Established pursuant to Annex II of the Council Directive 89/106 of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products (Construction Products Directive)

ETAG 028

GUIDELINE FOR
EUROPEAN TECHNICAL APPROVAL
of

Fire retardant products

Edition February 2009

This Guideline for European Technical Approval is established and published in accordance with Article 11 of the Construction Products Directive as a basis for the preparation and issue of European technical approvals in accordance with Article 9.1 of the Construction Products Directive.

European Technical Approvals are issued by approval bodies authorised and notified in accordance with Article 10 of the Construction Products Directive. These bodies are organized in EOTA.

The European Technical Approval, according to the Construction Products Directive, is a favourable technical assessment of the fitness for use of a construction product and the technical specification of the assessed product, serving as basis for the CE marking of this product when and where a harmonised standard according to the Directive is not or not yet available.

Due to technical innovation and the progress of the state of the art, guidelines for technical approval might not reflect the latest developments and experiences gained in approval procedures. The reader of this Guideline is therefore advised to check with an EOTA member whether there are further provisions which have to be taken into account in the use of the Guideline.

EOTA Kunstlaan 40 Avenue des Arts B - 1040 BRUSSELS

Table of contents

1 SCOPE OF THE ETAG

1.1 Definition of the construction product

This ETA Guideline covers paints, coatings, varnishes and impregnations intended to improve one or more of the reaction to fire performance characteristics of a surface of a construction product when incorporated into the works.

The following different types of coating material are covered by the ETAG

- paint and varnish (single or multilayer, primer / undercoat / top coat)
- intumescent (with top coating)
- encapsulation coating systems

The products covered may consist of one or more different layers. In the latter case the ETA will cover at least one of the fire retardant layers and will specify the other layers to enable the applied system to achieve the claimed fire performance.

This ETAG is not applicable to:

- a fire retardant impregnated into a product and a paint or varnish applied to a product before that product is placed on the market. (The fire performance of such a product is assessed in accordance with the relevant product Technical Specification)

- fire reactive products used to fill gaps and penetrations

- fire protective coatings which improve the fire resistance performance of a product to which they are applied are covered by ETAG 18 'Fire protective products part 2: Reactive coatings'.

- coatings and impregnations applied to textiles and cables

1.2 Intended use of the construction product

These fire retardant products are intended to be put on the market separately from the products or building elements to which they are intended to be applied. They are applied in situ. Two areas are defined, there are different fire tests for each area:

- construction products excluding floorings
- floorings

Note: In some countries, the reaction to fire classifcation of these products when used as floorings is not taken into account.
The following end use categories are defined in relation to environmental conditions:

Type X - Fire retardant products intended for all conditions (internal, semi-exposed and exposed).

Type Y - Fire retardant products intended for internal and semi-exposed conditions. Semi –exposed includes temperatures below zero, but no exposure to rain and limited exposure to UV (but UV is not assessed).

Type Z1 - Fire retardant products intended for internal conditions (excluding temperatures below zero) with high humidity. [1]

Type Z2 - Fire retardant products intended for internal conditions (excluding temperatures below zero) with high humidity classes other than Z1

Note: Products that meet the requirements for type X meet the requirements for all other types. Products that meet the requirements for type Y, also meet the requirements for type Z1 and Z2. Products that meet the requirements for type Z1 also meet the requirements for type Z2.

1.3 Assumed working life of the construction product

The provisions and the verification and assessment methods included or referred to in this ETAG have been written based upon the assumed working life of the fire retardant product for the intended use of 5 years when installed in the works, provided that the fire retardant product is subject to appropriate installation, use and maintenance (see 4.4). These provisions are based upon the current state of the art and the available knowledge and experience.

"Assumed working life" means that, when an assessment following the ETAG provisions is made, and when this working life has elapsed, the real working life may be, in normal use conditions, considerably longer without major degradation affecting the Essential Requirements.[2]

The indications given as to the working life of the construction product cannot be interpreted as a guarantee given by the product manufacturer or his representative or the approval body issuing the ETA, but are regarded only as a means for choosing the appropriate products in relation to the expected economically reasonable working life of the works (see 5.2.2 of the Interpretative Documents).

Note 1: for guidance on procedures to be undertaken when the working life of the product has elapsed see 4.4.

Note 2: Within some countries, the performance of these products when applied to flooring is considered only in its 'as newly applied' condition. For this reason, the NPD option for this characteristic is allowed.

1.4 Terminology

1.4.1 Common terms relating to the Construction Products Directive

For the meaning of these terms see EOTA document "Common terms used in Guidelines for European technical approval" published on the EOTA website.

1.4.2 Specific terms used in this ETAG

1.4.2.1 Fire retardant product: a product supplied in liquid or in paste or powder form, that, when applied to a substrate, improves one or more of the reaction to fire performance characteristics of the substrate.

---

[1] These conditions apply for internal humidity class 5 in accordance with EN ISO 13788.

[2] The real working life of a product incorporated in a specific works depends on the environmental conditions to which that works is subject and the particular conditions of the design, execution, use and maintenance of that works may be outside this ETAG. Therefore, it cannot be excluded that in these cases the real working life of the product may also be shorter or longer than the assumed working life.

Note: such products may have other defined performance not covered by the ETAG.

1.4.2.2 Intumescent coating; a coating which is specifically formulated to provide a chemical reaction upon heating such that the physical form changes into an expanded foam, and in so doing provides protection to the underlying surfaces from fire.

1.4.2.3 Encapsulation coating system: A coating system which when applied completely encases a surface to a thickness of at least 1 mm.

1.4.2.4 Surface impregnation treatment (on site): A product in liquid or paste form that, when applied to a substrate, penetrates below the surface and, on drying or curing, deposits substances that impart fire retardant properties to the substrate. The performance of such products depends on the combination of depth of penetration and amount (loading) of fire retardant substances deposited.

1.4.2.5 Topcoat: material applied to the surface of the fire retardant coating as protection against environmental degradation and also for decorative purposes.

1.4.2.6 Extended application: the outcome of a process (involving the application of defined rules that may incorporate calculation procedures) that predicts, for a variation of a product property and/or its intended use application(s), a test result on the basis of one or more tests to the same test standard

1.5 Procedure in the case of a significant deviation from the ETAG

The provisions of this ETAG apply to the preparation and issue of European technical approvals in accordance with Art. 9.1 of the CPD and section 3.1 of the Common Procedural Rules.

In cases in which a certain provision of this ETAG is not or not fully applicable or a particular aspect of a product and/or intended use to be assessed is not or not sufficiently covered by the methods and criteria of the ETAG, the procedure of Art. 9.2 of the CPD and section 3.2 of the Common Procedural Rules applies with regard to the deviation or aspect concerned.

2 ASSESSMENT OF FITNESS FOR USE

2.1 Meaning of "fitness for use"

"Fitness for (the intended) use" of a construction product means that the product has such characteristics that

the ***works*** in which it is to be incorporated ***can***, if properly designed and built,

1. ***satisfy*** the Essential Requirements when and where such works are subject to regulations containing such requirements (CPD Art. 2.1) and
2. ***be fit*** for their intended use, account being taken of economy, ***and*** in this connection ***satisfy*** the Essential Requirements for an economically reasonable working life, if normally maintained (see CPD Annex I, sentence 1 and 2).

