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ATG technical approval with certification

ATG H910

Low emissivity coated glass with solar control

LoE³ 366
LoE³ 366 TEMPERABLE

Valid from 05/07/2022
to 04/07/2027

Approval and certification body

BCCA

Belgian Construction Certification Association
Rue d'Arlon, 53 - 1040 Brussels
www.bcca.be - info@bcca.be

Approval holder:

Cardinal CG
1024 East Madison Street
Spring Green, WI 53588
USA
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Website: https://www.cardinalcorp.com/
E-mail: wknoble@cardinalcorp.com

1 Objective and scope of the technical approval

This technical approval is based on the favourable, independent evaluation of the system (as described above) by an independent approval body designated by UBAtc, BCCA, for the application mentioned in this technical approval.

The technical approval serves as a record of the approval inspection. This inspection consists of the following: identification of relevant properties of the system for the intended application, laying/installation method, product design and reliability of production.

The technical approval provides a high level of reliability, based on the statistical interpretation of inspection results, regular monitoring and adjustments, in order to keep abreast of the situation, the latest technical developments and quality monitoring by the approval holder.

In order to retain the technical approval, the approval holder must continuously provide evidence that he is taking all necessary steps to demonstrate that the system is suitable for use. In order to do so, it is vital that the conformity of the system with the technical approval is monitored. This monitoring is entrusted by the UBAtc to an independent certification body known as BCCA.

The approval holder is required to adhere to the inspection results described in the technical approval if he makes information available to third parties. The UBAtc or certification body may takes any steps that become appropriate if the approval holder [or the distributor] fails to do so (to a sufficient extent) of his own accord.

The technical approval and certification for conformity of the product to the technical approval are independent of tasks conducted individually. The contractor and/or architect remain fully responsible for the conformity of the completed work with the provisions contained in the specifications.

The technical approval does not cover, unless stated in specific provisions, on-site safety, health and safety aspects and the sustainable use of raw materials. As a result, the UBAtc shall not be responsible, under any circumstances, for any damage caused by the failure of the approval holder, contractor(s) and/or architect to respect provisions relating to on-site safety, health aspects and the sustainable use of raw materials.

Note: in this technical approval, the word "contractor" will always be used when referring to the entity that completes the work. This word has the same meaning as other frequently used words, such as "operator", "installer" and "fitter".

2 Object

The technical approval for low emissivity coated glass with or without solar control provides the technical description of the treated glass, which meets the performance level specified in paragraph 6, provided it is treated in compliance with the specifications set out in paragraphs 4 and 5.

ITT tests conducted within the framework of this approval can be used for the CE mark on coated glass, in compliance with NBN EN 1096-4.

The technical approval with certification includes continuous monitoring of production by the manufacturer, accompanied by regular external inspection by a certification body designated by UBAtc.

The technical approval with certification concerns the performance of the coated glass itself, but not its treatment with a more complex product (such as insulating glass, tempered glass, laminated glass, etc.), its performance or installation.

3 System

The coated glass described in this approval consists of glass substrates coated with a stack of thin inorganic layers applied to the surface of the glass using the cathode sputtering technique.

The coated glasses described in this approval belong to Class C, as defined in Standard NBN EN 1096-1. They are intended for further processing, in order to produce insulating glass.

The coated glasses described in this approval improve the thermal insulation properties (U_g) and solar factor (g) of the glass products, of which they form part.

4 Components

4.1 Manufacturing sites

The coatings are applied to the glass in the factories of Cardinal CG in Spring Green, WI 53558, USA.

4.2 Surfaces

The above-mentioned trade names are listed for the coatings applied to a clear float glass.

The same coatings can also be applied to other base surfaces:

- tempered glass

4.3 Coatings

In order to obtain a low emissivity coated glass or low emissivity coated glass with solar control, the simple glass is covered with a special coating, so that it reflects:

- far infrared rays, in order to limit the transfer of heat between the building interior and exterior (reduced coefficient "U_g") ;
- short-wave solar rays, in to limit overheating inside the building (reduced solar factor "g").

The coatings are applied offline by cathode sputtering.

