



TECHNICAL APPROVAL
(ABP)

EASY GLASS[®] SLIM

TOP MOUNT

MOD.6904

National Technical Approval

Approval / Certificate No.: P-169910-LGA

Test object Fall-protection glazing with experimental technically determined resistance under impulsive action (n.c. 2.12 construction products list A - part 3 – version 2015/2)

Usage/Applicability Fall-protection glazing – category B in accordance with DIN 18008-4
Railing system „Easy glass® SLIM“ Top mount
Glazing to be clamped into the lower edge of an aluminum profile.

Applicant Q-railing Europe GmbH & Co. KG
Marie-Curie-Straße 8 - 14
46446 Emmerich

Date of issue 12 July 2016

Valid until 11 July 2021

As a result of this National Technical Approval the above mentioned type of a fall-protection glazing is permitted to be used in the sense of the applicable Building Code of the Länder of the Federal Republic of Germany.

This National Technical Approval comprises 9 pages.

Should the content of this Approval Certificate need any interpretation the German text shall be leading

Responsible for the test:


Dipl.-Ing. Hagelstein



Head of the Glass Testing Laboratory:


Dipl.-Ing. Katz
Ltd. Baudirektor

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A General Provision

As a result of this National Technical Approval the use/application of this type shall be permitted in the sense of the Building Regulation of the Länder of the Federal Republic of Germany.

This Approval does not obviate the permissions, approvals and certifications required by law for the execution building projects

This Approval Certificate shall be issued without prejudice to the rights of third parties, especially in relation to their private intellectual property rights

The producers and operators of this construction type, without prejudice to further rules of the "Specific Provisions" shall provide the user of this construction type with reproductions of this Approval and shall inform them that this Approval must be available at the site where the relevant building method is being used.

On request reproductions of this Approval shall be made available to the Authorities concerned.

This Approval may only be reproduced in full. Reproductions of extracts require the prior consent of the LGA Approval Agency - Location Würzburg.

Texts and drawings on advertising brochures etc. shall not be contradictory to the statements as made in this Approval. Translations of this Approval shall contain the information "Should the content of this Approval Certificate need any interpretation the German text shall be leading"

The issue of this general Approval may be revoked. The statements as made in this Approval may be supplemented or modified at any time, especially where new engineering knowledge requires such modifications.

B Specific provisions

1 Test unit and applicability

1.1 Construction product to be tested for Approval

The construction type as described in this Approval is a fall-protection glazing manufactured in accordance with DIN 18008-4 in the sense of the construction products list A part 3 n.c. 2.12. The inclination of the face of the glass surface can be up to $\pm 10^\circ$ to the vertical. Furthermore, the balustrade can lean towards the public at any inclination desired (the angle between the glass surface and the public floor area is less than 80° .)

1.2 Scope of usage

This type is permitted to be used as fall-protection glazing category B in accordance with DIN 18008-4.

1.3 Requirements for and restrictions on usage and/or remarks:

This type shall not be used to strengthen any other construction.
Construction elements attached to constructions using this method must be sufficiently load bearing, as well as being able to absorb and dissipate effects due to static and impact-like stresses.

1.4 Basic documents

DIN EN 572-1:2016-06	Glass in building - Basic soda-lime silicate glass products - Part 1: Definitions and general physical and mechanical properties; German version EN 572-1:2012+A1:2016
DIN EN 12150-1:2015-12	Glass in building - Thermally toughened soda lime silicate safety glass - Part 1: Definition and description; German version EN 12150-1:2015
DIN 18008-1:2010-12	Glass in Building - Design and construction rules - Part 1: Terms and general bases
DIN 18008-4:2013-07	Glass in Building - Design and construction rules - Part 1: Terms and general bases – Part 4: Additional requirements for barrier glazing
DIN EN 1999-1-1:2014-03	Design of aluminium structures - Part 1-1: General structural rules; German version EN 1999-1-1:2007 + A1:2009 + A2:2013
DIN EN 1999-1-1/NA:2013-05	National determined parameters-Eurocode 9: Design of aluminium structures - Part 1-1: General structural rules

2 Type / requirements

2.1 Requirements / properties and technical parameters

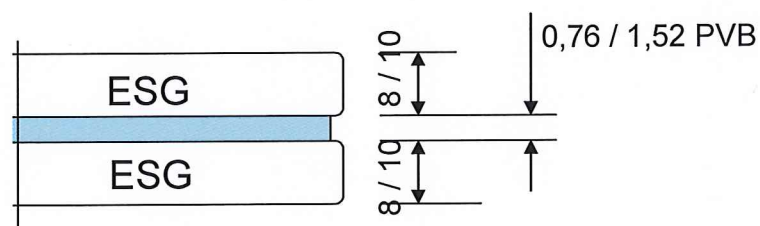
For the input products / materials DIN 18008-4 Section 4 shall be applied.
The construction is composed of several structural elements:

2.1.1 Glass panels

The glass panels are made of laminated safety glass designed as follows:

- (1) 8 mm ESG – 0,76 mm PVB – 8 mm ESG
- (2) 10 mm ESG – 0,76 mm PVB – 10 mm ESG

As an alternative also PVB films with the thickness of 1,52 mm may be used.