2.2 Elements of the assessment of fitness for use

The assessment of the fitness of a construction product for its intended use includes:

- the identification of the characteristics of the product which are relevant to its fitness for use (in the following referred to as "regulatory characteristics");

- the establishment of methods for the verification and assessment of the regulatory product characteristics and the expression of the respective product performances;
- the identification of such regulatory characteristics to which the option "No Performance Determined" applies for the reason that in one or more Member States they are not relevant for the fulfilment of the requirements applicable to the works;
- the identification of such regulatory characteristics for which limit values (threshold values) have to be respected for technical reasons.

2.3 Relationship of requirements to the product characteristics and methods of verification and assessment

The product characteristics, methods of verification and assessment criteria which are relevant for the fitness of fire retardant products for the intended use referred to in 1.2 are given in table 1.

Table 1 - Product characteristics and methods of verification and assessment

Product characteristic	**use of the NPD option**	**Method of verification and assessment**	**Expression of product performance** ***(value, class, NPD, criterion, etc)***
Essential Requirement 1: Mechanical resistance and stability			
Not relevant			
Essential Requirement 2: Safety in case of fire			
Reaction to fire	not permitted	2.4.1	See EN 13501-1
Essential Requirement 3: Hygiene, health and environment			
Release and / or content of dangerous substances	not permitted for components covered by ETA, for other components, may be permitted (see 2.4.2.2)	2.4.2 2.4.2.2	
Essential Requirement 4: Safety in use			
Not relevant			
Essential Requirement 5: Protection against noise			
Not relevant			
Essential Requirement 6: Energy economy and heat retention			
Not relevant			
General aspects relating to fitness for use **			
Durability Serviceability for floorings	not permitted permitted	2.4.3 2.4.4	see table 2a see table 2b

2.4 Product characteristics which are relevant for the fitness for use

2.4.1 Reaction to fire

2.4.1.1 Method of verification

The fire retardant product shall be tested, using the test methods relevant for the corresponding reaction to fire class, in order to be classified according to EN 13501-1. The procedures for mounting and fixing the products for the specific test methods are given in annex A.

2.4.1.2 Sampling and conditioning

Sampling for initial type testing shall be carried out by the representative of the Approval or Cerification body, normally during the initial inspection, with the manufacturer's representative present. The sample shall be taken from finished products, packaged and ready for distribution. The sample shall be taken at random and shall be representative of normal production and clearly identified to ensure that the sample is used for testing. The representative of the Approval body shall record the following details:

a) manufacturer name and address;
b) description of the product or product system;
c) how the product is identified;
d) manufacturer's marking of the product;
e) batch size;
f) sample size;
g) location and date of sampling;
h) all necessary information about the product for testing.

The record shall be agreed and signed by the representative of the Approval body and the manufacturer's representative.

The test specimens shall be produced from the sampled product under the direct supervision of the Notified Laboratory either by the manufacturers representative or following the manufacturers instructions for surface preparation and application.

Prior to conducting any fire tests, the specimens shall be allowed to 'cure' for at least one week as advised by the manufacturer and then conditioned to constant mass according to EN 13238.

2.4.1.3 Method of assessing and judging

The product shall be classified according to EN 13501-1.

2.4.2 Release and/ or content of dangerous substances

2.4.2.1 Method of verification

a) Presence of dangerous substances

The applicant shall submit a written declaration stating whether or not the fire retardant product contains dangerous substances according to European and national regulations, when and where relevant in the Member States of destination, and shall list these substances.

b) Compliance with the applicable regulations

If the fire retardant product contains dangerous substances as declared above, the ETA will

provide the method(s) which has been used for demonstrating compliance with the applicable regulations in the Member States of destination, according to the dated EU data-base (method(s) of content or release, as appropriate).

2.4.2.2 Method of assessing and judging

The fire retardant product shall comply with all relevant European and national provisions applicable for the uses for which it is brought to the market. The attention of the applicant should be drawn to the fact that for other uses or other Member States of destination there may be other requirements which would have to be respected. For dangerous substances contained in the product but not covered by the ETA, the NPD option (no performance determined) is applicable.

2.4.3 Durability

2.4.3.1 Method of verification

Durability of fire performance is assessed by subjecting test specimens to fire tests in accordance with ISO 5660-1, then further specimens are subjected to ageing procedures then fire tested again to ISO 5660-1. All details of these procedures are given in annex B.

2.4.3.2 Method of assessing and judging

After undergoing the ageing tests the average fire performance of the test specimens shall not deviate by more than the criteria provided in table 2 from the average fire performance of those specimens which had not been subjected to ageing procedures.

Table 2a – Fire performance in durability

	Building products excluding floorings	Floorings
Heat flux	50 kW/m^2	30 kW/m^2
Criteria		
Rate of heat release	RHR ≤ 60 kW/m^2 after weathering tests, or THR1200s not increased by more than 20% after weathering tests	RHR ≤ 60 kW/m^2 after weathering tests, or THR1200s not increased by more than 20% after weathering tests

2.4.4 Serviceability for floorings

Where a serviceability performance for floorings is claimed by the manufacturer, this shall be assessed by the following method. The NPD option is also allowed.

2.4.4.1 Method of verification

For floorings, the serviceability of the fire retardant product shall be verified to ISO 7784-2 (Taber Abrader Method) which is a method for determining the abrasion resistance of a dry film of paint, varnish or related products using a rotating abrasive rubber wheel. Fire retardant floorings shall be abraded to the above method using a CS17 wheel (for floorings resistant to pedestrian traffic*) for 1000 cycles with a 1 kg applied load.

Note: The volume of pedestrian traffic represented relates to that which would be experienced in supermarkets, shopping centres, etc

2.4.4.2 Method of assessing and judging

Ten square specimens, of sides 100 (+0, -2) mm shall be prepared by applying the fire

retardant coating to one face of a representative substrate. A central hole shall be made in each of the specimens. Five of the specimens shall be subjected to the Taber Abrader Method specified in clause 2.4.4.1. Following this test, any dust shall be removed from the surface of the specimens.

The abraded and non-abraded specimens shall all be tested in accordance with ISO 5660-1: 1993. The central hole within all the specimens shall be filled with a 'non- combustible mass'.

Note: A suitable product would be a sodium silicate paste.

All specimens shall be conditioned to constant mass in accordance with EN 13238. The specimens shall be wrapped in aluminium foil and a ring of foil removed of the same diameter as the abraded area to expose the surface of the flooring. The specimens shall be placed within the specimen holder directly onto the ceramic fibre insulation, and a retaining frame placed over the specimen. Specimens showing significant intumescent properties shall be tested using the wire grid as specified in ISO 5660-1: 1993.

The conical heater on the ISO 5660 apparatus shall be set to give a heat output of 30 kW/m2. The duration of the test shall be 22 minutes and the mean values calculated over a 20 minute period.

After being abraded, the average fire performance of the test specimens shall not deviate by more than the criteria provided in table 2b from the average fire performance of those specimens which had not been subjected to the abrading procedures.

