

Technical Specification No.3

Determination of the reaction to fire

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1 Preamble

The reaction to fire class, expressed in the form of Euroclasses, may be certified. It is systematically certified if the product has CE marking and comes under the system of conformity certification No.1, and for thermal insulation produced by pneumatic spraying of products made of mineral wools with binder and adjuvant.

For products coming under the harmonised European standards NF EN 13162 to 13171 and NF EN 14064-1, the conditions of these standards apply, supplemented if necessary by the paragraphs below.

For other products, reaction to fire classification is determined in accordance with standard NF EN 13501-1 and according to the measures of the paragraphs below.

2 Type testing

The definition of type testing programmes is always based where possible on the recommendations established by the cluster responsible for coordination of the notified laboratories for reaction to fire under the Construction Products Directive (CPD) and the Construction Products Regulation (CPR).

For the specific case of measurement of the higher heating power (HHP), definition of the test programme may take into account the national results on the measurement of HHP from notified laboratories.

In the context of voluntary certification, type testing is carried out by ACERMI lead laboratories or by other laboratories with whom recognition agreements have been made, or by notified laboratories when CE marking is applicable and after assessment of the test report.

Type testing shall be performed on samples taken from one or more production units where products likely to be placed in the same group are manufactured (see grouping criteria in Technical Specification C).

For bulk products, type testing shall be performed on samples taken from each production unit (3 manufacturing dates).

Samples shall be taken such that the influence of the product parameter levels (thickness, density, etc.) on the Euroclass of the products can be checked.

3 Follow-up testing

3.1 CE marked products

Random testing is performed in the case of products coming under conformity certification system 1 as part of CE marking, in the case of the Key mark or by request of the manufacturer



once every two years for each plant, for a given group of products and according to an sampling plan drawn up by the lead member in collaboration with the industrial manufacturer concerned, unless the manufacturer supplies a test report produced by other laboratories, with whom recognition agreements have been made or by notified laboratories after assessment of the test report.

3.2 Products which do not have CE marking

Random testing is performed for each line in the case of products in Euroclass A, B or C, once every two years for each plant, for a given group of products and according to a sampling plan drawn up by the lead member in collaboration with the industrial manufacturer concerned, unless the manufacturer supplies a test report produced by other laboratories, with whom recognition agreements have been made or by notified laboratories after assessment of the test report.

4 Test procedures

This paragraph specifies the assembly and test procedures for products which do not come under a harmonised European standard.

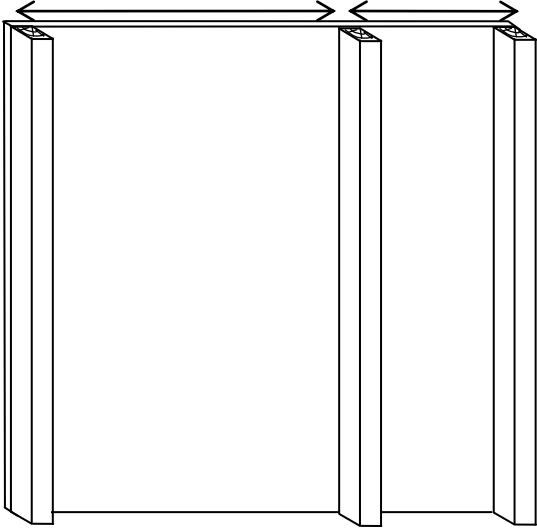
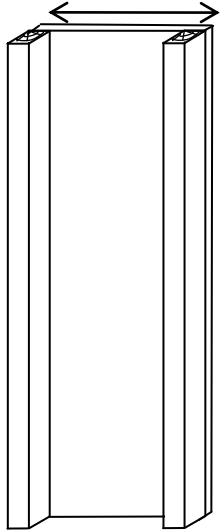
4.1 Reflective products or products for which emissivity is certified

The test standard EN 13823 "Reaction to fire testing of construction products - Construction products excluding floor coverings exposed to thermal stress caused by an isolated burning object" gives a general description of the assembly of test specimens for the SBI test, applicable to classes A2, B, C and D (and in certain cases to A1).