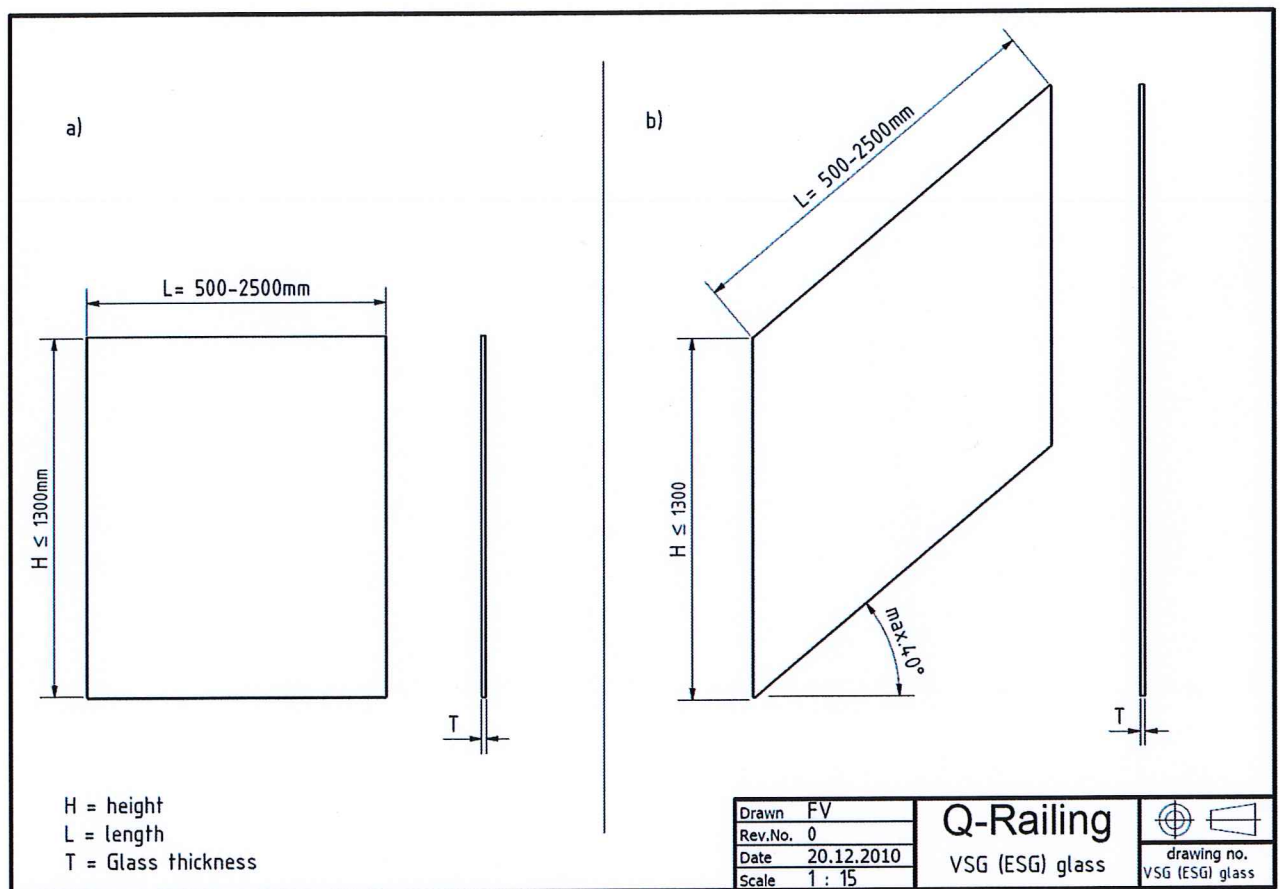


The maximum admissible dimensions of the rectangular glass panes are the following:

$$500 \leq B \leq 6000 \text{ mm} \quad H \leq 1300 \text{ mm}$$

The maximum admissible dimensions of the trapezoid stair/step panes are the following:

$$500 \leq B \leq 2500 \text{ mm} \quad H \leq 1300 \text{ mm} \quad \alpha \leq 40^\circ$$



For the glass type as used the following breaking stress at the minimum shall apply:

ESG 120 N/mm²

The in-between films made of polyvinyl-butyrle (PVB) shall have the following mechanic parameters at 23°C

Rupture strength: > 20 N/mm²

Elongation at break: > 250 %

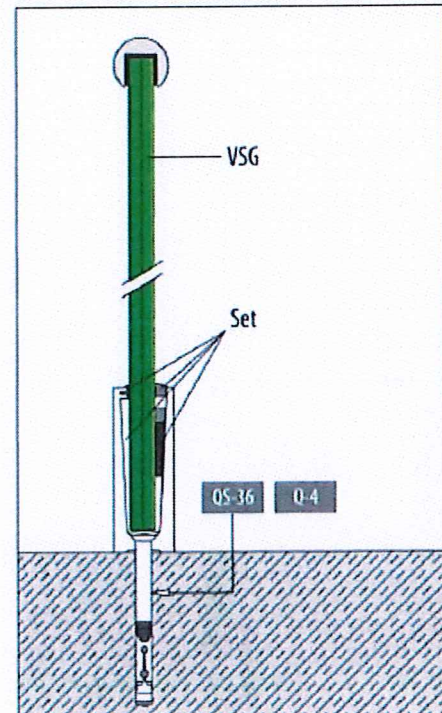
Laminated safety glass with in-between PVB-film is a building product in the sense of the Building Regulations / construction products list A see part 1/ No. 11.14.