The coatings are applied to the glass plates or cut glass sheets. Cardinal CG equipment makes it possible to treat sheets (plates) measuring 3210 mm in width and 6000 mm in length.

In a magnetron containing an inert gas, a potential difference is created between two electrodes, which enables the cathode to project ions, some of which are deposited on the glass surface.

The different sheets are put on a glass stand. They are packed in order to protect, for a limited period, coated glasses against moisture and faults related to storage, transport and handling.

5 Installation

When processing the coated glass, it is important to respect the specifications of the coated glass manufacturer.

Please refer to the following Cardinal CG documents:

- Instructions for use

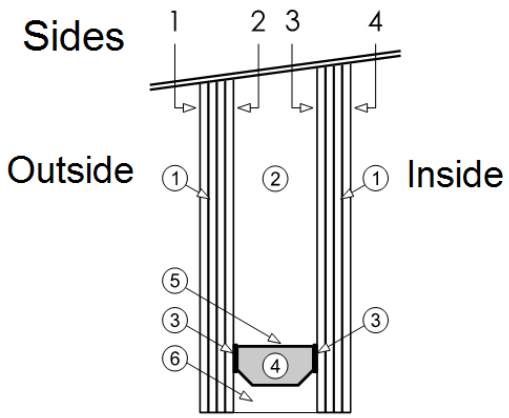
The processor must also follow the following instructions.

5.1 Use of coated glass

The coated glasses described in this approval belong to Class C, as defined in Standard NBN EN 1096-1.

Class C coated glasses can only be used with the coating enclosedin the cavity of insulating glass and therefore on side 2 or 3 of the insulating glass, as shown in Figure 1.

Figure 1 – Insulating glass surfaces



1. glass sheet
2. dehydrated air or gas
3. first sealant barrier
4. desiccant
5. spacer
6. second sealant barrier

Class C coated glasses can be packed on glass stands (see Chapter 4.3) and processed in insulating glass at a later stage.

5.2 Processing of coated glass

If the coated glass is later processed in a more sophisticated product (laminated glass, insulating glass, etc.), it is important to ensure that the coated glass will not be affected as a result and the finished product is not or will not be affected, after treatment, due to the presence of coatings. Normally, this must be determined by evaluating the conformity of the finished product with the European standards for the relevant products.

The coated glasses LoE³366 Temperable must be tempered after the coating is applied, in order to obtain their spectrometric properties. This type of glass is sold after heat treatment. The spectrometric characteristics and durability after tempering have been examined by conducting ITT tests in compliance with NBN EN 1096-1 and NBN EN 1096-3.

7 Performance

Coated glass types LoE³ 366 and LoE³ 366 Temperable fulfil the specifications of Standards NBN EN 1096-1 and NBN EN 1096-3. The spectrophotometric properties are shown below.

The emissivities determined by the manufacturer are certified by BCCA, based on an inspection chart, in compliance with the Standard NBN EN 1096-4 and the UEAtc "UEAtc Technical Guide for Coated Glasses – Final Draft - October 2002".

Trade names of coatings, according to base surface	UV range τ_{uv}	Visible range			Solar range				IG product composition (argon) – coating position	Thermal range		Classification in compliance with NBN EN 1096-1	Glass substrate NBN EN 572-2 Float
		τ_v [%]	ρ_v [%]	ρ'_v [%]	τ_e [%]	ρ_e [%]	ρ'_e [%]	g [%]		ε_n	U		
	Base surface - clear float												
LoE³ 366	4	71	4	7	32	45	37	36	pos 2	0.02	N.A.	C	3.1 mm
LoE³ 366	/	69	6	9	30	47	33	36	pos 2	0.02	N.A.	C	6 mm
LoE³ 366 Temperable *	/	69	7	9	31	49	38	35	pos 2	0.02	N.A.	C	4 mm
LoE³ 366 Temperable *	/	68	7	9	30	49	33	35	pos 2	0.02	N.A.	C	6 mm
*: The values for the temperable coatings are those obtained after tempering the coating.													

