EAD **030927-00-0404**

www.eota.eu

June 2023

European Assessment Document for

Adhesive backed polymeric films for use on glass in buildings

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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) 305/2011 as a basis for the preparation and issuing of European Technical Assessments (ETA).

Contents

1 SCOPE OF THE EAD

1.1 Description of the construction product

The adhesive backed polymeric films for use on glass in buildings are composed of one or more layers of polymeric film with an adhesive on one external face and designed to modify glazing performances solar and luminous control, thermal transmittance, safety and security. The construction product is hereinafter referred to as “adhesive backed film”.

The individual layers of polymeric film are laminated together to form the final adhesive backed film. The adhesive backed film may incorporate one or more of the following: colouring, UV absorbers, UV inhibitors, metal layer(s), metal alloy layer(s), metal oxide layer(s), ceramic layer(s), abrasion resistant surface coating, release liner. The individual layers of polymeric film are different media, and interface transmissions and reflections as well as internal transmissions of each media will affect the light and solar performance of the final product. Therefore, each assessed layer combination should be considered as an individual adhesive backed film and shall be assessed as such.

The adhesive backed film is intended for application on glass surfaces that are oriented to the exterior and/or interior.

The product is not covered by a harmonised European standard (hEN). However, EN 15752-1[1], which is not a harmonised European standard, is adequately considered.

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 absence of such instructions) according to the usual practice of the building professionals.

Relevant manufacturer’s stipulations, e.g., with regard to the intended end use conditions, 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 as long as the details of the assessment methods as laid down in this EAD are respected.

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

1.2.1 Intended use(s)

The adhesive backed film is intended for application on internal or external glass surface in order to modify glazing performance. The following uses are considered:

- Uses subject to reaction to fire regulations.
- Uses as anti-bullet, or anti-explosion.
- Other uses liable to present "safety in use" risks and subject to such regulations. Adhesive backed safety films and adhesive backed security films, except adhesive backed anti-bullet and adhesive backed anti-explosion films, are intended for this use.
- Uses relating to energy conservation and/or noise reduction. Adhesive backed solar control films, adhesive backed lower emissivity films, adhesive backed ultraviolet reducing films are intended for this use.

An adhesive backed film can have more than one intended use.

The adhesive backed film is applied to float glass, always on a glass uncoated surface. The glass shall be soda-lime silicate in accordance with EN 572-1 and EN 572-2.

1 All undated references to standard in this EAD are to be understood as references to the dated versions listed in chapter 4.

The adhesive backed film is applied on-site.

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 adhesive backed film for the intended use of 5 years when installed in the works. These provisions are based upon the current state of the art and the available knowledge and experience.

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 works[2].

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

Unless otherwise stated, the terms and symbols used in EN 15752-1 apply.

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

2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA

2.1 Essential characteristics of the product

Table 2.1.1 shows how the performance of adhesive backed film is 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	Reaction to fire	2.2.1	Class
Basic Works Requirement 3: Hygiene, health and the environment			
2	Content, emission and/or release of dangerous substances	2.2.2	Level/description
Basic Works Requirement 4: Safety and accessibility in use			
3	Bullet resistance	2.2.3	Class
4	Resistance against explosion pressure	2.2.4	Class
5	Explosion resistance: air-blast loading	2.2.5	Class
6	Resistance against manual attack	2.2.6	Class
7	Pendulum impact resistance	2.2.7	Class
8	Adhesive strength	2.2.8	Level
Basic Works Requirement 5: Protection against noise			
9	Direct airborne sound reduction	2.2.8	Level
Basic Works Requirement 6: Energy economy and heat retention			
10	Thermal transmittance	2.2.10	Level
11	Emissivity	2.2.11	Level
12	Light transmittance and light reflectance	2.2.12	Level
13	Solar energy characteristics	2.2.13	Level
Aspects of durability			
14	Accelerated weathering	2.2.14	Level
15	Scratch / abrasion resistance	2.2.15	Level

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.