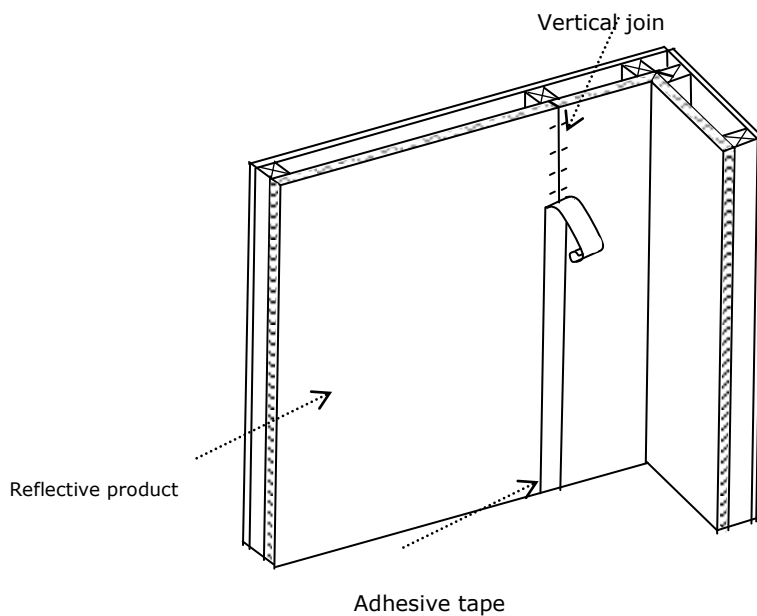
An example of assembly is summarised as follows:

- Normalised panels (as defined by EN 13823) are attached to a framework of wooden battens to form two walls: a short wing and a long wing;
- Strips of product (tested specimen) are attached to the frame at regular points (most frequently using staples);
- A single vertical joint is made on the long wing. This joint is made by an overlap of 50 mm then covered with adhesive tape specific to the product;
- The thickness of the air gaps between the panels and test specimens is approximately 40 mm;
- The short wing and the long wing are placed edge to edge at an angle of 90°.

Long wing	Short wing
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<p>a = 800 mm - thickness of the panel b = 200 mm + thickness of the panel dimensions = 1000 mm x 1500 mm wooden batten = 40 mm x 40 mm</p>	<p>dimensions = 495 mm x 1500 mm wooden batten = 40 mm x 40 mm</p>

3D view:



Initial type testing: 3 tests per configuration

Follow-up testing: 1 test on the least favourable case

4.2 Bulk cellulose wadding-based products

4.2.1 Conditioning

The test specimens are conditioned at $23 \pm 2^\circ\text{C}$ and $50 \pm 5\%$ RH, for at least 14 days for blown and injected application and at least 28 days for wet spraying.

4.2.2 Preparation of the test specimens

The test specimens are prepared according to the three methods, blown, injection and spraying, in the dimensions and on the supports or cages described in the draft standard prEN 15101-1 (version 2010) and the following paragraphs.

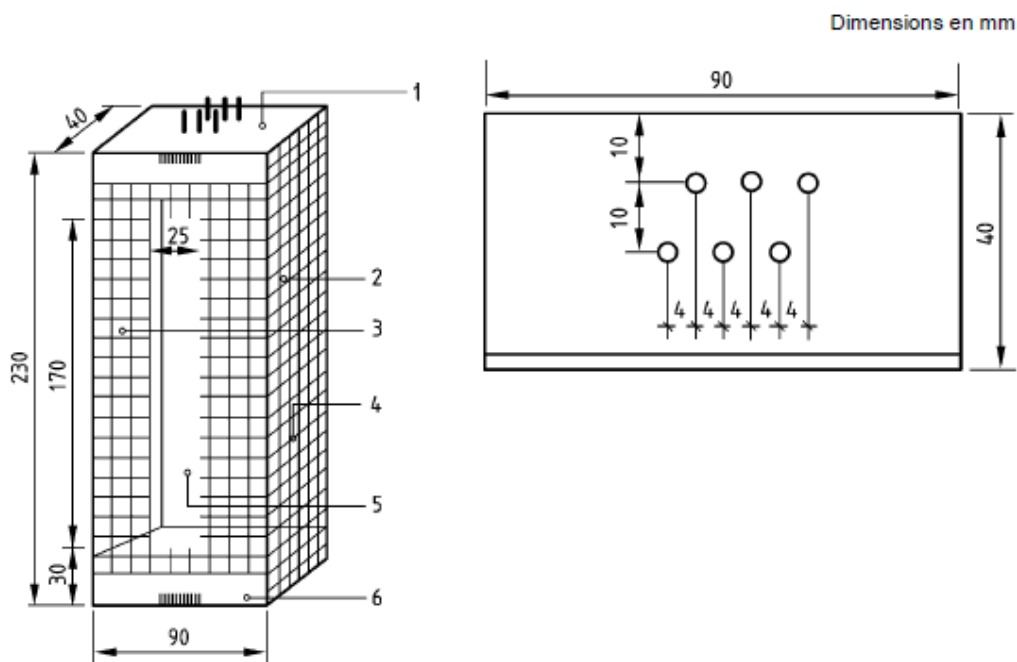
In all cases the density of the test specimens must correspond to the manufacturer's specifications.