The following remarks apply:

N.A. :	not applicable
τ_{uv}:	ultraviolet transmission factor
τ_v:	light transmission factor
ρ_v:	light reflection factor on coating side
ρ'_v:	light reflection factor on glass side
τ_e:	direct solar energy transmission factor
ρ_e:	direct solar energy reflection factor (coating side)
ρ'_e:	direct solar energy reflection factor (glass side)
g:	total solar energy transmission factor or solar factor, coating side (*1) g value quoted for double glazing - composition of double glazing: standard (see ITT).
ε_n:	normal emissivity determined by the manufacturer, in compliance with Standard EN 1096-4 based on the ITT; this value has been approved by BCCA.
U:	Heat transmission coefficient

8 Conditions

A. This technical approval refers exclusively to the product mentioned on the cover page of the technical approval.

B. Only the approval holder and, if applicable, the distributor may assert rights based on the technical approval.

C. The approval holder and, if applicable, the distributor are not permitted, in any way, to use the name of the UBAtc, its logo, the technical approval mark, the technical approval or the approval number to demand the evaluation of products that fail to comply with the technical approval or products, equipment or systems, including their properties or characteristics, which do not form the object of the technical approval.

D. Information provided in any way by the approval holder, distributor or an approved contractor or by their representatives for (potential) users of the product, which is described in the technical approval (e.g. for clients, contractors, architects, consultants, designers, etc.) must not be incomplete or contradict the content of the technical approval or information mentioned in the technical approval.

E. The approval holder is bound at all times to provide UBAtc, the approval body and the certification body with prompt or prior notification of any adjustments made to primary materials and products, installation instructions and/or the manufacturing, installation and equipment process. According to the information communicated, the UBAtc, the approval body and the certification body will judge whether it is necessary to adjust the technical approval.

F. The technical approval is based on the available knowledge and technical/scientific information, together with information provided by the applicant and complemented by an approval inspection, which takes account of the specific nature of the product. However, users remain responsible for selecting the product, as described in the technical approval, for the specific use intended by the user.

G. The intellectual property rights associated with the technical approval, including the copyright, belong exclusively to the UBAtc.

H. Any references to the technical approval must be accompanied by an ATG index (ATG H910) and the validity period.

I. The UBAtc, the approval body and the certification body cannot be held responsible for any damage or adverse consequences suffered by third parties (e.g. the user) that result from the failure of the approval holder or distributor to respect the provisions of Article 7.

This technical approval has been published by UBAtc, under the responsibility of the approval body BCCA, and based on favourable feedback from the specialist "FAÇADES" group, issued on 26 June 2015.

In addition, the BCCA certification body has confirmed that the production process meets the conditions for certification and that a certification agreement was signed by the technical approval holder.

Date of issue: 5 July 2022.

This ATG replaces ATG H910, valid from 27/8/2019 to 26/8/2024. The modifications compared to previous version are summarized below:

Modifications compared to the previous version
Change of "approval holder" from Velux to Cardinal Change of coating name from VELUX LoE³ 366 / V9 to LoE³ 366

For UBAtc, declaration of the validity of the approval process

Eric Winnepenninckx,
Secretary General

Benny De Blaere,
Directeur

For the approval and certification body

Olivier Delbrouck,
Managing director

This technical approval shall remain valid, provided the product, its manufacture and all processes that are appropriate for this purpose:

- are maintained, in order to achieve, as a minimum, the inspection results defined in the approval document;
- are continuously monitored by the certification body, which confirms that the certification continues to be valid;

If these conditions are no longer met, the technical approval shall be suspended or withdrawn and the approval document shall be deleted from the UBAtc website. The technical approvals are regularly updated. It is recommended that you always use the version published on the UBAtc website (www.butgb-ubatc.be).

The most recent version of the technical approval can be consulted using this QR code.

Belgische Unie voor de technische goedkeuring in de bouw — Union belge pour l'Agrément technique de la construction

ATG H910

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UBAtc asbl is notified by the FPS Economy within the framework of Regulation 305/2011/EEC
Certification bodies designated by UBAtc asbl operate in compliance with a system that is set to be accredited by BELAC (www.belac.be).

UBAtc asbl is an approval body and member of:

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