Table 2b – Fire performance in service

	Floorings
Heat flux	30 kW/m2
Criteria	
Rate of heat release	RHR ≤ 60 kW/m2 after abrading, or THR1200s not increased by more than 20% after abrading

3 EVALUATION AND ATTESTATION OF CONFORMITY AND CE MARKING

3.1 System of attestation of conformity

According to the Decision 99/454/EC as amended by Decision 2001/596/EC of the European Commission[1] the systems of attestation of conformity given in Table 3 apply.

Table 3 - Choice of the system of attestation of conformity applicable to fire retardant products with respect to reaction to fire

[1] Official Journal of the European Communities L178 of14/07/1999, amendment published in L209 of 02/08/2001

Product	Intended use	Level or class *(reaction to fire)*	Attestation of conformity system
Fire retardant product	for uses subject to regulations on reaction to fire	A1*, A2*, B*, C* A1**, A2**, B**, C**, D, E, (A1 to E) *** ,F	1 3 4

System 1: See Directive 89/106/EEC Annex III.2.(i), without audit-testing of samples
System 3: See Directive 89/106/EEC Annex III.2.(ii), Second possibility
System 4: See Directive 89/106/EEC Annex III.2.(ii), Third possibility

* Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material)

** Products/materials not covered by footnote (*)

*** Products/materials that do not require to be tested for reaction to fire (eg. Products/materials of class A1 according to Commission Decision 96/603/EC, as amended)

The attestation of fire retardant products which may attain a classification in accordance with EN 13501-1 of Class A1, A2, B or C, shall be in accordance with system 1 since there is a clearly identifiable stage in their production which results in an improvement of fire performance due to the introduction of fire retardants of differing natures. (If a manufacturer considers this does not apply to his product he shall demonstrate this to the Notified Body). For Class D and E products, system 3 shall apply.

Note: clearly a fire retardant product will not have a class F reaction to fire performance.

The systems of attestation of conformity referred to above are defined as follows:

In the case of system 1:

System 1: Certification of the conformity of the product by a notified certification body on the basis of:

(a) Tasks for the manufacturer:
  (1) factory production control;
  (2) further testing of samples taken at the factory by the manufacturer in accordance with a prescribed test plan;

(b) Tasks for the notified body:
  (3) initial type–testing of the product;
  (4) initial inspection of factory and of factory production control;
  (5) continuous surveillance, assessment and approval of factory production control.

In the case of system 3:

System 3: Declaration of conformity of the product by the manufacturer on the basis of:

(a) Tasks for the manufacturer:
  factory production control;

(b) Tasks for the notified body:
  initial type-testing of the product.

In the case of system 4:

System 4: Declaration of conformity of the product by the manufacturer on the basis of:

Tasks for the manufacturer:

– initial type-testing of the product;
– factory production control.

3.2 Tasks and responsibilities of the manufacturer and notified bodies

3.2.1 Tasks of the manufacturer

The corner stones of the actions to be undertaken by the manufacturer of fire retardant products in the procedure of attestation of conformity are laid down in table 4.

Table 4 provides an indication of the characteristics which may be addressed dependant on the type of fire retardant product being evaluated. The characteristics to be addressed shall be agreed with the Approval Body.

Table 4 - Control plan for the manufacturer; corner stones - Factory production control

examples of characteristic	need to test	examples of test method	minimum frequency of control
Percentage solids	optional	EN ISO 3251	every batch
Viscosity	"	ISO 2884, ISO 3219	"
Density	"	EN ISO 2811	"
Sag resistance	"	ISO 16862	"
Ash content	"	ISO 14680, EN ISO 3451-1	"
Drying	"	ISO 1517(surface) or EN 29117 (through dry)	"
Brightness (gloss)	"	EN ISO 2813	"
PH	"		"
abrasion	mandatory for floorings	ISO 7784-2, CS17 wheel for 1000 cycles with a 1 kg applied load	every 10 batches or at least once per month, to be agreed with the Approval Body
reaction to fire	mandatory	manufacturer's method[1]	"

[1]The manufacturer's method should, to the satisfaction of the Approval body, be linked with the fire test methods used for classification and should be able to ensure continuity of that product within the classification that it achieves. Due to the diversity of product types to which this Guideline applies, no single method can be recommended, however, for guidance, the method used should consider measurement, in some form, of one or more of the following parameters, the heat release, ignitability and flame spread. It is suggested that the manufacturer adopts a method where the specimen is in its end use condition, i.e. applied to a substrate and in a dry film state.

3.2.2 Tasks of notified bodies

The corner stones of the actions to be undertaken by the notified body in the procedure of attestation of conformity for fire retardant products are laid down in table 5.

In the case of system 1, the test specimens shall be prepared under the supervision of the Notified Body.

Before any approval tests are conducted by the Approval Body or a Body acting under its responsibility in accordance with 2.4, it is strongly recommended that the approval body liaise with the chosen Certification Body to agree a testing protocol. Once the tests are conducted, the approval body can assess the results of these tests in accordance with 2.4, as part of the ETA issuing procedure. These tests results should be used for the purposes of Initial Type Testing.

Initial type testing shall be performed to provide the evidence of fire performance. It shall be performed:

a) At the beginning of the production of a new fire retardant coating system not previously approved

b) Whenever a change occurs in the formulation, which may potentially affect the fire performance of the system.

c) Whenever there is a change in the method of production

For fire retardant product within attestation level 1 the product system shall be sampled in accordance with 2.4.1.2.

Table 5 - Control plan for the notified bodies; corner stones

Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples
Initial type-testing of the product (ITT) *(for systems 1 and 3 only)*			
reaction to fire	see 2.4.1		
durability	see 2.4.3	see 2.4.3	5
Initial inspection of factory and factory production control (FPC) *(for system 1 only)*			
reaction to fire	see table 4		
non fire properties	see table 4		
Continuous surveillance, judgment and assessment of factory production control (FPC) *(for system 1 only)*			
reaction to fire	see table 4		
non fire properties	See table 4		

3.3 CE marking and accompanying information

According to Council Directive 93/68/EEC[1] the CE marking consists of the letters "CE" in the form laid down in the Directive, followed by the identification number of the notified certification body, where applicable. All products covered by this ETAG are subject to Council Directive 89/106/EEC the identification number of the notified certification body shall be given for products to which system 1 attestation of conformity applies.

The CE marking of fire retardant products shall be accompanied by the following information:

- the name and address of the producer (legal entity responsible for the manufacture),
- the last two digits of the year in which the CE marking was affixed,
- for AoC system 1: the number of the EC certificate of conformity for the product,
- the number of the European technical approval,
- the reaction to fire classification in accordance with the provisions of the ETA (only when there is more than one classification in the ETA and it is not clear which one corresponds to the CE marked product).
- the substrates for which the reaction to fire class is valid

Example of CE marking and accompanying information:

CE 1234	Letters "CE" Identification number of notified certification body *(for AoC system 1)*
Any Company Street 1, City, Country 06 1234-CPD-0321	Name and address of the producer (legal entity responsible for the manufacture) Two last digits of year of affixing CE marking Number of EC certificate of conformity *(for AoC system 1)*
ETA-08/1234 ETAG 028 Class B-s2,d0 Wooden substrates of class D-s2,d2 or better and of density 400 kg/m^3 or greater end use category Type Z2	ETA number ETAG number reaction to fire classification substrates for which classification is valid end use category

4 ASSUMPTIONS UNDER WHICH THE FITNESS FOR THE INTENDED USE IS ASSESSED

4.1 Manufacture of the product

No specific provisions are given for the manufacture of fire retardant products.