4.2.3 Ignitability test

The principle of the test is described according to the standard EN 11925-2.

The methods specific to the products which come under this regulation are indicated in the draft standard prEN 15101-1 - Appendix C.

4.2.3.1 Blown and injection applications



Key

1. Solid wood (beech or oak)
2. Rear door (not visible) for filling
3. Side (not visible)
4. Metal mesh measuring 9.6×9.6 mm using 0.9 mm diameter wire
5. 170×25 mm opening for flame attack
6. Screwed metal plate with 11 guides 2 mm apart



A single type of attack: surface.

Tests performed without substrate.

Initial type testing: 6 attacks per density range (min-max)

4.2.3.2 Wet spraying application

A single type of attack: surface.

Tests performed with substrate.

Test specimen measuring 250 x 90 mm produced by spraying onto substrate to a total thickness of 60 mm

Initial type testing: 6 attacks

4.2.4 Tests for factory production control

Tests for factory production control are performed according to paragraph 5 of these Technical Specifications.

4.2.5 SBI test

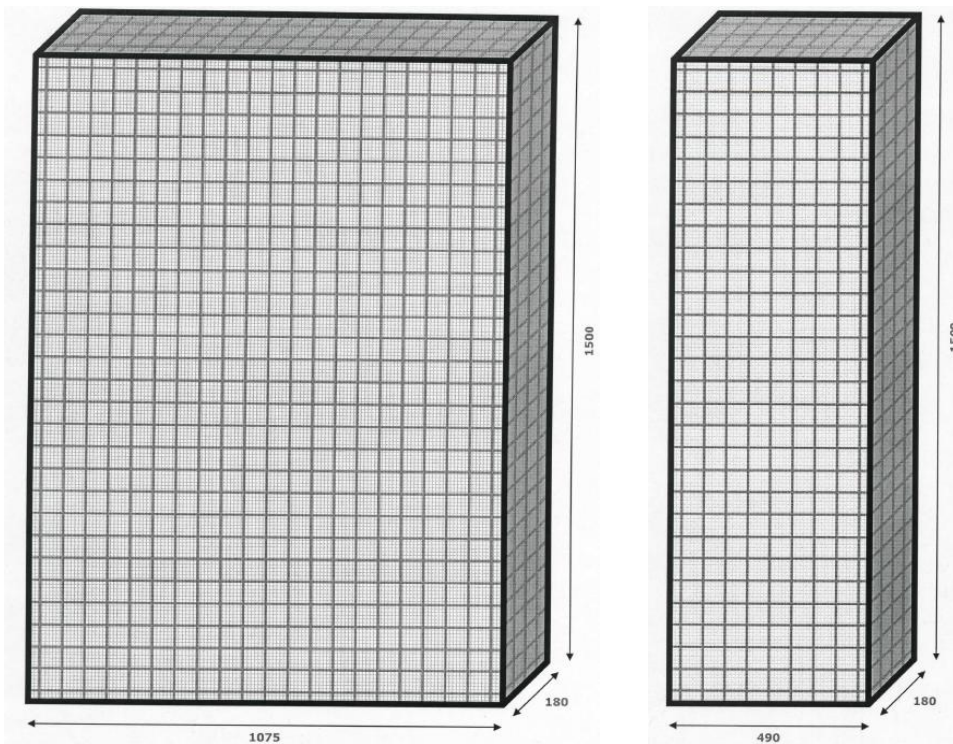
The test principle is described in standard EN 13823.

The methods specific to the products governed by this regulation are indicated in prEN 15101-1 - Appendix C.

4.2.5.1 Blown and injection applications

The tests are performed using metal cages (galvanised steel), cages consisting of galvanised steel angle irons measuring 25 x 25 x 3 mm and mesh.

A 4 x 4 mm mesh using 0.5 mm diameter wire and a second mesh of 50 x 50 mm using 2 mm diameter wire.



