GGF Datasheet: Channel Shaped Glass: Glazing and performance of Channel Shaped Glass

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Bibliography

Introduction

This Part of the GGF Data Sheets 4.6 series covers matters not previously dealt with in the GGF Data Sheet 4.6 series.

1. Scope

This part of the GGF Data Sheet 4.6 series deals with the following:

• glazing of channel shaped glass;

• information on the properties of channel shaped glass.

2. Definitions and Descriptions

For the purpose of this GGF Data Sheet the definitions contained within GGF Data Sheets 4.6.1, 4.6.2, 4.6.3, 4.6.4 and the following apply:

2.1 Definitions

2.1.1 Plank

A single length of channel shaped glass

2.1.2 Vertical glazing

Glazing installed at true vertical or 15° either side of vertical.

2.1.3 Sloping glazing

Glazing installed between horizontal and 75° from horizontal.

Fig. 1: Representation of a vertical assembly

Fig. 2: Representation of a horizontal assembly
2.2 Descriptions

2.2.1 Single glazed channel shaped glass assembly

This is an assembly of individual pieces of channel shaped glass, i.e. individual planks, side by side that are supported in a metal frame. (see Fig 3 for Vertical Glazing)

2.2.2 Dual (Double) glazed channel shaped glass assembly

This is an assembly of individual pieces of channel shaped glass, i.e. planks, which are interlocked to produce a 'double skin effect'. The interlocking of the channels continues to produce an assembly that is supported in a metal frame. (see Fig 3 for Vertical Glazing and Fig 4 for Horizontal Glazing)

2.2.3 Triple glazed channel shaped glass assembly

This is an assembly of channel shaped glasses that interlock to produce a triple glazed assembly.

The interlocking of the channels continues to produce an assembly that is supported in a metal frame. (see Fig 5)

The triple glazed assembly may also be manufactured using planks of channel shaped glass and flat glass. (see Fig 6)
3 Glass types

Any type of channel shaped glass, i.e. annealed wired or unwired, toughened, coated, may be used together.

NOTE: See 4.6.2, 4.6.3, 4.6.4

4 Glazing system

All the assemblies for glazing channel shaped glass consist of the following:

• Aluminium channels;
• Preformed inserts [these act as setting locks, location blocks, etc]

Details of glazing systems can be obtained from the manufacturer.

5 Performance characteristics

5.1 Thermal insulation

This characteristic is improved going from single glazed to dual (double) glazed to triple glazed assemblies.

The performance of dual (double) glazed and triple glazed assemblies can be improved by:

(a) Incorporation of insulation in one or both spaces. (see Fig 7) or
(b) The use of glass that has a low-emissivity coating.

NOTE: Unlike insulating glass units 'channel shaped glass assemblies' CANNOT be gas filled.

5.2 Solar control

The amount of solar heat gain, into a building, can be reduced by incorporating channel shaped coated glass that:

i. Reduces the solar heat transmittance;
ii. Increases the solar heat radiation; and
iii. Has a low emissivity.

iv. Any combination can be used in any of the assemblies (see 2.2.2 and 2.2.3)

The incorporation of insulation will also influence the solar heat gain.

5.3 Light transmission/translucency

Light transmittance through channel shaped glass can be influenced by the following: -

i. Clear glass, i.e. no surface embellishment;
ii. Cast glass, i.e. pattern on one or more surfaces;
iii. Sandblasted glass;

The incorporation of insulation will also influence the light transmission / translucency.

Also, the use of white glass, tinted glass, coated glass will alter the degree of light transmittance.

Opaque channel shaped thermally toughened soda lime silicate safety glass will also reduce light transmission.

5.4 Sound reduction

Channel shaped glass assemblies, especially with included insulation, can have an effect on sound reduction.

5.5 Fire resistance

Whilst annealed wired channel shaped glass is available it CANNOT be used for FIRE RESISTANCE.

5.6 Wind loading

The wind loading resistance of a channel shaped glass assembly is dependent on the following: -

Orientation of the assembly;
Height of assembly;
Width of assembly;
Dimensions of the plank of channel shaped glass;

The glazing system manufacturer can undertake wind loading calculations.

5.6 Use of channel shaped glass assembly in areas acting as protective barriers

The glazing system manufacturer can advise on the type and make up of assemblies that may be acceptable as protective barriers.
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Bibliography

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;

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