4.2 Packaging, transport and storage of the product

The manufacturer should provide information relating to the transport and storage of the fire retardant products in a data sheet.

As a minimum, the following should be addressed: storage temperature, manner of storage (container, tank etc), and the necessary information on the minimum and maximum temperature for transport and

[1] Official Journal of the European Communities L 220 of 30.8.1993

storage. For flammable components or other potentially hazardous materials, the instructions should contain specific guidance on restrictions and/or conditions for handling, transport and storage.

4.3 Installation of the product in the works

The substrate to which the fire retardant product is to be applied should be clean and sound, prepared by removing any loose material. The surface should be free of dust, grease and other contaminants. All traces of moisture either from direct water attack, damp or condensation should be removed unless manufacturer's instructions state otherwise. In all cases reference should be made to the manufacturer's instructions.

The ETA and the manufacturer's data sheet should give information about applications (e.g. temperature and humidity conditions before, during and after application). Information which should be provided and included in the ETA are:

- list of suitable substrates
- preparation of the surface
- method of application
- required thickness of each layer of the system or coating application rate
- period of time between the application of each component, taking into account temperature and humidity
- drying time of the system

4.4 Use, maintenance and repair

The end use category of the fire retardant product (see 1.2) should be appropriate. The manufacturer of the fire retardant product should have a readily available procedure for the repair and maintenance of the system during the assumed working life. The manufacturer should also provide advice and instructions on the methods for cleaning their products as appropriate. Consideration should be given to the effect on fire performance of applying further coatings, possibly for aesthetic reasons, at any stage during or after the assumed working life, consult the manufacturer if further guidance is needed.

After the assumed working life of the product, i.e. 5 years, the manufacturer should be consulted about any maintenance and repair of the fire retardant product.

Note: A change of the end–use of the building in which the fire retardant coating is used may have an effect on the durability of the coating.

5 IDENTIFICATION OF THE CONSTRUCTION PRODUCT

5.1 Means of identification

The product which is the subject of the technical approval shall be identified by the formulation or fingerprinting given in Table 6.

Changes of materials, of composition or characteristics, should be immediately notified to the Approval Body, which will decide whether a new assessment will be necessary.

The manufacturer however should provide the necessary information to identify the product to the Approval / Notified Body. This may be in the form of the formulation for the product or its unique fingerprint. This information is retained by the Approval Body for reference at any time, if necessary, during the assumed working life of the product.

Table 6 - Product characteristics, methods of verification and criteria used for checking the product identity

Product characteristic	Criteria for product identity: (clause 5.2)
Formulation	Formulation and suppliers same as that provided during ITT sampling
Fingerprinting	IR spectrum, same as that provided during ITT sampling and TGA spectrum, same as that provided during ITT sampling

5.2 Product characteristics which are relevant for identification checking

5.2.1 General

One of the procedures identified in 5.2.2 or 5.2.3 shall be used to identify the product.

5.2.2 Formulation

5.2.2.1 General

During the initial sampling of the product and audit of the Factory production control in place at the factory(s), the Notified Certification or Approval Body shall obtain full details of the formulation and suppliers used for the product.

5.2.2.2 Method of verification

At subsequent factory production control audits the formulation details and suppliers shall be checked against that originally provided and against any notified changes in these details reported to the Notified Certification Body.

5.2.2.3 Criteria for product identity

The formulation details and suppliers shall be identical with the exception of any agreed changes with the Notified Certification Body

5.2.3 Fingerprinting

5.2.3.1 General

Infra red and thermogravimetric fingerprinting provide good methods for the identification of the product, the specimen providing a unique trace.

5.2.3.2 Method of verification (see annex C)

a) IR - The coating should be applied directly to a KBr disc and a thin film produced. The film should be mounted directly in an analyser using a clear KBr disc in the reference position and an infra-red spectrum obtained, using either a dispersive infra-red analyser or a Fourier transform infra-red analyser (FTIR). Alternatively the paint sample may undergo thermogravimetric analysis and the residue ground to a powder, incorporated into a KBr disc and the infra red spectrum determined against that for a plain KBr disc.

b) TGA – The coating should be applied to a glass plate and a thin film produced. The film should be removed and ground to a powder. The sample should then be placed in the sample crucible of the TGA and the analysis run.

5.2.3.3 Criteria for product identity (see annex C)

a) IR - The infra-red spectra produced shall be identical both in terms of the wavelengths and intensities for individual absorbencies to the satisfaction of the Notified Certification or Approval Body.

b) TGA – The thermogravimetric spectrum shall be identical in all its characteristics to the satisfaction of the Notified Certification or Approval Body.

6 FORMAT OF ETAs ISSUED ON THE BASIS OF THE ETAG

European technical approvals issued on the basis of this ETAG shall be in accordance with the ETA format given in the addendum to this ETAG.

7 Reference documents

EN 520	Gypsum plasterboards, definitions, requirements and test methods
EN 13501-1	Fire classification of construction products and building elements Part 1: Classification using data from reaction to fire tests
EN 13283	Reaction to fire tests for building products – Conditioning procedures and general rules for selection of substrates
EN 13823	Reaction to fire tests for building products – Building products excluding floorings exposed to the thermal attack by a single burning item
EN 29117	Methods of test for paints. Tests associated with paint film formation. Paints and varnishes. Determination of through-dry state and through-dry time. Method of test.
EN ISO 1517	Paints and varnishes. Surface-drying test. Ballotini method
EN ISO 1716	Reaction to fire tests for building products – Determination of the heat of combustion
EN ISO 2811	Paints and varnishes. Determination of density
EN ISO 2813	Paints and varnishes. measurement of specular gloss of non-metallic paint films at 20^{o}, 60^{o} and 85^{o}
EN ISO 3219	Plastics. Polymers / resins in the liquid state or as emulsions or dispersions. Determination of viscosity using a rotational viscometer with defied shear rate
EN ISO 3251	Paints, varnishes and plastics. Determination of non-volatile-matter content
EN ISO 3451-1	Plastics -- Determination of ash -- Part 1: General methods
EN ISO 9239-1	Reaction to fire tests for floorings – Part 1: Determination of the burning behaviour using a radiant heat source
EN ISO 11507	Paints and varnishes. Exposure of coatings to artificial weathering. Exposure to fluorescent UV and water
EN ISO 11925-2	Reaction to fire tests – Ignitability of building products subjected to direct impingement of flame – Part 2: Single-flame source test
EN ISO 13788	Hygrothermal performance of building components and elements. Internal surface temperature to avoid critical surface humidity and interstitial condensation, calculation methods
ISO 2884	Paints and varnishes -- Determination of viscosity using rotary viscometers
ISO 5660-1	Reaction-to-fire tests -- Heat release, smoke production and mass loss rate -- Part 1: Heat release rate (cone calorimeter method)
ISO 7784-2	Paints and varnishes -- Determination of resistance to abrasion -- Part 2: Rotating abrasive rubber wheel method
ISO 11503	Paints and varnishes -- Determination of resistance to humidity

(intermittent condensation)

ISO 14680 Paints and varnishes -- Determination of pigment content

ISO 16862 Paints and varnishes -- Evaluation of sag resistance

Annex A - Additional information for fire tests on fire retardant products

A.1 Substrates

A.1.1 General

Two substrates are identified for testing purposes:

- pre-coated (no defined fire performance in EN 13238)
- timber based e.g. particleboard (as defined in EN 13238) or plywood (as defined in EN 13238) or end-use specific

A.1.2 Pre-coated substrate

When the fire retardant coating is applied on previous existing coatings, without removing them, this has been recognised as a potential fire hazard and a pre-coated multilayer substrate can be used to provide an end-use behaviour which gives rapid fire growth. Surface coatings shall be applied to this type of substrate which are intended to upgrade this fire performance.

