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European Assessment Document for

Special mirrors



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This European Assessment Document (EAD) has been developed taking into account up-to-date technical and scientific knowledge at the time of issue and is published in accordance with the relevant provisions of Regulation (EU) No 305/2011 as a basis for the preparation and issuing of European Technical Assessments (ETA).

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1 SCOPE OF THE EAD

1.1 Description of the construction product

This EAD is applicable for special mirrors made of the following stack:

- Flat annealed clear glass, consisting of monolithic float glass according to EN 572-2¹, with general physical and mechanical properties according to EN 572-1 and supplied and final cut sizes according to EN 572-8 with a thickness from 2 mm up to and including 10 mm
- Intermediate (coloured) layer, consisting of special tinted coating of class B according to EN 1096-2, applied on the flat annealed clear glass
- Reflective coating, using silver in order to provide the quality of a silvered mirror reflection
- Protective coating, consisting of one or more layers of paint or lacquer

The product is not fully covered by the harmonised European standard EN 1036-2, as this standard specifies that the silver layer is brought directly onto the glass surface. Special mirrors, specified in this EAD, are thus excluded from EN 1036-2 due to the presence of this intermediate layer. Compared to EN 1036-2, this EAD also covers essential characteristics “Content and/or release of dangerous substances” and “Durability and protective coating(s) adhesion”.

Special mirrors shall conform to the definition and fulfil the requirements of mirror as defined in EN 1036-1, including clauses 5, 6, and 7, except clause 6.2.

Concerning product packaging, transport, storage, maintenance, replacement and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport, storage, maintenance, replacement and repair of the product as he considers necessary.

It is assumed that the product will be installed according to the manufacturer’s instructions or, in the absence of such instructions, according to the usual practice of the building professionals.

Relevant manufacturer’s stipulations having influence on the performance of the product covered by this European Assessment Document shall be considered for the determination of the performance and detailed in the ETA.

1.2 Information on the intended use(s) of the construction product

1.2.1 Intended use(s)

The product is intended to be used for internal applications in an internal, normal climate.

Mirrors from silvered glass used in aggressive and/or constantly high humidity atmospheres, e.g., swimming pools, medical baths, saunas etc. and reflective glass for external glazing applications are excluded from the scope of this EAD.

1.2.2 Working life / durability

The assessment methods included or referred to in this EAD have been written based on the manufacturer’s request to take into account a working life of the special mirrors for the intended use of 10 years when installed in the works (provided that the special mirror is subject to appropriate installation (see 1.1)). These provisions are based upon the current state of the art and the available knowledge and experience.

¹ All undated references to standards or to EADs in this EAD are to be understood as references to the dated versions listed in chapter 4

When assessing the product, the intended use as foreseen by the manufacturer shall be taken into account. The real working life may be, in normal use conditions, considerably longer without major degradation affecting the basic requirements for works².

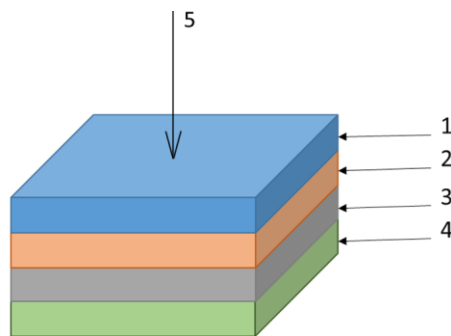
The indications given as to the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or his representative nor by EOTA when drafting this EAD nor by the Technical Assessment Body issuing an ETA based on this EAD, but are regarded only as a means for expressing the expected economically reasonable working life of the product.

1.3 Specific terms used in this EAD

EN 1036-1, clause 3, applies, as completed as follows:

1.3.1 Tinted coating

Intermediate coating brought onto the base float glass dedicated to receive a reflective silver coating deposit.



Key:

- 1- Base annealed glass
- 2- Tinted coating
- 3- Silver layer
- 4- Protective coating
- 5- Direction of incoming light

Figure 1.3.1.1 Layer stacking

² The real working life of a product incorporated in a specific works depends on the environmental conditions the works is subjected to, as well as on the particular conditions of the design, execution, use and maintenance of those works. Therefore, it cannot be excluded that in certain cases the real working life of the product may also be shorter than those referred to.

2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA

2.1 Essential characteristics of the product

Table 2.1.1 specifies how the performance of the special mirror shall be assessed in relation to the essential characteristics.