The performance shall not be determined for the adhesive backed film alone. Performance shall be determined using test specimens consisting of the adhesive backed film applied to clear, monolithic, uncoated float glass of nominal thickness of 4 mm. The adhesive backed film shall be applied to this glass substrate in accordance with the Manufacturer’s Product Installation Instructions (MPII). The glass shall be monolithic soda-lime silicate and shall be in accordance with EN 572-1 and EN 572-2.

Measurement of the properties of test specimens shall be made after the cure time has elapsed. Cure time requirements may be obtained from the Manufacturer’s Product Installation Instructions (MPII). In case such information is not part of the MPII, a curing time of 48 hours at (23±2) ºC and (50±5) % RH shall be used. The curing time shall be stated in the ETA.

2.2.1 Reaction to fire

The adhesive backed film shall be tested using the method(s) relevant for the corresponding reaction to fire class in accordance with EN 13501-1. The provisions given in Annex A shall be taken into account within the tests. The adhesive backed film shall be classified in accordance with the Commission Delegated Regulation (EU) No 2016/364 in connection with EN 13501-1.

The reaction to fire class shall be stated in the ETA together with those conditions for which the classification is valid.

2.2.2 Content, emission 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 manufacturer[3] 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.

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

IA1: Product with direct contact to indoor air

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[3] The manufacturer may be asked to provide to the TAB the REACH related information which shall accompany the DoP (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
- 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, taking into account the installation conditions of the construction product and the release scenarios resulting from there.

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

2.2.2.1 SVOC and VOC

For the intended use covered by the release scenario IA1 semi-volatile organic compounds (SVOC) and volatile organic compounds (VOC) shall be determined in accordance with EN 16516. The loading factor (m^2/m^3) used for emission testing can be taken from following table:

Intended use	Loading factor (m^2/m^3)
small surfaces, e.g., door, window	0,05

Table 2.2.2.1.1 Loading factor for emission testing.

Test specimen shall be placed to the emission chamber immediately after the self-adhesive film was applied to clear, monolithic, uncoated float glass of nominal thickness of 4 mm. This time is considered the starting time of the emission test.

The test results have to be reported for the relevant parameters (e.g., chamber size, temperature and relative humidity, air exchange rate, loading factor, size of test specimen, edge sealing, conditioning, glue system, production date, arrival date, test period, test result) after 3 and/or 28 days testing.

The product performance shall be stated in the ETA [unit µg/m³ or mg/m³].

2.2.3 Bullet resistance

The bullet resistance shall be determined in accordance with EN 1063. In the test specimen, the adhesive backed film shall be applied to surface of the glass not covered by the frame used to clamp the test specimen.

When a bullet resistance class is claimed by the manufacturer, the bullet test for this claimed bullet resistance class shall be performed.

When a bullet resistance class is not claimed by the manufacturer, then the test shall start with the lowest level of bullet resistance within the attack with rifle in accordance with Table 1 of EN 1063 or with shot gun in accordance with Table 2 of EN 1063 and continue increasing the level of attack, with the aim of obtaining the maximum bullet resistance.

The highest tested level of protection that meets the requirements of Clause 6 of EN 1063 is assigned a class in accordance with Table 1 and Table 2 of EN 1063. This class shall be stated in the ETA.

If further layers are added to the self-adhesive film, the class remains the same.

2.2.4 Resistance against explosion pressure

The resistance against explosion pressure shall be determined in accordance with EN 13541. In the test specimen, the adhesive backed film shall be applied to surface of the glass not covered by the frame used to clamp the test specimen.

When an explosion-pressure resistance class is claimed by the manufacturer, the explosion-pressure test for this claimed explosion-pressure resistance class shall be performed.

When an explosion-pressure resistance class is not claimed by the manufacturer, then the test shall start with the lowest level of positive maximum overpressure of the reflected blast wave in accordance with Table 1 of EN 13541 and continue increasing the level of overpressure, with the aim of obtaining the maximum explosion-pressure resistance.