A multilayer pre-coated substrate is representative of coated surfaces of concrete, brick, breezeblock, and other masonry, plaster, paper-faced and skimmed plasterboard. It is not representative of coated combustible substrates.

A typical pre-coated substrate could consist of 10 layers of assorted types of paint on 12.5 mm thick paper-faced plasterboard. This substrate has Class F performance according to EN 13501-1 due to the very rapid surface flame spread and immediate release of heat and its ease of ignition.

Table A.1 Typical specification of standard multilayer painted substrate

Nominal density of substrate	800 kg/m^3 $\pm$ 100 kg/m^3
Type of substrate	Gypsum plasterboard with paper facing of 200+/-20 g/m^2 in accordance with EN 520 type A
Thickness of substrate	12.5 mm $\pm$ 0.5 mm
Thickness of multilayer paint coating	0.5 mm $\pm$ 0.1 mm
Typical performance to EN 13823	2500 < $FIGRA_{0.4MJ}$ <3500 W/s 4 < THR600s <8 MJ 50 < SMOGRA <120 m2/s2 50 < TSP600s <80 m2
Typical performance to EN ISO 11925-2	Flame spread <150mm during 15 s flame application

The board consists of ten layers of paint each applied individually and within a defined time period of 7 days during which each individual paint layer dries and cures to ensure absolute individuality of layers. The following table provides a description of the paint used for each layer of the substrate which when produced will give the defined characteristics

Coat No.	Description of Material	Colour	Type
1	Stabiliser	Clear	Cellulose
2	Gloss Paint	Yellow	Cellulose
3	Undercoat	Pink	Cellulose
4	2 pack Lacquer	Clear	Polyurethane
5	Gloss Paint	Blue	Oil Based
6	Gloss Paint	Blue	Oil Based
7	2 pack Lacquer	Clear	Polyurethane
8	Isolator	White	Cellulose
9	Gloss Paint	Pale Green	Cellulose
10	Gloss Paint	Blue	Cellulose

A.2 General guidance on preparing test specimens

The test specimen shall fully represent the end use coating system utilising all the envisaged components in the end use condition as specified by the applicant.

Each different coating system, as placed on the market, requires testing. The assembly including corner details (for the SBI test) shall be as specified by the applicant and in accordance the end use conditions.

Influences of different colours of coatings can be determined by performing tests on the lightest and darkest colour, and the deepest red (e.g. Munsell ref. 7.5R 4/13, RAL 3020 or BS04E56).

Where formulations are identical but simply carry a different label, and can be identified as being of the same formula from a factory audit, duplicate testing is not required.

Where the coating system may be used on different substrates, the extended application rules given in EN 13283 shall be applied. The coating shall be applied only to the surface of the substrate and to all edges.

A.3 Mounting and fixing procedures for testing to EN 13823

The test rig consists of a corner with a long (1,0 m) and a short (0,5 m) wing. The dimensions of the test specimens shall be:

	Assembly dimensions (mm)	
	Length	**Height**
Short wing	495	1500
Long wing	1000	1500

When testing to EN 13823, the test assembly shall be representative of end use conditions. The first 200mm depth in the end use assembly are important and can affect the fire performance of surface coatings. It is therefore necessary that the assembly upon which

surface coatings will be used is considered when determining the mounting and fixing conditions for fire tests to EN 13823. Under end use conditions, a number of different substrates may be found, the most common of which are plasterboard, concrete and wood (of several different types). The rules specified in EN 13238 shall apply. None of these substrates relates to previously painted substrates, which will need to be addressed separately.

The mounting and fixing of the fire retardant coatings shall therefore to take these rules into consideration and the test specimen shall consist of coating system applied the chosen substrate which for A1 and A2 substrates shall be placed directly against the backing board. The panels shall be prepared separately and butt jointed together. Vertical and horizontal joints are not necessary. The coatings shall be applied to the front surface and, optionally, to the edges of the chosen substrate

It should also be noted that the wooden substrates may in end use conditions have an air gap immediately behind and this shall be taken into account when testing as the air gap may influence the burning behaviour of the assembly. If a ventilated air gap is used in the test the result is also valid for a non-ventilated air gap.

The choice of the substrate is for the manufacturer and the Notified Approval and/or Certification Body to agree, however this will have a direct bearing on the end use application of the product.

A.4 Test preparation for EN ISO 11925-2

When testing to EN 11925-2, the substrate upon which the surface coating is applied can affect their fire performance. It is therefore necessary that the substrate used is representative of the worst case substrate upon which the surface coating may be found. According to the rules specified in EN 13238, if particle board is used then the test results apply to all wood, and any A1 or A2 substrate, of 75% of density of the particleboard and above and thicknesses which are identical or greater. If plasterboard is used then this applies to all A1 and A2 substrates but not wood.

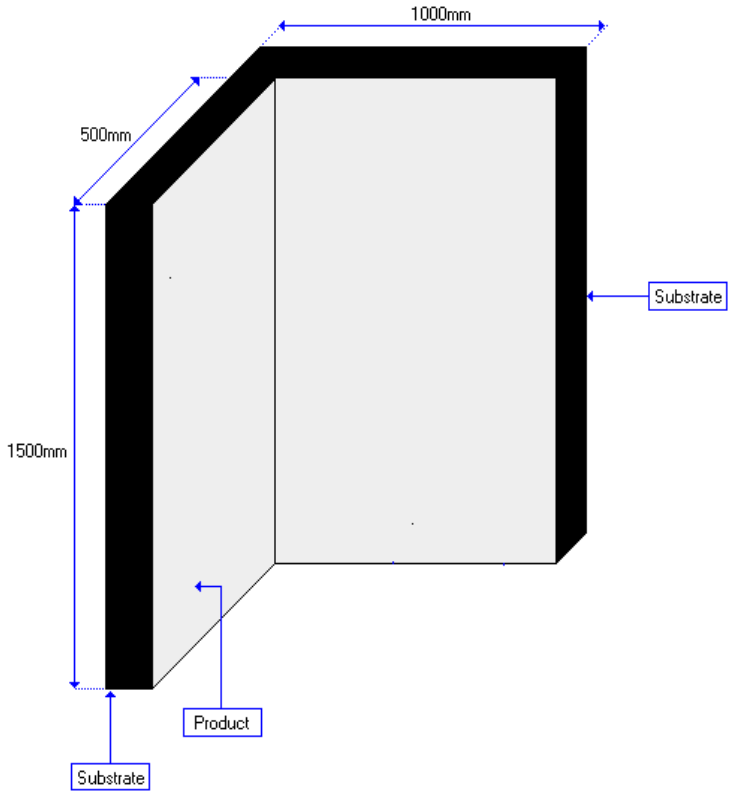


Figure A.1: Schematic minimal jointing arrangement in EN 13823

The choice of the substrate is for the manufacturer and the Notified Approval and/or Certification Body to agree, however this will have a direct bearing on the end use application of the product. The substrate for this test shall be that also used in the EN 13823 or the EN ISO 9239-1 test.