The support, defined in standard EN 13823, is placed at the back of the cages.

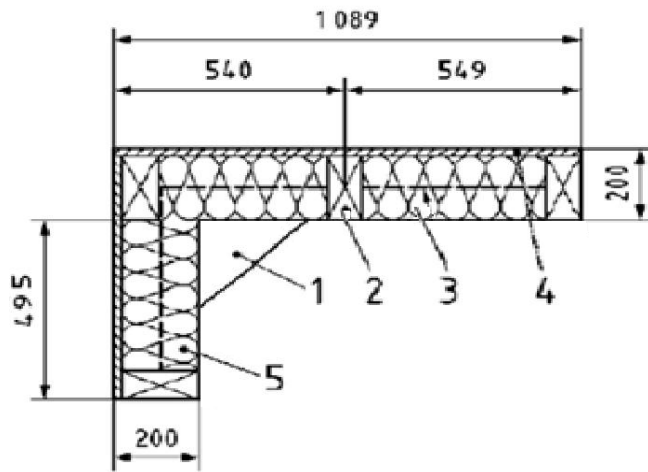
Number of models: 3 models in minimum density + 3 in maximum density, thickness 180 mm.

Initial type testing: 1 test by density then complete at 3 on unfavourable density.

N.B. To avoid settling linked to the height of 1.5 m for the blown and injection applications, it is preferable to condition bulk insulation beforehand at $23 \pm 2^\circ\text{C}$ and $50 \pm 5\% \text{ RH}$, in an aerated form (manually) then make the models with the help of the carding machine just before the SBI test.

4.2.5.2 Wet spraying application

The tests are performed on the models obtained by wet spraying of the wadding onto a standard support defined in the standard EN 13238.



Key

1. Burner
2. Wooden frame
3. Intermediate mesh (optional)
4. Standard support
5. Sprayed insulation

Initial type testing: 3 models, with a thickness of 180 mm of insulation, thus approximately 200 mm depending on the support.

4.2.6 Range testing

In the case of a grouped application for the same composition and the 3 methods of application, protocol specific to the SBI test:

Performance of one test at the minimum density, one at maximum density and one using spraying, then complete to 3 tests on the unfavourable case.

4.2.7 Follow-up tests by the ACERMI lead member

2 models on the unfavourable density range defined during the initial type tests on condition that the classification (Euroclass) is identical for the various density ranges.

If this is not the case 2 models on the unfavourable cases for each classification determined during the initial type tests.

In the event of heterogeneous or non-compliant results, a third model must be tested to calculate the mean of the parameters as defined in the standard EN 13501-1 (SBI).



4.3 Thermal insulation produced by pneumatic spraying of products prepared using mineral wools with binder and adjuvant

4.3.1 Conditioning

The test specimens are conditioned at $23 \pm 2^\circ\text{C}$ and $50 \pm 5\%$ RH at least 28 days for wet spraying.

Preparation of the test specimens:

The test specimens are prepared by spraying in the dimensions and on the supports described in the following paragraphs.

In all cases, the density of the test specimens must correspond to the manufacturer's specifications.

4.3.2 Ignitability test

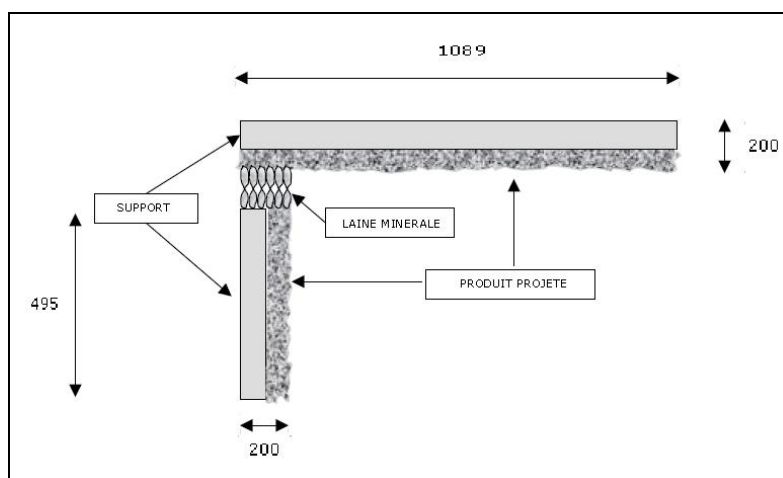
The test principle is that of standard EN 11925-2. The methods specific to the products which are the subject of this paragraph are listed below.

