

GGF Datasheet: Channel Shaped Glass - Coated Channel Shaped Glass

4.6.4 April 2020

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Introduction

This part of the GGF Data Sheet 4.6 series gives extra information, over and above GGF Data Sheet 4.6.1 on coated channel shaped glass.

1. Scope

This GGF Data Sheet concentrates on the specifics of channel shaped glass that has been coated.

2. Definitions and Descriptions

For the purpose of this GGF Data Sheet the definitions contained within GGF Data Sheet 4.6.1 and the following apply: -

2.1 Product definition

2.1.1 Coated glass

Glass substrate, as defined in 2.1.2, to which has been applied a coating, as defined in 2.1.3, in order to modify one or more of its properties.

NOTE: The properties modified could be one and/or more of the following

- solar heat transmittance / reflectance
- ultra violet transmittance

- emissivity

- colour/appearance.

2.1.2 Glass substrate

A basic soda lime silicate glass product (as EN 572-1¹) that is wired or unwired channel shaped glass product (see EN 572-7²)

2.1.3 Coating

One or more thin solid layers of inorganic materials applied on to the surface of a glass substrate by various methods of deposition.

2.1.4 On-line coating

Treatment of the surface of a moving continuous ribbon of a basic glass, at a stage during its manufacture, before it is cut.

2.1.5 Additive methods of deposition

Single or multilayer systems (consisting of metals, oxides, nitrides, fluorides, diamond like carbon or other compounds) added to the surface of the glass by different methods.

NOTE: the above definitions have been selectively reproduced from EN 1096-1³

2.2 Description

2.2.1 Coated glass (as required for this Data Sheet)

Soda lime silicate channel shaped glass, both annealed, thermally toughened and heat soaked thermally toughened, that has been 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 coated glass, definition and classification, can be found in EN 1096-1.

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

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

³EN 1096-1: 2012 Glass in building – Coated glass – Part 1: Definitions and classification



3. Glass Types

3.1 General

Channel shaped glass during manufacture can be coated.

These coatings change the following characteristics of the coated channel shaped glass: -

- solar heat transmittance / reflectance
- ultra violet transmittance
- emissivity

The coating may also be applied to influence the colour/ appearance of the product.

3.2 Measurement of properties

The characteristics can be measured in accordance with EN 410⁴.

4. Appearance

4.1 General

The defects affecting appearance are: -

- Specific to the glass substrate (see Data Sheets 4.6.2 and 4.6.3).

- Specific to the coating

If a defect specific to the glass substrate is more visible because of the coating, it will be treated as a coating defect.

4.2 Detection of defects

4.2.1 General

The defects are detected visually by an observation of the channel shaped coated glass in finished sizes ready to be installed.

The web area only shall be examined.

The examination shall be undertaken in transmission and/or reflection.

An artificial sky or daylight may be used, as the source of illumination.

4.2.2 Artificial sky

The artificial sky is a plane emitting diffuse light with a uniform brightness and a general colouring index Ra higher than 70 (see CIE 013.3-1995⁵). It is obtained by using

a light source whose correlated colour temperature is in the range between 4000 K and 6000 K.

In front of the arrangement of light sources is a light scattering panel, without spectral selectivity. The illuminance level, on the glass surface shall be between 400 lx and 20000 lx.

4.2.3 Daylight illumination

Daylight illumination is a uniform overcast sky, without direct sunlight.

4.3 Conditions of examination

4.3.1 General

Coated channel shaped glass may be examined in stock size or in finished sizes ready for installation. The examination may be undertaken in the factory or on site when glazed.

The channel shaped coated glass being examined is viewed from a minimum distance of 3 m. The actual distance will be dependent on the defect being considered and which illumination source is being used.

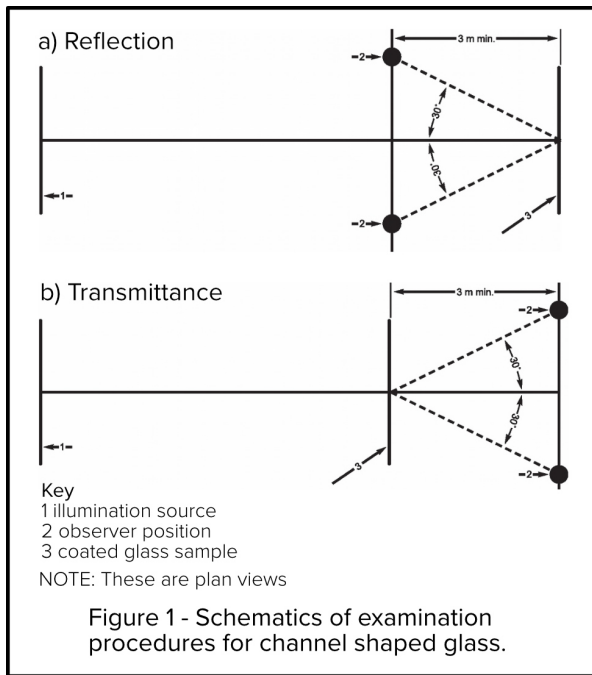
The examination of the channel shaped coated glass in reflection is performed by the observer looking at the side which will be the outside of the glazing.

The examination of the channel shaped coated glass in transmission is performed by the observer looking at the side which will be the inside of the glazing.

During the examination the angle between the normal to the surface of the channel shaped coated glass and the light beam proceeding to the eyes of the observer after reflection or transmission by the channel shaped coated glass shall not exceed 30° (see Figure 1).

⁴EN 410: *Glass in building – Determination of luminous and solar characteristics of glazing*

⁵CIE 013.3-1995: *Method of measuring and specifying colour rendering properties of light sources*



Each examination will take no more than 20 s.

No artificial light sources, i.e. torches, or artificial sight enhancers, except glasses if worn, shall be used.

4.3.2 Uniformity defects and stains

Under the conditions of examination, given in 4.3.1, note any coating variations either within one pane or between neighbouring panes which are visible.

4.3.3 Punctual defects

Under the conditions of examination, given in 4.3.1, note any spots, pinholes and/or scratches that are visually disturbing.

For spots/pinholes measure the size and note the number relative to the size of the pane.

For scratches measure the length of any scratches noted. For scratches > 75 mm long determine the distance between adjacent scratches. For scratches ≤ 75 mm long note any area where their density produces visual disturbance.

4.4 Acceptance criteria of coated glass defects

The acceptance criteria for defects in coated channel shaped glass, examined according to 4.3.1, are given in Table 1

Defect Type	Acceptance Criteria	
	Channel to Channel	Individual Channel
Uniformity/Stain	allowed as long as not visually disturbing	allowed as long as not visually disturbing *
Punctual Spots/Pinholes	not applicable	
>3mm		not allowed
>2mm ≤3mm		allowed if not more than 1/m ²
Clusters		not allowed
Scratches		
>75mm	not allowed	
≤75mm	allowed if local density is not visually disturbing	

* There are situations that occur with very thin coatings; which are generally low emissivity coatings, which produce an "oil on water" effect. This is inherent with the coating make-up and its interaction with light. **This is not a defect.**

Table 1: Acceptable criteria for channel shaped coated glass

5. 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 1096-4: Glass in building – Coated glass–Part 4: Product standard

Bibliography

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*

CIE 013.3-1995: *Method of measuring and specifying colour rendering properties of light sources*

Data Sheet 4.6.1: *Channel Shaped Glass - Generalities – Definitions, Terminology, Properties*

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*