Table 2.1.1 Essential characteristics of the product and methods and criteria for assessing the performance of the product in relation to those essential characteristics

No	Essential characteristic	Assessment method	Type of expression of product performance
Basic Works Requirement 2: Safety in case of fire*			
1	Resistance to fire (for glass for use in a glazed assembly intended specifically for fire resistance)	EN 1036-2, § 4.3.2.2	Class
2	Reaction to fire	2.2.1	Class
Basic Works Requirement 3: Hygiene, health and the environment			
3	Content and/or release of dangerous substances	2.2.2	Description
Basic Works Requirement 4: Safety and accessibility in use			
4	Bullet resistance: shatter properties and resistance to attack	EN 1036-2, § 4.3.2.5	Class
5	Explosion resistance: impact behaviour and resistance to attack	EN 1036-2, § 4.3.2.6	Class
6	Burglar resistance: shatter properties and resistance to attack	EN 1036-2, § 4.3.2.7	Class
7	Pendulum body impact resistance: Shatter properties (safe breakability) and resistance to impact	EN 1036-2, § 4.3.2.8	Class
8	Mechanical resistance: Resistance against sudden temperature changes and temperature differentials	2.2.3	Level
9	Mechanical resistance: resistance against wind, snow, permanent and imposed load and/or imposed loads of the glass unit	EN 1036-2, § 4.3.2.10 **	Level
Basic Works Requirement 5: Protection against noise			
10	Protection against noise: direct airborne sound reduction	EN 1036-2, § 4.3.2.11	Level
Basic Works Requirement 6: Energy economy and heat retention			
11	Thermal properties	EN 1036-2, § 4.3.2.12	Level
12	Radiation properties: reflectance ρ_v	2.2.4	Level
13	Radiation properties: solar energy characteristics	EN 1036-2, § 4.3.2.14	Level
Aspects of durability			
14	Durability and protective coating(s) adhesion	2.2.5	Description
<p>* Although specified in EN 1036-2, the external fire performance is not addressed in this EAD, because this characteristic is only relevant for roof coverings only. Such use has been excluded from the scope of this EAD.</p> <p>** Methods EN 1288-2, EN 1288-3, EN 1288-4 and EN 1288-5 offer equivalent results; the reference method is EN 1288-3. As the coatings are very thin compared to the glass thickness and have no detrimental effect on the performance assessed of the glass pane without coating, the performance of the glass pane without coatings is the same.</p>			

2.2 Methods and criteria for assessing the performance of the product in relation to essential characteristics of the product

This chapter is intended to provide instructions for TABs. Therefore, the use of wordings such as “shall be stated in the ETA” or “it has to be given in the ETA” shall be understood only as such instructions for TABs on how results of assessments shall be presented in the ETA. Such wordings do not impose any obligations for the manufacturer and the TAB shall not carry out the assessment of the performance in relation to a given essential characteristic when the manufacturer does not wish to declare this performance in the Declaration of Performance.

2.2.1 Reaction to fire

The special mirror is considered to satisfy the requirements for performance class A1 of the characteristic reaction to fire in accordance with the Commission Decision 96/603/EC as amended by Commission Decision 2000/605/EC and 2003/424/EC without the need for testing on the basis of it fulfilling the conditions set out in that Decision and its intended use being covered by that Decision.

Therefore the performance of the product is A1.

2.2.2 Content and/or release of dangerous substances

The performance of the product related to the emissions and/or release and, where appropriate, the content of dangerous substances will be assessed on the basis of the information provided by the manufacturer³ after identifying the release scenarios taking into account the intended use of the product and the Member States where the manufacturer intends his product to be made available on the market.

If the manufacturer wants other dangerous substances to be assessed which are not specified below, this EAD may need to be amended or another EAD may need to be developed.

The identified intended release scenario for this product and intended use with respect to dangerous substances is:

IA2: Product with indirect contact to indoor air (e.g., covered products) but possible impact on indoor air

2.2.2.1 SVOC and VOC

For the intended use covered by the release scenario IA2 semi-volatile organic compounds (SVOC) and volatile organic compounds (VOC) shall be determined in accordance with EN 16516. The loading factor used for emission testing shall be 0,007 m²/m³.

Taking into account production variability, the products and their intended use(s), the manufacturer may determine performances on the basis of samples taken from one of the product-types that is representative of the product-types belonging to the same family; for the purpose of determination of release of SVOC and VOC a family is determined as products containing the same layer of organic materials (same thickness

³ The manufacturer may be asked to provide to the TAB the REACH related information which he must accompany the DoP with (cf. Article 6(5) of Regulation (EU) No 305/2011).

The manufacturer is **not** obliged:

- to provide the chemical constitution and composition of the product (or of constituents of the product) to the TAB, or
- to provide a written declaration to the TAB stating whether the product (or constituents of the product) contain(s) substances which are classified as dangerous according to Directive 67/548/EEC and Regulation (EC) No 1272/2008 and listed in the "Indicative list on dangerous substances" of the SGDS.

Any information provided by the manufacturer regarding the chemical composition of the products may not be distributed to EOTA or to TABs.

and same components). Within a family the thickness of inorganic layers does not influence this result. The risk analysis shall be documented in the manufacturer's technical documentation.

In case product performances were already demonstrated in accordance with the relevant test method, but based on a superseded version, that performance may be used, provided that the ratio between the performance and the LCI value is smaller or equal to 0,10.

The test specimen for these tests need to be taken from production as soon as practically possible and packaged in airtight foil. The sampling report shall indicate the time between production and the sealing of the airtight foil. The airtight foil shall be removed immediately before the start of the test. The test report shall copy the time between production and the sealing of the airtight foil from the sampling report.

The test results have to be reported for the relevant parameters defined in EN 16516 after 3 and/or 28 days testing.