The substrate shall be (250 $^{+0}_{-1}$) mm long by (90 $^{+0}_{-1}$) mm wide The coating shall be applied to the front face and, optionally, to all sides of the substrate. No backing board is required by this test. The EN ISO 11925-2 test shall be conducted using surface application only.

A.5 Test preparation for EN ISO 9239-1

When testing to EN ISO 9239-1, the test assembly shall be representative of end use conditions. The first 100 mm depth in the end use assembly are important and can affect the fire performance of surface coatings. It is therefore necessary that the assembly upon which surface coatings will be used is considered when determining the mounting and fixing conditions for fire tests to EN ISO 9239-1. Under end use conditions, a number of different substrates may be found, the most common of which are concrete and wood (of several different types). The rules specified in EN 13238 shall apply.None of these substrates relates to previously painted substrates, which will need to be addressed separately.

The mounting and fixing of the fire retardant coatings shall therefore take these rules into consideration and the test specimen shall consist of a coating system applied the chosen substrate. Three specimens (1 050 ± 5) mm $\times$ (230 ± 5) mm, shall be prepared, the coatings shall be applied to the front surface and, optionally, to the edges of the chosen substrate.

A.6 End use application rules

A.6.1 General

The manner in which the product is tested has a direct consequence upon the manner in which the product or product family may be classified and used within a building construction. When determining the testing programme all aspects of the product in terms of its own parameters and its end-use parameters need to be considered. For fire retardant products, the following provides guidance on the potential end-use application rules which may apply dependant on the testing programme undertaken. If different classifications are obtained, additional testing shall be conducted to redefine the product family to which a single classification applies.

A.6.2 Influence of colour

If the tests conducted on the darkest and lightest colours, and the deepest red (eg Munsell ref. 7.5R 4/13, RAL 3020 or BS04E56), yield the same classification, that classification will apply to all colours. If a red pigmented product is not part of the range of colours for a particular product family, the intermediate test shall be conducted on the product containing the highest organic content.

A.6.3 Influence of substrate

The substrate used to support the surface coating system in the EN 13823 determines the type of substrate to which the fire retardant coating system may be applied in end use. The Rules specified in EN 13823 shall apply.

A.6.4 Influence of coating thicknesses

If the coating may be applied in varying quantities thus producing different thicknesses, and tests conducted on the minimum and maximum quantities yield the same classification that classification will apply to all the intermediate coating thicknesses.

A.6.5 Influence of air gap

If the product is tested with a ventilated cavity the results shall apply to both open and closed cavities and to situations where there is no air gap in end use configurations.

A.6.6 Influence of other variables

Other variable parameters such as organic content, etc may be addressed in a similar manner to the above.

Annex B Assessment of durability

B.1 General

Fire retardant products shall not change significantly during their working life. The properties on which the reaction to fire behaviour depends shall not be significantly affected or degraded by environmental conditions.

The fire retardant products shall not deteriorate during their assumed intended working life so as to affect the reaction to fire performance of the products. The fire retardant products shall be durable to the conditions in service such as:

- Variations in temperature
- Variations of relative humidity, rain
- Radiation from the sun (UV exposure)

With reference to the end use categories defined in 1.2, the regime in table B.1 shall be used.

Table B.1 Determination of weathering regime for end-use categories

fire retardant product		end use condition			
		X	Y	Z1	Z2
coatings	a) paint & varnish b) intumescent c) encapsulation	T R UV H	T H	T H	T
surface treatments i.e. surface impregnations		T R UV H	T H	T H	T

T temperature, R rain, UV ultra violet, H humidity

B.2 Specimen preparation

The fire retardant coating shall be applied to one face of a representative substrate. The coated substrate shall be cut to provide at least 10 specimens. The specimens shall be square, the sides having a dimension of (100 +0, -2) mm. Five of these specimens shall be subjected to tests in accordance with B.4 and a further five specimens shall be subjected to environmental conditioning cycles. The specimens shall protected by suitable means such that only a square area of sides (95 +0. -2) mm on the coated surface is exposed and all other faces are covered and water penetration into the substrate is prevented. One method by which this may be achieved is for the specimens to be wrapped first in a polyethylene film and then in aluminium foil. The edges of the aluminium foil on the face of the specimen can then be adhered to the face of the specimen using aluminized tape. Another method would be to use a fabricated container which could be sealed on closure and which has a number of square openings 95 +0,-2mm which when specimens are placed behind them also seal to expose only the face of the specimen to the environment of the weathering machine.

B.3 Environmental conditioning cycles

The environmental conditioning cabinet used to artificially age the specimens of fire retardant coating shall be capable of exposing only one face of the specimen to the conditioning cycles and to any wetting which may be required, protecting the other faces. This is an essential characteristic for the cabinet used since the unexposed substrate upon which the coating is

being assessed must be protected from the wetting and high humidity conditions which occurs during the conditioning cycles.

The environmental conditioning cycles for each of the end use conditions shall be as detailed below:

Type X Fire retardant products intended for internal and outdoor uses exposed to rain and UV

The specimens shall be exposed for four weeks in climate chamber to the following weathering conditions.

For the irradiance values for artificial weathering use EN ISO 11507, type 2 lamp.

Air, humidified and temperature-controlled, shall be blown through the test enclosure, the specimens being wetted by sprinkling with distilled or demineralised water.

Continuous irradiation
1 cycle = 6 h distributed as follows:
- 5 h dry phase, 40 ± 3°C test room temperature and
- 1 h exposed to water spray, 20 ± 3°C test room temperature

This cycle shall be undertaken 112 (28 days) times without interruption.

The specimens shall then be exposed according to the cycling procedure in table B.2, with each new condition being undertaken within 30 min of the previous one.

Table B.2 Cycling procedures for type X products

Day	6 hours	6 hours	6 hours	6 hours
1. + 2.	20 °C, 95 % rel. Humidity	70 °C, 20 % rel. Humidity	20 °C, 95 % rel. Humidity	70°C, 20 % rel. Humidity
3. + 4.	20 °C, 95 % rel. Humidity	30 °C, 40 % rel. Humidity	40°C, 95 % rel. Humidity	30 °C, 40 % rel. Humidity
5. + 6 + 7	-20 °C, dry	40 °C, 95 % rel. Humidity	-20 °C, dry	40 °C, 95 % rel. Humidity

The cycling procedure indicated in this table should be applied without interruption:
- 1 time, for an expected working life of 5 years

After weathering the specimens must be tested according to tests indicated in 2.4.3

These weathering conditions are also valid for paints and varnishes of all other use categories

Type Y Fire retardant products intended for internal and outdoor uses not exposed to rain and UV

The test specimens shall be stored in a vertical position and exposed to weathering. The frame of the test method is according to EN ISO 11507.

The specimens shall be exposed according to the cycling procedure in table B.3, with each new condition being undertaken within 30 min of the previous one.

