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1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “GenStone”, when used as a high density, polyurethane plastic cladding system in new and retrofit constructions falling under Part 9 of the NBC 2010 in accordance with the conditions and limitations stated in Section 3 of this Report, complies with the National Building Code 2010:

- Clause 1.2.1.1.(1)(a), Division A, using the following acceptable solutions from Division B:
 - Article 9.27.3.7., Flashing Materials
 - Article 9.27.4.2., Materials (Sealants)
 - Sentence 9.27.5.1.(1), Attachment (Attachment of Cladding)
- Clause 1.2.1.1.(1)(b), Division A, as an alternative solution that achieves at least the minimum level of performance required by Division B in the areas defined by the objectives and functional statements attributed to the following applicable acceptable solutions:
 - Article 1.1.3.1., Climatic and Seismic Values
 - Sentence 4.1.7.1.(4), Specified Wind Load
 - Sentence 5.6.1.1.(1), Required Protection from Precipitation
 - Section 9.27., Cladding
 - Sentence 9.27.1.1.(5), General (Cladding)
 - Article 9.27.2.1., Minimizing and Preventing Ingress and Damage
 - Sentence 9.27.2.2.(1), Minimum Protection from Precipitation Ingress
 - Sentence 9.27.2.2.(4), Minimum Protection from Precipitation Ingress
 - Sentence 9.27.2.2.(5), Minimum Protection from Precipitation Ingress
 - Sentence 9.27.2.3.(1), First and Second Planes of Protection
 - Subsection 9.27.3., Second Plane of Protection

This opinion is based on CCMC's evaluation of the technical evidence in Section 4 provided by the Report Holder.

2. Description

The product is an exterior cladding system consisting of high density, polyurethane plastic panels that are either injection or compression moulded. The panels are profiled along the top and right-side edges such that the horizontal and vertical joints are shiplapped. The exterior face of the panels are embossed to provide a masonry-like (natural stone or brick) pattern. The panels are available in different colours simulating natural stone.

3. Conditions and Limitations

CCMC's compliance opinion in Section 1 is bound by the “GenStone” being used in accordance with the conditions and limitations set out below.

- The cladding system is intended to be used over concrete, masonry and plywood or oriented strandboard (OSB) sheathing installed over wood or steel framing.
- The cladding must not be used as an exterior wall covering in buildings that are required to be a noncombustible construction or its exterior cladding is required to be noncombustible in accordance with the NBC.
- Fasteners for the cladding must be corrosion resistant, compatible with the cladding material, and positioned to permit expansion and contraction due to temperature changes.
- The 10-mm air space that is created by furring must remain unobstructed to form a clear drainage layer behind the cladding or approved alternative.
- The cladding must be installed with a suitable flashing that will drain water to the exterior and protect the exposed top edge of the cladding. Installed flashing must be in accordance with the requirements of Subsection 9.27.3. of Division B of the NBC 2010.
- At least one layer of sheathing membrane conforming to Article 9.23.17.1., Required Sheathing, of Division B of the NBC 2010 must be applied beneath the cladding.

4. Technical Evidence

The Report Holder has submitted technical documentation for CCMC's evaluation. Testing was conducted at laboratories recognized by CCMC. The corresponding technical evidence for this product is summarized below.

4.1 Prescriptive Requirements

4.1.1 Cladding Material Characteristics

Table 4.1.1 Test Results for Cladding Material Characteristics

Property	Unit	Requirement	Result
Density	kg/m ³	> 100	207
Tensile modulus	MPa	Report value	108
Compressive strength at 10% deformation	MPa	≥ 1.0	2.7
Tensile strength @ yield	MPa	Report value	2.69
Tensile strength @ yield after UV resistance test	%	80% of original value	88
Coefficient of linear expansion	cm/cm/°C	< 0.000081	0.000059
Flexural modulus	MPa	≥ Report value	96
Flexural strength	MPa	≥ 1	3.25
Loss of flexural strength	%	> 75	80
Abrasion resistance	—	No cracking, checking or loss of finish at 100 L of sand	Pass
Water absorption	—	< 1% or 0.6 mg/cm ² , whichever is smaller	0.7
Hardness of panel	—	Report value	587
Hardness after acid rain resistance test	%	≥ 80 of original value	85
Loss of panel hardness	%	> 80	119

4.1.2 Dimensional Tolerance

Table 4.1.2 Test Results for Dimensional Tolerance

Property	Unit	Requirement	Result
Length and width	mm	± 3	Pass
Thickness	mm	± 1.6	Pass
Squareness	mm	± 4.0	Pass
Warpage	mm	1:400	Pass
Skew	mm/m	≤ 1.3 of length	Pass
Edge straightness	mm/m	≤ 1.3 of length and width	Pass

4.2 Performance Requirements

4.2.1 Cladding Performance

Table 4.2.1 Test Results for Cladding Performance

Property	Unit	Requirement	Result
Impact resistance	—	The cladding system shall be capable of withstanding the applied impact loads without deterioration in the performance or safety of the system.	Pass
Acid rain resistance	—	The surface shall not have any defects and/or occurrences of new voids.	Pass
Fastener pull through	N	400	464
Wind load resistance	—	The cladding system shall be capable of resisting and transmitting to its points of support, the positive and negative forces, that are generated by the design wind loads without any fracture or permanent deformation of the surfaces resulting from such design wind loads.	Pass
Durability	—	The durability of the cladding is assessed by observing changes in appearance (e.g., cracking, crazing) and by measuring the loss of flexural strength.	Pass

Report Holder

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