The product performance shall be expressed in $\mu\text{g}/\text{m}^3$ and specified in the ETA.

2.2.3 Mechanical resistance: Resistance against sudden temperature changes and temperature differentials

The product shall be evaluated and assessed in accordance with EN 1036-2, clauses 4.2, 4.3.1 and 4.3.2.9.

2.2.4 Radiation properties: reflectance

The product shall be evaluated and assessed in accordance with EN 1036-2, 4.3.2.13.

The reflectance ρ_v of the product shall be stated in the ETA.

2.2.5 Durability and protective coating(s) adhesion

The product shall be evaluated and assessed in accordance with EN 1036-1, clause 8.

The ETA shall state to which evaluations according to EN 1036-1, clause 8.1 and 8.2 durability has been assessed (neutral salt spray test, copper accelerated acetic acid spray test, condensation water test and/or adhesion of protective coating) and, if so, which result according to EN 1036-1, clause 8.1.5 and 8.2 was obtained.

3 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

3.1 System(s) of assessment and verification of constancy of performance to be applied

For the products covered by this EAD the applicable European legal act is Decision⁴ 2000/245/EC of the European Commission for glass in building as amended by Decision⁵ 2001/596/EC of 8 January 2001.

The systems to be applied have been specified in Table 3.1.1:

Table 3.1.1 System of assessment and verification of constancy of performance applicable to special mirrors

Product(s)	Intended use(s)	Level(s) or class(es)	AVCP system(s)
Special mirrors	For use in a glazed assembly intended specifically to provide fire resistance	Any	1
	For uses subject to reaction to fire regulations	A1*	4
	For use as anti-bullet, or anti-explosion glazing	-	1
	For other uses liable to present 'safety-in-use' risks and subject to such regulations	-	3
	For uses relating to energy conservation and/or noise reduction	-	3
	For other uses other than those specified above	-	4
* Products/materials that do not require to be tested for reaction to fire (e.g., products/materials of Class A1 according to Commission Decision 1996/603/EC as amended by 2000/605/EC).			

⁴ Official Journal L 77 of 28 March 2000

⁵ Official Journal L 209 of 2 August 2001

3.2 Tasks of the manufacturer

The cornerstones of the actions to be undertaken by the manufacturer of the product in the procedure of assessment and verification of constancy of performance are laid down in Table 3.2.1.

Table 3.2.1 Control plan for the manufacturer; cornerstones

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Factory production control (FPC) [including testing of samples taken at the factory in accordance with a prescribed test plan]					
1	Light reflectance	§2.2.4	According to Control plan	According to Control plan	1/month
2	Silver thickness	EN 1036-2	According to Control plan	According to Control plan	1/day
3	Dimensions as cut finished sizes	EN 1036-2	According to Control plan	According to Control plan	1/day
4	Appearance of mirror	EN 1036-2	According to Control plan	According to Control plan	1/day
5	Thickness, adhesion of protective coating	§2.2.5	According to Control plan	According to Control plan	1/day

3.3 Tasks of the notified body

The cornerstones of the actions to be undertaken by the notified body in the procedure of assessment and verification of constancy of performance of the product are laid down in Table 3.3.1.

Table 3.3.1 Control plan for the notified body; cornerstones

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Initial inspection of the manufacturing plant and of factory production control <i>(for system 1 only)</i>					
1	Notified Body will ascertain that the factory production control with the staff and equipment are suitable to ensure a continuous and orderly manufacturing of the special mirrors. This assessment shall be based on an initial inspection of the factory according to EN 1036-2.	Verification of the complete FPC as described in the control plan agreed between the TAB and the manufacturer.	According to Control plan	According to Control plan	When starting the production or a new line
Continuous surveillance, assessment and evaluation of factory production control <i>(for system 1 only)</i>					
2	The Notified Body will ascertain that the system of factory production control and the specified manufacturing process are maintained taking account of the control plan. This assessment shall be based on an initial inspection of the factory according to EN 1036-2.	Verification of the controls carried out by the manufacturer as described in the control plan agreed between the TAB and the manufacturer with reference to the raw materials, to the process and to the product as indicated in Table 3.2.1.	According to Control plan	According to Control plan	According to Control plan

4 REFERENCE DOCUMENTS

EN 572-1:2012+A1:2016	Glass in building - Basic soda-lime silicate glass products - Part 1: Definitions and general physical and mechanical properties
EN 572-2:2012	Glass in building - Basic soda lime silicate glass products - Part 2: Float glass
EN 572-8:2012+A1:2016	Glass in building - Basic soda-lime silicate glass products - Part 8: Supplied and final cut sizes
EN 1096-2:2012	Glass in building - Coated glass - Part 2: Requirements and test methods for class A, B and S coatings
EN 1036-1:2007	Glass in building - Mirrors from silver-coated float glass for internal use - Part 1: Definitions, requirements and tests methods
EN 1036-2:2008	Glass in building - Mirrors from silver-coated float glass for internal use - Part 2: Evaluation of conformity - Product standard
EN 16516:2017+A1:2020	Construction products: Assessment of release of dangerous substances - Determination of emissions into indoor air