The highest level of overpressure that meets the requirements of Clause 6 of EN 13541 is assigned a class in accordance with Table 1 of EN 1063. This class shall be stated in the ETA.

2.2.5 Explosion resistance: air-blast loading

The explosion resistance, air-blast loading, shall be determined in accordance with ISO 16933. In the test specimen, the adhesive backed film shall be applied to surface of the glass not covered by the frame used to clamp the test specimen.

When an air-blast loading resistance class for vehicle bombs or smaller hand carried satchel bombs is claimed by the manufacturer, the air-blast loading test for this claimed air-blast loading resistance shall be performed.

When an air-blast loading resistance class is not claimed by the manufacturer, then the test shall start with the lowest mean peak air-blast pressure for vehicle bombs in accordance with Table 2 of ISO 16933 or with smaller hand carried satchel bombs in accordance with Table 3 of ISO 16933 and continue increasing the mean peak air-blast pressure, with the aim of obtaining the maximum air-blast loading resistance.

The highest mean peak air-blast pressure for vehicle bombs or smaller hand carried satchel bombs that meets the requirements of Table 1 of ISO 16933 is assigned a class in accordance with Table 2 or Table 3 of ISO 16933. This class shall be stated in the ETA.

2.2.6 Resistance against manual attack

The resistance against manual attack shall be determined in accordance with EN 356. In the test specimen, the adhesive backed film shall be applied to surface of the glass not covered by the frame used to clamp the test specimen.

When a resistance against manual attack class is claimed by the manufacturer, the hard drop test or the axe test for this claimed resistance against manual attack shall be performed.

When the resistance against manual attack class is not claimed by the manufacturer, then the test shall start with the lowest drop height in accordance with Table 4 of EN 356 for the hard body drop or with the minimum number of strikes in accordance with Table 4 of EN 356 for the axe attack and continue increasing the drop height or the number of strikes, with the aim of obtaining the maximum resistance against manual attack.

The highest tested category of resistance that meets the requirements of Clause 8.4 of EN 356 for the hard body drop test or Clause 9.4 of EN 356 for the axe test is assigned a class in accordance with Table 4 of EN 356. This class shall be stated in the ETA.

If further layers are added to the self-adhesive film, the class remains the same.

2.2.7 Pendulum impact resistance

The pendulum impact resistance shall be determined in accordance with EN 12600. In the test specimen, the adhesive backed film shall be applied to surface of the glass not covered by the frame used to clamp the test specimen.

The highest drop height that meets the requirements of Clause 4 of EN 12600 is assigned a class in accordance with Section 6 of EN 12600. This class shall be stated in the ETA.

If further layers are added to the self-adhesive film, the class remains the same.

2.2.8 Adhesive strength

The adhesive strength shall be determined in accordance with Clause 7.3.4 of EN 15752-1. A minimum of 5 specimens shall be tested.

The adhesive strength mean value, expressed as force in Newtons for the 25 mm wide strip (N / 25 mm), shall be stated in the ETA.

2.2.9 Direct airborne sound reduction

The sound reduction indexes shall be determined in accordance with EN 12758.

The weighted sound reduction index, R_w, expressed in dB, and corresponding spectrum adaptation terms, C and C_{tr}, expressed in dB, in accordance with EN ISO 10140-1 and EN ISO 717-1, shall be stated in the ETA.

2.2.10 Thermal transmittance

The thermal transmittance value (*U*-value) shall be determined by calculation in accordance with EN 673, with:

- Total normal emissivity ε_n, in accordance with Clause 2.2.10.
- Nominal thickness of each material layer.
- Thermal resistivity of each material.

The thermal resistivity of soda-lime silicate glass shall be obtained from Clause 5.2 of EN 673. The thermal conductivity of components other than glass shall be obtained in accordance with EN ISO 22007-2. The thermal resistivity of components other than glass shall be calculated as the inverse of the thermal conductivity.