Table B.3 Cycling procedures for type Y products

Day	6 hours	6 hours	6 hours	6 hours
1. + 2.	20 °C, 95 % rel. Humidity	70 °C, 20 % rel. Humidity	20 °C, 95 % rel. Humidity	70°C, 20 % rel. Humidity
3. + 4.	20 °C, 95 % rel. Humidity	30 °C, 40 % rel. Humidity	40°C, 95 % rel. Humidity	30 °C, 40 % rel. Humidity
5. + 6 + 7	-20 °C, dry	40 °C, 95 % rel. Humidity	-20 °C, dry	40 °C, 95 % rel. Humidity

The cycling procedure indicated in the table should be applied without interruption:

1 time, for an expected working life of 5 years

After weathering the specimens must be tested according to tests indicated in 2.4.3

These weathering conditions are also valid for paints and varnishes of use category Type Z2

Type Z1 Fire retardant products intended for indoor use in high humidity environment

The test specimens shall be stored in a vertical position and exposed to the following cycle:

- 8 hours at 40±3°C and 98% to 100 % RH
- 16 hours with humidity switched off and the cabinet open or ventilated with temperature conditions in the environment as described in ISO 11503.

The cycle should be repeated without interruption:

- 10 times , for an expected working life of 5 years

After weathering the specimens must be tested according to tests indicated in 2.4.3.

These weathering conditions are also valid for paints and varnishes of use category Type Z2

Type Z2 Fire retardant products intended for indoor use only

The test specimens shall be stored in a vertical position and exposed to the following cycle:

- 4 hours at +5 ± 3 °C
- 4 hours at + 23 ± 3 °C and 80 ± 5 % RH
- 16 hours at + 40 ± 3 °C and 50 ± 5 % RH.

The cycle should be repeated without interruption:

- 10 times, for an expected working life of 5 years

After weathering the specimens shall be tested according to 2.4.3.

B.4 Determination of fire behaviour

Five specimens shall be subjected to fire test without environmental conditioning and five further specimens shall be subjected to fire test following environmental conditioning in accordance with the relevant section of B.3.

The specimens shall all be tested in accordance with ISO 5660-1. All specimens shall be conditioned to constant mass in accordance with EN 13238. The specimens shall be placed within the specimen holder directly onto the ceramic fibre insulation, and a retaining frame placed over the specimen. Specimens showing intumescent properties shall be tested either using the wire grid as specified in ISO 5660-1:1993, or using the procedure for intumescent products detailed in ISO 5660:2002

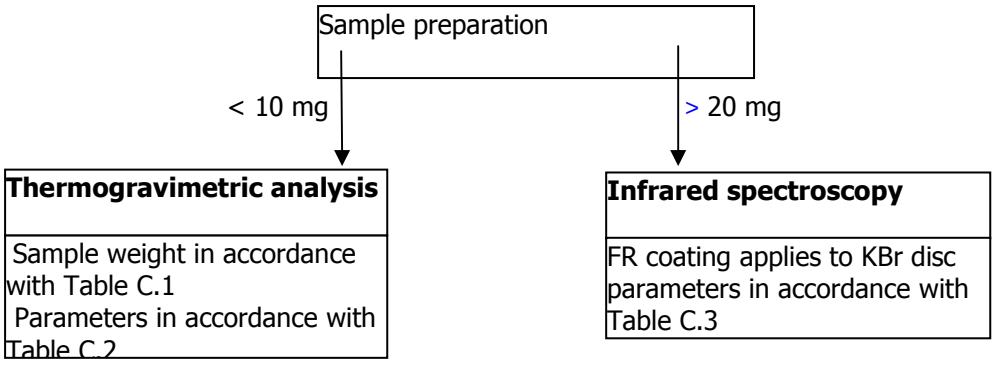
The conical heater on the ISO 5660 apparatus shall be set to give a heat output of 50 kW/m^2 for wall and ceiling systems and 30 kW/m^2 for flooring systems. The duration of the test shall be 22 minutes and the mean values calculated over a 20 minute period.

Annex C - Determination of identification characteristics (fingerprinting)

C.1 General

The identification test of fire protective coatings should be performed by combining the infrared spectrum the thermal analysis of the dried reactive coating.

Scheme of analysis:



C.2 Sample preparation

An identical prepreparation of the samples shall be provided for the thermoanalytical and infrared-spectroscopy analyses:

- Separation of a representative quantity of fire retardant product (ideally approx. 1g but not less than 30 mg).This can be achieved for example, by means of a scalpel from the applied and dried fire retardant coating component
- In the case of a highly heterogenous sample composition: homogenize the sample by grinding in a mill or mortar. The required quantity of sample is then taken from the homogenized mass.
- TG: Sample, without any further treatment is placed directly into the sample crucible according to Table C.1. The results shall be analysed in acccordance with Table C.2.
- IR: KBr method. The results shall be analysed in acccordance with Table C.3.

The sample weight used for the thermogravametric analysis should be chosen such that any increase in volume occurring with some fire retardant materials during the process of analysis does not lead, under any circumstances, to sample components escaping from the sample receptacle.

Table 1 Maximum sample weight recommended as a function of the size of sample receptacle.

receptacle size / µl	40	70	300	900
max. quantity of original sample weight / mg	3	4	10	30

C.2 Parameters for thermogravametric analysis of fire retardant products

The parameters, given in Table C.2, should be used for the thermogravimetric analysis of fire retardant products.

Table 2: TG parameters for the analysis of fire retardant products

Crucible	standard Alox crucible with perforated lid
Original sample weight	see Table 1
Cleansing gas / flow	nitrogen / 50 ml/min
Range of temperature	50 – 800 °C
Rate of heating	10 K/min
Graphical representation	both TG and DTG curve

C.4 Infrared Spectroscopy

C.4.1 General

The following method is recommended to characterise the chemical nature of the fire retardant product. The parameters for the infra red analysis are given in Table C.3.

C.4.2 Infrared spectroscopy of the fire retardant product film

a) Apply a thin coating of the fire retardant coating to a KBr disc producing a thin film.

b) The coated KBr disc is directly spectroscopied against an identical but blank KBr disc in the reference sample position.

Table 3: IR parameters for the analysis of fire protective materials

Range of wave number	4000 – 600 cm^{-1}
Dispersion	< 4 cm^{-1}

Note: it is possible to combine these two methods of analysis by carrying out an infra red analysis of the TGA residue. In this instance, a KBr disc should be formed using a homogenized mix of residue and KBr.

ADDENDUM MODEL FOR ETAS ISSUED ON THE BASIS OF ETAG 0000

Cover page of the ETA

according to the EOTA Bible.

I LEGAL BASES AND GENERAL CONDITIONS

1 This European Technical Approval is issued by ...*(name of approval body)* in accordance with:

- Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products[1], modified by Council Directive 93/68/EEC[2] and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council[3];
- ...*(indicate respective national law transposing the CPD; only if the national law of the Member State of the issuing approval body so requires)*;
- Common Procedural Rules for Requesting, Preparing and the Granting of European Technical Approvals set out in the Annex to Commission Decision 94/23/EC[4];
- Guideline ...*(indicate title and number of ETA Guideline on the basis of which the ETA is granted, unless ETA is issued without an ETA Guideline in accordance with point 3.2 of the Common Procedural Rules, pursuant to Article 9(2) of the CPD)*.

