

Channel Shaped Glass: Generalities – Definitions, Terminology, Properties:

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Introduction

This series of GGF Data Sheets, 4.6, deals with Channel Shaped Glass. In annealed wired and unwired forms, thermally toughened and coated forms.

1. Scope

This part, GGF Data Sheet 4.6.1: Channel Shaped Glass; defines channel shaped glass and its types and gives

- the terminology to be used to specify a channel shaped glass;
- the procedures, measurement and test methods for the determination of dimensional parameters and appearance/visual quality;
- the range of available channel shaped glass types, thicknesses and thickness tolerances;

Further GGF Data Sheets in the 4.6 series are as follows: -

Data Sheet 4.6.2: Channel Shaped Glass - *Annealed Wired and Unwired Channel Shaped Glass*;

Data Sheet 4.6.3: Channel Shaped Glass - *Thermally Toughened Soda Lime Silicate Channel Shaped Safety Glass*;

Data Sheet 4.6.4: Channel Shaped Glass - *Coated Channel Shaped Glass*;

Data Sheet 4.6.5: Channel Shaped Glass - *Glazing and performance of Channel Shaped Glass*

2. Definitions and Descriptions

For the purpose of this GGF Data Sheet the following definitions apply: -

2.1. Basic soda lime silicate glass products

The composition for soda lime silicate glass and its general physical and mechanical properties together with the list of products can be found in EN 572-1

2.2. Wired or unwired channel shaped glass

Translucent, clear or tinted soda lime silicate glass, wired or unwired, obtained by continuous casting and rolling, which is formed into a channel shape during the manufacturing process. (see EN 572-7)

2.3. Wired channel shaped glass

Channel shaped glass which has a wire inlay in the web, i.e. across the width, B, which runs in the direction of the length, H. Additional wires may also be in the flanges. (see Fig 1)

2.4. Thermally toughened soda lime silicate channel shaped safety glass

Channel shaped glass within which a permanent surface compressive stress has been induced by a controlled heating and cooling process in order to give it greatly increased resistance to mechanical and thermal stress and prescribed fragmentation characteristics. (See also 2.4.1 & EN 15683-1)

¹EN 572-1: 2012 Glass in building – *Basic soda lime silicate glass products – Part 1: Definitions and general physical and mechanical properties*

²EN 572-7: 2012 Glass in building – *Basic soda lime silicate glass product –Part 7: Wired or unwired channel shaped glass*

³EN 15683-1: 2013 Glass in building – *Thermally toughened soda lime silicate channel shaped safety glass – Part 1:*



2.4.1. Mechanical and safety properties

Mechanic properties, i.e. thermal durability and profile bending strength, and safety properties, i.e. fragmentation characteristics, are generalised by the level of surface compression. [see EN 15683-1]

NOTE: These properties do not depend on the size of the channel shaped glass.

2.5. Coated glass

Channel shaped glass, both annealed and thermally toughened, is available coated.

The coating process is on-line during manufacture of the annealed glass product. Certain of the coatings may be thermally toughened. (See manufacturer's literature)

Specifics of the coated glass, definition and classification, can be found in EN 1096-1

3. Glass Types

3.1 General

The different products are defined by the following: -

- Annealed or toughened
- If annealed;
- Wired or unwired
- If wired – number and position of wires
- Coated
- Dimensions of:
 - Flange
 - Web
 - Thickness

NOTE: A single piece of channel shaped glass may be referred to as a 'plank'.

3.2 Representation of Channel shaped glass

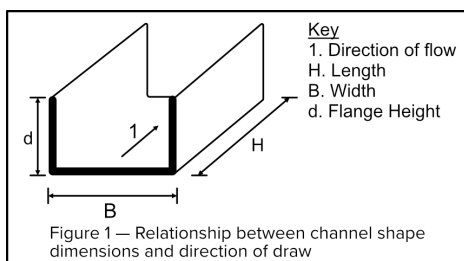


Figure 1

Definition 3.3 from EN 572-7: 2012

Length, H, width, B, and flange height, d, are defined with reference to the direction of draw of the glass ribbon as shown in Figure 1. All corners are rounded.

3.3 Harmonised standards for CE marking

All of the product standards referred to in this document have a part that covers the requirements for application of the CE marking. These parts are as follows:

- EN 572-9: Glass in building – Basic soda lime silicate glass products – Part 9: Product standard
- EN 15683-2: Glass in building – Thermally toughened soda lime silicate channel shaped safety glass – Part 2: Product standard
- EN 1096-4: Glass in building – Coated glass – Part 4: Product standard

4. Dimensions

4.1 General

The dimensions and dimension tolerances are consistent for all forms of channel shaped glass. Dimensions are

| Width, B (mm) | Height of flange, d, (mm) | Thickness, c, (mm) |
|---------------|---------------------------|--------------------|
| 232 to 498 | 41 | 6 |
| 232 to 498 | 60 | 7 |

Table 1: Nominal dimensions

| Width, B (mm) | Height of flange, d, (mm) | Thickness, c, (mm) |
|---------------|---------------------------|--------------------|
| ± 2 | ± 1 | ± 0.2 |
| ± 2 | ± 1 | ± 0.2 |

Table 2: Tolerances on nominal dimensions given in Table 1 and tolerances in Table 2.