- Initial type testing: 6 attacks per density range;
- Follow-up testing: 6 attacks per density range.

4.3.3 SBI test

The test principle is that of standard EN 13823. The methods specific to the products which are the subject of this paragraph are listed below.

The tests are performed on models obtained by spraying mineral wool onto a standard support defined in EN 13238.



4.3.3.1 Initial type testing

3 models with a 180 mm thickness of insulation.



4.3.3.2 Follow-up testing

2 models on the unfavourable density range defined during the initial type tests on condition that the classification (Euroclass) is identical for the various density ranges.

If this is not the case, 2 models per density range. In the event of heterogeneous or non-compliant results, a third model must be tested to calculate the mean of the parameters as defined in the standard EN 13501-1 (SBI).

4.3.4 Measurement of HHV

The test principle is described in standard EN ISO 1716.

Initial type testing: 3 measurements performed on samples taken in the sprayed product.

Follow-up testing: 3 measurements performed on samples taken in the sprayed product.

4.3.5 Measurement of non-combustibility in oven

The test principle is described in standard EN ISO 1182.

Initial type testing: 5 measurements performed on samples taken in the sprayed product in the maximum density range.

Follow-up testing: 5 measurements performed on samples taken in the sprayed product in the maximum density range.



5 Factory production control

5.1 Product coming under harmonised European standards

For products coming under harmonised European standards NF EN 13162 à 13171 and NF EN 14064-1, the conditions of these standards apply.

5.2 Products based on plant or animal fibres, reflective products

The test methods and minimum frequency for factory control are described in the table below.

	Minimum test frequency ^a			
Euroclass	Direct tests ^b		Indirect tests ^{c, d}	
	Method	Frequency	Method	Frequency
B	EN 13823	Once /month or Once/2 years and indirect test	-	-
C			And	Manufacturer method
D	EN ISO 11925-2	Once /month or Once/2 years and indirect tests	-	-
E			EN ISO 11925-2	Manufacturer method
F	-	-	-	-

^a By minimum test frequencies is meant the minimum frequency for a product or group of products for each unit/production line under stable conditions. In addition to the test frequencies given above, testing of the relevant properties of the product must be repeated in case of changes or modifications likely to affect the product's conformity

^b The direct test can be performed by a third party or by the manufacturer

^c The indirect test shall be performed on the product.

^d The indirect test shall be performed in accordance with the standard EN 13172.



5.3 Thermal insulation produced by pneumatic spraying of products prepared using mineral wools with binder and adjuvant

The test methods and minimum frequency for factory control are described in the table below.

Minimum test frequency ^a						
Euroclass	Direct tests ^b		Indirect tests ^{c, d}			
			Product		Method	Frequency
	Method	Frequency	Test method	Frequency		
A1 without testing ^e	EN 13820	Once every 3 months ^f or once every 2 years and indirect testing	-	-	Loss on ignition	Once every 5 hours
A1	EN ISO 1182 and EN ISO 1716	Once every 2 years and indirect testing	-	-	Loss on ignition	Once every 5 hours
			-	-	Density of the product in the bag	Once every 5 hours
A2	EN ISO 1182 or EN ISO 1716 and EN ISO 13823	Once every 2 years and indirect testing	-	-	Loss on ignition	Once every 5 hours
					Density of the product in the bag	Once every 5 hours
B C D	EN ISO 13823 and EN ISO 11 925-2	Once every 3 months ^f or once every 2 years and indirect testing	Manufacturer method	Once a day	Loss on ignition	Once every 5 hours
					Density of the product in the bag	Once every 5 hours
		Once a week or once every 2 years with indirect testing	-	-	-	-
			Manufacturer method	Once a day	-	-
E	EN ISO 11925-2	Once a week or once every 2 years with indirect testing			Manufacturer method	Once a day
F	-	-			-	-

^a By minimum test frequencies is meant the minimum frequency for a product or group of products for each unit/production line under stable conditions. In addition to the test frequencies given above, testing of the relevant properties of the product must be repeated in case of changes or modifications likely to affect the product's conformity

^b The direct test can be performed by a third party or by the manufacturer

^c The indirect test shall be performed on the product.

^d The indirect test shall be performed in accordance with the standard EN 13172.

^e European decision 96/603EC: Materials reputed to belong to the reaction to fire class A without requiring testing in accordance with decision 94/611/EC (for reaction to fire performances).

^f Only for non-coated products