2 The ...*(name of issuing approval body)* is authorized to check whether the provisions of this European Technical Approval are met. Checking may take place in the manufacturing plant(s). Nevertheless, the responsibility for the conformity of the products to the European Technical Approval and for their fitness for the intended use remains with the holder of the European Technical Approval.

3 This European Technical Approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those /indicated on page 1/ laid down in the context/ of this European Technical Approval *(delete as appropriate)*.

4 This European Technical Approval may be withdrawn by ...*(name of issuing approval body)*, in particular pursuant to information by the Commission according to Article 5(1) of Council Directive 89/106/EEC.

5 Reproduction of this European Technical Approval including transmission by electronic means shall be in full. However, partial reproduction can be made with the written consent of ...*(name of issuing approval body)*. In this case partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European Technical Approval.

6 The European Technical Approval is issued by the approval body in its official language(s). This (These) version(s) corresponds (correspond) fully to the version

---

1 Official Journal of the European Communities N° L 40, 11.2.1989, p. 12

2 Official Journal of the European Communities N° L 220, 30.8.1993, p. 1

3 Official Journal of the European Union N° L 284, 31.10.2003, p. 1

4 Official Journal of the European Communities N° L 17, 20.1.1994, p. 34

circulated in EOTA. Translations into other languages have to be designated as such.

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of product(s) and intended use

1.1 Definition of the construction product

A definition of the product to be provided in accordance with 1.1 of this ETAG

1.2 Intended use

This fire retardant product is intended for use as a construction product, excluding floors / floor (… delete as applicable)

The end use category is defined as Type (… as defined in 1.2 of this ETAG)

The provisions made in this European technical approval are based on an assumed working life of the fire retardant product of 5 years[, provided that the conditions laid down in section(s) 4.2 / 5.1 / 5.2 for the packaging / transport / storage / installation / use / maintenance / repair are met]. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

2 Characteristics of product(s) and methods of verification

2.1 Reaction to fire performance

The reaction to fire class of the product shall be stated in accordance with EN 13501-1.

2.2 Release of dangerous substances

The fire retardant product shall be such that, when installed according to the appropriate provisions of the Member States, it allows for the satisfaction of the ER3 of the CPD as expressed by the national provisions of the Member States and in particular does not cause harmful emission of toxic gases, dangerous particles or radiation to the indoor environment nor contamination of the outdoor environment (air, soil or water).

Note: In addition to the specific clauses relating to dangerous substances contained in this European Technical Approval, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Directive, these requirements need also to be complied with, when and where they apply.

2.3 Durability

The durability performance of the product shall be declared in accordance with 2.4.3 of this ETAG.

3 Evaluation and attestation of conformity and CE marking

3.1 System of attestation of conformity

The system of attestation of conformity is dependant upon the reaction to fire performance and is determined in accordance with Table 3 of ETAG 000 and is ……*State system of attestation and include the relevant text from below*

System 1: Certification of the conformity of the product by an approved certification body on the basis of:

(a) Tasks for the manufacturer:

(1) factory production control;

(2) further testing of samples taken at the factory by the manufacturer in accordance with a prescribed test plan;

(b) Tasks for the approved body:

(3) initial type–testing of the product;

(4) initial inspection of factory and of factory production control;

(5) continuous surveillance, assessment and approval of factory production control.

System 3: Declaration of conformity of the product by the manufacturer on the basis of:

(a) Tasks for the manufacturer:

(1) factory production control;

(b) Tasks for the approved body:

(2) initial type-testing of the product.

System 4: Declaration of conformity of the product by the manufacturer on the basis of:

Tasks for the manufacturer:

(1) initial type-testing of the product;

(2) factory production control.

Note: Approved bodies are also referred to as "notified bodies".

3.2 Responsibilities

3.2.1 Tasks of the manufacturer

3.2.1.1 Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall insure that the product is in conformity with this European technical approval.

The manufacturer may only use initial / raw / constituent materials *(as relevant)* stated in the technical documentation of this European technical approval*.*

The factory production control shall be in accordance with the "Control Plan of ...*(date)* relating to the European technical approval ETA -...*(number)* issued on ...*(date)*" which is part of the technical documentation of this European technical approval*.* The "Control Plan" is

laid down in the context of the factory production control system operated by the manufacturer and deposited at the ...*(name of the approval body)*.[1]

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the "Control Plan".

3.2.1.2 Other tasks of manufacturer

In the case of system 1 or 3:

The manufacturer shall, on the basis of a contract, involve a body (bodies) which is (are) approved for the tasks referred to in section 3.1 in the field of fire retardant products in order to undertake the actions laid down in section 3.3. For this purpose, the "control plan" referred to in sections 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the approved body or bodies involved.

In all cases (also for system 1):

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of the European technical approval ETA ...*(number)* issued on ...*(date)*.

3.2.2 Tasks of approved bodies

The approved body (bodies) shall perform the

- initial type-testing of the product *(for systems 1 and 3)*,
- initial inspection of factory and of factory production control *(for system 1)*,
- continuous surveillance, assessment and approval of factory production control *(for system 1)*,

in accordance with the provisions laid down in the "Control Plan of ...*(date)* relating to the European technical approval ETA -...*(number)* issued on ...*(date)*".

The approved body (bodies) shall retain the essential points of its (their) actions referred to above and state the results obtained and conclusions drawn in (a) written report (reports).

In the case of AoC system 1:

The approved certification body involved by the manufacturer shall issue an EC certificate of conformity of the product stating the conformity with the provisions of this European technical approval.

In addition in the case of AoC system 1:

In cases where the provisions of the European technical approval and its "Control Plan" are no longer fulfilled the certification body shall withdraw the certificate of conformity and inform the ...*(name of approval body)* without delay.

3.3 CE marking

The CE marking shall be affixed on the ...*(product itself - indicate where on the product, if necessary; or the label attached to it; packaging; accompanying commercial document, e.g.*

[1] The "control plan" is a confidential part of the European technical approval and only handed over to the approved body or bodies involved in the procedure of attestation of conformity. See section 3.2.2.

the EC declaration of conformity). The letters „CE" shall be followed by the identification number of the approved certification body, where relevant, and be accompanied by the following additional information:

- the name and address of the producer (legal entity responsible for the manufacture),
- the last two digits of the year in which the CE marking was affixed,
- the number of the EC certificate of conformity for the product *(only for AoC system 1)*,
- the number of the European technical approval,
- the number of the guideline for European technical approval
- the reaction to fire classification
- end use category

4 Assumptions under which the fitness of the product(s) for the intended use was favourably assessed

4.1 Manufacturing

The European technical approval is issued for the product on the basis of agreed data/information, deposited with the ...*(Approval Body name)*, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to the ...*(Approval Body name)* before the changes are introduced. The ...*(Approval Body name)* will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

5 Indications to the manufacturer

5.1 Packaging, transport and storage

Manufacturer's information shall be provided in accordance with 4.2 of this ETAG.

5.2 Installation of the product in the works

Manufacturer's information shall be provided in accordance with 4.3 of this ETAG.

5.2 Use, maintenance, repair

Manufacturer's information shall be provided in accordance with 4.4 of this ETAG.

ANNEX 1 - DESCRIPTION OF PRODUCT(S)

…… *(Specific text and/or drawings, as far as relevant)*