The requirements as specified therein must be conforming to the quality of the product and should be subject to certificates attesting these characteristics.

2.1.2 Glass fixture

The glass panes shall be clamped into an aluminum profile purpose-designed for the glazing (article-No. 1669040018). The individual profiles shall have the maximum length of $l=2500$ mm, however, the profiles may be lined up - as the user likes - one after the other to a long tier. Mounting into the concrete surface: The profile to be mounted shall be fixed into the concrete of the base construction by using Fisher dowels FH 12/50SK or equal. Dowels shall be positioned at the distance of 100 mm from each other. At the distance of ≤ 250 mm from each other, plastic angles shall be placed into the profile to be used as glass bearing. Subsequent to this, the VSG glass panes were inserted and clamped by using plastic wedges. The dimensions of the glass panes are not dependent of the profile grooves.

For more details we refer to the expert statements [1] and [2].



2.2 Load capacity at impacts

The load bearing capacity at impacts was attested/verified in the Expert Statement [1]. The evidence of the load bearing capacity for impacts from inside to outside was furnished. The requirements have been met.

3 Proof of conformity

3.1 General

According to construction products list A Part 3, this type of construction as submitted to the test requires proof of conformity on basis of a declaration of conformity issued by the user (i.e. the contractor).

The contractor shall submit to the contract partner (normally, his client) a written declaration that the construction was in conformity with the approved type (according to this National Technical Approval).

A suitable model for this purpose is attached as an Annex to this Approval.

3.2 Production control

At every site where this type of construction is manufactured, a production control must be established. This production control shall be understood as a process where the manufacturer undertakes continuous monitoring of production activities, to ensure that the type which is manufactured in his company is in compliance with the provisions of the Type Approval.

The results of the production control shall be documented and validated.
The production monitoring system must include at minimum the following:

- Description and control of the input materials and the components thereof.
- Type designation and/or type designation of the input materials or the pertaining components
- Test methods / control / checks (procedure)
- Date of manufacture / date of type testing / and/or of the input material and the components thereof
- Result of the controls and tests, and in case where it seems to be necessary, the actual results shall be compared with the nominal requirements
- Signature of the person responsible for the control

The records shall be kept for at least five years. On request, the records must be submitted to the Highest Building Supervision Authority.

When an unsatisfactory test result should occur, the manufacturer must immediately take the necessary measures to remedy the defect. Non-conforming types shall be identified such that they cannot be mixed up with conforming types. Once the defect has been remedied – where technically possible and required for the proof of correction – the type concerned shall be subjected to re-testing immediately.

4 Specifications for design and dimensioning

The construction type shall be designed for the respective installation situation in accordance with the requirements as defined in DIN 18008 section 6.1.

5 Technical Regulation for the Design

The design of the construction type/product shall be conforming to the Expert Statement [1]

6 Usage, care and maintenance

The type of construction shall be regularly cleaned and maintained to retain its function.

The state of the construction needs to be checked at regular intervals. Damaged parts must be replaced immediately. Only components fulfilling the conditions of this general construction certificate should be used as replacement parts.

In addition, manufacturers' instructions in relation to usage, maintenance and care must be followed.

[1] Expert statement S-WUE/110019-1 of the Approval Agency for Structural Engineering - location: Würzburg. Date: 17 March 2011

[2] Expert statement S-WUE/110019_Erweiterung of the Approval Agency for Structural Engineering - location: Würzburg. Date: 16 June 2014

**Model / Example
Declaration of Conformity**

Manufacturer:

Type: Fall-protection glazing in accordance with DIN 18008-4 action (n.c. 2.12
construction products list A - part 3 – version 2015/2)
Fall-protection glazing with experimental technically determined re-
sistance under impulsive action

Usage /application: Fall-protection / category B

Site of installation:

Date of manufacture:

Herewith it is to certify that the above-mentioned type including any relevant details was manufac-
tured and installed properly and professional competent conforming to the provisions of this Na-
tional Technical Approval-- **P-169910-LGA** – Date: 12 July 2016 - issued by the Approval Agency
for Structural Engineering – location Würzburg.

.....
Location, Date

.....
Stamp and signature

This Certificate shall be handed over to the building owner (client) to be submitted to the Building Supervisory
Authority.

GOOD LUCK WITH
YOUR INSTALLATION!

VIEL ERFOLG MIT
IHRER MONTAGE!

SUCCES MET
DE INSTALLATIE!