The thermal transmittance value (*U*-value) shall be stated in the ETA. The thermal transmittance value (*U*-value) shall be expressed in W/(m^2K) rounded to one decimal place.

2.2.11 Emissivity

The total normal emissivity ε_n shall be determined in accordance with EN 12898.

The total normal emissivity value shall be stated in the ETA. The total normal emissivity value shall be truncated at three decimal places and then rounded to two decimal places.

2.2.12 Light transmittance and light reflectance

The light transmittance τ_v and light reflectance ρ_v shall be determined in accordance with Clause 5.2 and Clause 5.3 of EN 410. Annex A and Annex B of EN 410 are not applicable.

The light transmittance and light reflectance values shall be stated in the ETA. The light transmittance and the light reflectance values shall be expressed in decimal and rounded to two decimal places.

2.2.13 Solar energy characteristics

The solar direct transmittance τ_e, the solar direct reflectance ρ_e and the total solar energy transmittance (solar factor) g shall be determined in accordance with Clause 5.4 of EN 410.

The solar direct transmittance, the solar direct reflectance, and the solar factor[4] values shall be stated in the ETA. The solar direct transmittance, the solar direct reflectance and the solar factor values shall be expressed in decimal and rounded to two decimal places.

2.2.14 Accelerated weathering

The durability shall be determined in accordance with Clause 7 of EN 15752-1.

[4] When relevant, if the intended use involves internal and external glass surface, the solar factor calculated from both sides shall be stated.

The method of accelerated weathering in Clause 7.2 of EN 15752-1 applies to all films regardless of their intended use. In order to assess durability, the test methods described in Clause 7.3 of EN 15752-1 shall be used.

The light transmittance and the solar factor values after the accelerated weathering shall be stated in the ETA. For adhesive backed safety / security films, the adhesive strength values after the accelerated weathering shall be stated in the ETA.

The light transmittance and the solar factor values shall be expressed in decimal and rounded to two decimal places. The total normal emissivity value shall be truncated at three decimal places and then rounded to two decimal places. The adhesive strength mean value shall be expressed as force in Newtons for the 25 mm wide strip (N / 25 mm).

2.2.15 Scratch / abrasion resistance

The scratch / abrasion resistance shall be determined in accordance with Clause 7.4 of EN 15752-1.

The change in haze, ΔHaze, expressed as percentage and rounded to one decimal place shall be stated in the ETA.

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 Commission Decision 2000/245/EC, as amended by Commission Decision 2001/596/EC.

The systems are:

- 3 or 4 for uses subject to reaction to fire regulations, depending on the conditions defined in the said Decision,
- 1 for anti-bullet or anti-explosion uses,
- 3 for uses subject to regulations regarding safety in use risk,
- 3 for noise reduction and/or energy conservation.

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)					
Incoming materials					
1.	Type of film	Visual	According to purchase specifications	According to Control Plan	Each delivery
2	Thickness / Dimensions of film	EN 15752-1, Clause 6	According to purchase specifications	According to Control Plan	Each delivery
3.	Light transmittance or/and light reflectance of film	EN 410	According to purchase specifications	According to Control Plan	Each delivery
4	Packaging and labelling of materials for coating (metals, oxides, dyes, adhesives, additional polymers...) and release liner	Visual	According to purchase specifications	According to Control Plan	Each delivery
Product control					
6	Reaction to fire	Indirect test according to Infrared spectrum of Table 2 of EN 1279-4	According to Control Plan	1	Once per production batch
7	Reaction to fire	Indirect test according to method A (600 ºC) of EN ISO 3451-1	According to Control Plan	1	Once per production batch
8	Light transmittance or/and light reflectance	2.2.11	According to Control Plan	1	Once per production batch
9	UV transmittance, where appropriate	EN 410, Clause 5.5	According to Control Plan	1	Once per production batch
10	Total normal emissivity (only for adhesive backed film claiming to have a low emissivity)	EN 12898, Clause 6.1	According to Control Plan	1	Once per year
11	Appearance of adhesive backed film	Visual	According to Control Plan	1	Once per production batch
12	Adhesive strength	2.2.8	According to Control Plan	1	Once per production batch
14	Scratch / abrasion resistance	2.2.15	According to Control Plan	1	Once per production batch
15	Thickness	EN 15752-1, Clause 6	According to Control Plan	3	Once per production batch

3.3 Tasks of the notified body

The intervention of the notified body under AVCP system 1 is only necessary for products intended for anti-bullet or anti-explosion uses.