NOTE: Not all widths, B, are available with all flange heights, d.

4.2 Length

Tolerance on measured length, H, is ±3.0mm.

NOTE: Maximum length, H, available is 7,000mm

4.3 Flange deviation

The flange deviation, z, (see Figure 2) should not exceed 1.0mm.

Definition and description

*EN 1096-1: 2012 Glass in building –Coated glass – Part 1: Definitions and classification

4.4 Squariness of cut

The deviation of the squariness of cut, q , (see Figure 3) shall not exceed 3mm.

5. Methods of measurement

These methods apply for all forms of channel shaped glass.

5.1 Width, B , and height of flange, d

These are measured at both cut ends of the piece using a Vernier calliper with an accuracy of 0.1mm.

5.2 Length, H

This is measured at the centre of the web.

5.3 Thickness, c

The actual thickness is measured at both cut ends. Measurements, to an accuracy of 0.1mm, are made in the centre of the web and flanges. Measurement should be made by means of an instrument of the plate gauge type with a diameter of $50\text{mm} \pm 5\text{mm}$.

5.4 Flange deviation

The deviation of the flange, z , from perpendicular to the web is determined with a right angle, as shown in Figure 2.

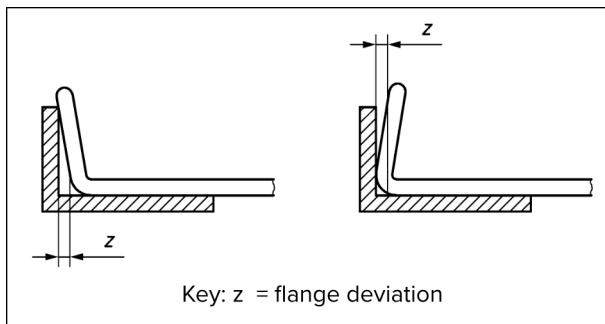


Figure 2 — Determination of flange deviation

5.5 Squariness of cut

The out of squariness of the web and flanges is determined at both cut ends. It is measured relative to a plane perpendicular to the direction of draw of the glass at the intersection of the centre line of the web and of the cut edge, as shown in Figure 3. The deviation of the flange plane is measured.

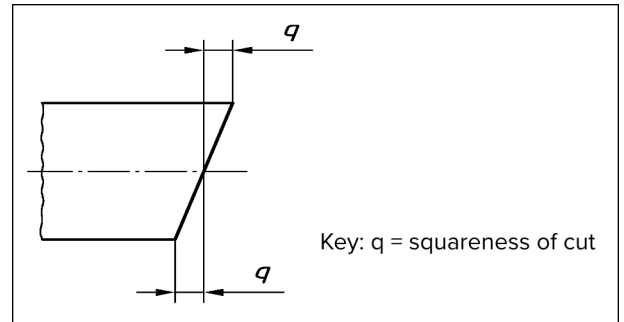


Figure 3 - Determination of squariness of cut

6. Appearance/viewing conditions

The method of viewing is constant for all channel shaped glass types.

NOTE: Thermally toughened soda lime silicate channel shaped safety glass will show appearance differences that are related to the product and the manufacturing process. (see Data Sheet 4.6.3)

6.1 Viewing conditions

The piece of channel shaped glass to be examined is illuminated in conditions approximating to diffused daylight and observed in front of a white background.

Place the glass to be examined vertically in front of the screen. Arrange the point of observation 2m from the glass, keeping the direction of observation normal to the glass surface.

The presence of bubbles, ream, scratches and inclusions shall be noted. Acceptance levels for these faults will be given within each specific product type document.

Bibliography

- EN 572-1: Glass in building – Basic soda lime silicate glass products – Part 1: Definitions and general physical and mechanical properties
- EN 572-7: Glass in building – Basic soda lime silicate glass products – Part 7: Wired or unwired channel shaped glass
- EN 572-9: Glass in building – Basic soda lime silicate glass products – Part 9: Product standard
- EN 1096-1: Glass in building – Coated glass – Part 1: Definitions and classification
- EN 1096-4: Glass in building – Coated glass – Part 4: Product standard

Channel Shaped Glass: Generalities – Definitions, Terminology, Properties:

EN 15683-1: Glass in building – Thermally toughened soda lime silicate channel shaped safety glass – Part 1: Definition and description

EN 15683-2: Glass in building – Thermally toughened soda lime silicate channel shaped safety glass – Part 2: Product standard

Data Sheet 4.6.2: Channel Shaped Glass - Annealed Wired and Unwired;

Data Sheet 4.6.3: Channel Shaped Glass - Thermally Toughened Soda Lime Silicate Channel Shaped Safety Glass;

Data Sheet 4.6.4: Channel Shaped Glass - Coated Channel Shaped Glass;

Data Sheet 4.6.5 Channel shaped glass - Glazing and performance of Channel Shaped Glass