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BSI Standards Publication

Glass in building – Determination of the lateral load resistance of glass panes by calculation

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National foreword

This British Standard is the UK implementation of EN 16612:2019.

The UK participation in its preparation was entrusted to Technical Committee B/520/4, Glass & Glazing Applications.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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English Version

Glass in building - Determination of the lateral load resistance of glass panes by calculation

Verre dans la construction - Détermination de la résistance des feuilles de verre par calcul et par essai

Glas im Bauwesen - Bestimmung des Belastungswiderstandes von Glasscheiben durch Berechnung und Prüfung

This European Standard was approved by CEN on 21 July 2019.

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European foreword

This document (EN 16612:2019) has been prepared by Technical Committee CEN/TC 129 "Glass in Building", the secretariat of which is held by NBN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2020 and conflicting national standards shall be withdrawn at the latest by April 2020.

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Introduction

This document gives a method of determining the lateral load resistance of linearly supported glass elements.

The method of determining the load resistance of glass is in accordance with the principles of structural Eurocode EN 1990: Basis of structural design. The actions are determined in accordance with the structural Eurocode 1 series for actions on structures, e.g. EN 1991-1-1, EN 1991-1-3 and EN 1991-1-4, including the National annexes. In the design processes, the reliability is part of national competency. For that reason, this document foresees that, to conform with the rules applied by the Eurocodes, the following parameters are subject to national determination:

- material partial factors, $\gamma_{M;A}$ and $\gamma_{M;V}$;
- factors for the load duration, k_{mod} ;
- factor for stressed edges, k_e .

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1 Scope

This document gives a method of determining the design value of the bending strength of glass. It gives the general method of calculation, and guidance for lateral load resistance of linearly supported glazed elements used as infill panels.

NOTE Examples of lateral loads are wind loads, snow loads, self weight of sloping glass, and cavity pressure variations on insulating glass units.

This document gives recommended values for the following factors for glass as a material:

- material partial factors, $\gamma_{M;A}$ and $\gamma_{M;V}$;
- factors for the load duration, k_{mod} ;
- factor for stressed edges, k_e .

Most glass in buildings is used as infill panels. This document covers those infill panels that are in a class of consequence lower than those covered in EN 1990, so proposed values for the partial load factors, γ_Q and γ_G , are given for these infill panels.

The action of cavity pressure variations on insulating glass units is not covered by Eurocodes, so this document also gives proposed values of combination factors, ψ_0 , ψ_1 and ψ_2 , for this action.

This document does not determine suitability for purpose. Resistance to lateral loads is only one part of the design process, which could also need to take into account:

- in-plane loading, buckling, lateral torsional buckling, and shear forces,
- environmental factors (e.g. sound insulation, thermal properties),
- safety characteristics (e.g. fire performance, mode of breakage in relation to human safety, security).

This document does not apply to channel shaped glass, glass blocks and pavers, or vacuum insulated glass units.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 410, *Glass in building — Determination of luminous and solar characteristics of glazing*

EN 572-1, *Glass in building — Basic soda-lime silicate glass products — Part 1: Definitions and general physical and mechanical properties*

EN 673, *Glass in building — Determination of thermal transmittance (U value) — Calculation method*

EN 1279-5, *Glass in building — Insulating glass units — Part 5: Product standard*

EN 1288-2, *Glass in building — Determination of bending strength of glass — Part 2: Coaxial double ring test on flat specimens with large test surface areas*