The cornerstones of the actions to be undertaken by the notified body in the procedure of assessment and verification of constancy of performance for the adhesive backed film 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 *(for systems 1 only)*					
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 adhesive backed film.	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 *(for system 1 only)*					
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.	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	One/year

4 REFERENCE DOCUMENTS

EN 356:1999	Glass in building – Security glazing – Testing and classification of resistance against manual attack
EN 410:2011	Glass in building – Determination of luminous and solar characteristics of glazing
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 673:2011	Glass in building – Determination of thermal transmittance (U value) – Calculation method
EN 1063:1999	Glass in building – Security glazing – Testing and classification of resistance against bullet attack
EN 1279-4:2018	Glass in Building – Insulating Glass Units – Part 4: Methods of test for the physical attributes of edge seal components and inserts
EN 12600:2002	Glass in building – Pendulum test – Impact test method and classification for flat glass
EN 12758:2019+A1:2023	Glass in building – Glazing and airborne sound insulation – Product descriptions, determination of properties and extension rules
EN 12898:2019	Glass in building – Determination of the emissivity
EN 13501-1:2018	Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests
EN 13541:2012	Glass in building – Security glazing – Testing and classification of resistance against explosion pressure
EN 13823:2020+A1:2022	Reaction to fire tests for building products – Building products excluding floorings exposed to the thermal attack by a single burning item
EN 15752-1:2014	Glass in building – Adhesive backed polymeric film – Part 1: Definitions and requirements
EN 16516:2017+A1:2020	Construction products: Assessment of release of dangerous substances - Determination of emissions into indoor air
EN ISO 3451-1:2019	Plastics – Determination of ash – Part 1: General methods (ISO 3451-1:2019)
EN ISO 717-1:2020	Acoustics – Rating of sound insulation in buildings and of building elements – Part 1: Airborne sound insulation
EN ISO 1716:2018	Reaction to fire tests for products – Determination of the gross heat of combustion (calorific value) (ISO 1716:2018)
EN ISO 1182:2020	Reaction to fire tests for products – Non-combustibility test (ISO 1182:2020)
EN ISO 10140-1:2021	Acoustics – Laboratory measurement of sound insulation of building elements – Part 1: Application rules for specific products
EN ISO 11925-2:2020	Reaction to fire tests - Ignitability of products subjected to direct impingement of flame – Part 2: Single-flame source test (ISO 11925-2:2020)
ISO 16933:2007 ISO 16933:2007/Cor 1:2008	Glass in building – Explosion-resistant security glazing – Test and classification for arena air-blast loading
EN ISO 22007-2:2022	Plastics – Determination of thermal conductivity and thermal diffusivity – Part 2: Transient plane heat source (hot disc) method (ISO 22007-2:2022)

ANNEX A: MOUNTING AND FIXING PROVISIONS AS WELL AS EXTENDED APPLICATION RULES FOR THE TEST RESULTS OF THE RELEVANT REACTION TO FIRE TESTS

A.1 Testing in accordance with EN ISO 1182 and EN ISO 1716

These test methods are relevant for reaction to fire classes A1 and/or A2 in accordance with EN 13501-1..

A.2 Testing in accordance with EN 13823 (Single burning item test)

This test method is relevant for reaction to fire classes A2 to D in accordance with EN 13501-1 simulating the use of the adhesive backed film as direct adhered to glass.

A.2.1 Dimension of the test rig and the test specimens

The dimension of the L-shaped test specimens (consisting of a long wing and a short wing) shall be as prescribed in the test standard.

