

Guidance for assessment of structural glass barriers and safety glass markings

Frameless cantilevered glass balustrades

Frameless cantilevered glass balustrades need to meet the provisions of Building Code clauses B1 (structure), B2 (Durability), F2 (hazardous materials) and F4 (Safety from falling).

Auckland Council has raised concerns with the Ministry of Business Innovation and Employment around frameless glass barriers (also known as unframed). Our concerns stem from the requirements of NZ Building Code clause B1 in particular performance criteria B1.3.4, where allowance must be made for the consequence of failure. Specifically, if toughened frameless glass barriers fail they collapse and lose all function as a barrier.

The Ministry have advised that frameless glass barriers that have been designed to comply with NZS4223.3:1999, as modified in B1/AS1, and which are specifically designed to resist the loads specified in AS/NZS 1170, comply with NZBC clause B1.

We believe that the **current** acceptable solution (NZS4223.3:1999 and AS/NZS 1170) has shortcomings insofar as it does not adequately address clause B1.3.4. In simple terms, this means that frameless glass barriers are not designed to resist edge loads (e.g. top, bottom and side edges) and are therefore susceptible to breakage. (The edge is the weakest part of the glass). Notwithstanding this, a new standard (**NZS4223.3:2016**) which addresses these shortcomings has been published and will be cited by the Ministry on 1 June 2016.

In the interim, Auckland Council will continue to accept designs based on the **current** acceptable solution **until 1 June 2016**. In addition, we will advise all building consent applicants that the acceptable solution will be changing to give them the opportunity to include interlinking rails. This will alert applicants to the consequences of failure and enable them to reconsider their design and opt for a better solution should they choose too.



This photo shows what happens when toughened glass breaks following a side impact.

Auckland Council does not wish to cause delays to the building consent process but believes the consequences of failure are such that applicants should be forewarned about this matter. Applicants who want to be extra cautious can stage their building consent or apply for an amendment at a later stage. This will enable the building consent to be approved, whilst applicants seek an acceptable design for their barriers.

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Producer statements design

Auckland Council has become increasingly concerned over the quality of producer statements offered for design purposes as it is difficult to determine what they cover. When NZS4223:2016 comes into effect, designers will need to ensure that their producer statements are updated and include all applicable code clauses e.g. B1 (structure), B2 (Durability), F2 (hazardous materials) and F4 (Safety from falling). They will need to be explicit and ensure the scope covers the glass barrier, fixings and inter-linking rail / handrail. Producer statements must include calculations and drawings to depict what is being constructed. Details must include glass thickness; height; span; fixing details, etc. Furthermore, producer statements for design will only be accepted from structural engineers.

Safety Glass markings

2.8.2 Marking requirements

Each pane of safety glass shall be marked with the following minimum requirements:

- (a) The name or registered trademark of the manufacturer or supplier;
- (b) The type of safety glass. This may be in the form of a code from the relevant standard, for example, T = Toughened, L = Laminated;
- (c) The standard to which the safety glass has been manufactured and tested, for example, AS/NZS 2208; and
- (d) The licence or identification number provided by the third party compliance certifier for the plant of manufacture.

NOTE – Additional marking, such as thickness and grade may be used at the discretion of the manufacturer as it may be required for compliance with the relevant standard or third party certification. The certifier's registered trademark may also be required.



A typical mark showing it is safety glass. The licence number is for third-party certification

Removable stickers and producer statements verifying that the glass is safety glass are not permitted or acceptable for compliance purposes.