On the long wing of each test specimen at least one vertical and one horizontal joint shall be considered as prescribed in the test standard (200 mm for away from the inner corner of the test specimen and 500 mm above the floor of the specimen trolley). These joints shall be created only in the adhesive backed film. The glass substrate used will be one piece on the long wing and another piece on the short wing. The glass substrate with the adhesive backed film shall be tested free standing at a distance of 80 mm from the backing board.

The two wings of the test specimen shall be arranged on the trolley in accordance with EN 13823. On the backside there shall be arranged a support frame made from metal profiles. The function of this support frame is just to hold the glass against the lower U-profile and the upper stop for preventing the glass panes to fall over.

A.2.2 Substrate

The test specimens shall be applied to clear, monolithic, uncoated float monolithic soda-lime silicate glass of nominal thickness of 4 mm in accordance with EN 572-1 and EN 572-2.

Other end-use conditions shall be tested. In this case, end-use conditions shall be indicated in the ETA.

A.2.3 Test specimens

The following parameters shall be considered when preparing the test specimens:

- Chemical composition and assembly[5] – each different composition and assembly (e.g., number, type and dimensions of the various layers of the films) shall be considered within the tests.
- Thickness.
- Orientation – if relevant, the specimen shall be mounted and tested with vertical as well as with horizontal orientation.
- Adhesive – each adhesive foreseen for fixing purposes in the end-use shall be considered within the tests of the adhesive backed film, taking into account the highest possible applied quantity per unit area of the adhesive.

5 To permit the TAB to apply direct applications rules for test results within the assessment, it is recommended that the manufacturer should provide (but he is not obliged to do it) sufficient information with regard to this parameter, allowing the TAB to determine which products or product variants shall be submitted to testing and to reduce the number of tests required.

A.2.4 Direct applications rules of test results

The test result in compliance with EN 13823 remains also valid if:

- The adhesive backed film is replaced by an adhesive backed film of the same generic material type with a PCS value determined in accordance with EN ISO 1716 which is not more than 10% higher than the adhesive backed film tested.
- The thickness of the adhesive backed film is decreased.
- The glass thickness is increased.
- The applied quantity per unit area of adhesive is decreased.

A.3 Testing in accordance with EN ISO 11925-2 (Small ignition source test)

This test method is relevant for reaction to fire classes B to E in accordance with EN 13501-1 simulating the use of the adhesive backed film as direct adhered to glass.

A.3.1 Dimensions of the test specimens and preparation

The dimension of the test specimens shall be as prescribed in EN ISO 11925-2.

A.3.2 Substrate

The test specimens shall be applied to clear, monolithic, uncoated float monolithic soda-lime silicate glass of nominal thickness of 4 mm in accordance with EN 572-1 and EN 572-2.

Other end-use conditions shall be tested. In this case, end-use conditions shall be indicated in the ETA.

A.3.3 Exposure type

Both surface exposure and edge exposure shall be tested.

A.3.4 Test specimens

The following parameters shall be considered when preparing the test specimens:

- Chemical composition and assembly (see footnote 5) – each different composition and assembly (e.g., number, type and dimensions of the various layers of the films) shall be considered within the tests.
- Thickness.
- Orientation – if relevant, the specimen shall be mounted and tested with vertical as well as with horizontal orientation.
- Adhesive – each adhesive foreseen for fixing purposes in the end-use shall be considered within the tests of the adhesive backed film, taking into account the highest possible applied quantity per unit area of the adhesive.

A.3.5 Direct applications rules of test results

The test result in compliance with EN ISO 11925-2 remains also valid if:

- The adhesive backed film is replaced by an adhesive backed film of the same generic material type with a PCS value determined in accordance with EN ISO 1716 which is not more than 10% higher than the adhesive backed film tested.
- The thickness of the adhesive backed film is decreased.
- The glass thickness is increased.
- The applied quantity per unit area of adhesive is decreased.