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Product Guideline No.18

Insulation and plasterboard thermal insulation composite systems

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CSTB - LNE

Contents

1 Purpose

This Product Guideline supplements the provisions in the General Guidelines.

This Product Guideline concerns:

- thermal insulation composite systems composed of insulation material glued onto a plasterboard panel with or without a vapour barrier;

- thermal insulation sandwich panels composed of insulation material glued between two plasterboard panels with or without a vapour barrier;

Compliant with harmonised European Standard NF EN 13950.

As specified in §1.2 of the general guidelines, only products presumed to be fit for use can be issued with an ACERMI certificate. In the case of this product guideline, this is either NF DTU 25.42, a Technical appraisal, a Technical Application Document or a Technical Experimentation Assessment, case A.

2 Additional elements of the certificate application technical file

The technical file defined in paragraph 2.2 of the General Guidelines is supplemented by the following items:

- The references of the components of the thermal/acoustic insulation composite panels and their associated characteristics (insulation material, plasterboard, physical or chemical adhesive, vapour barrier if applicable).

- The ACERMI certificate for the insulation component with the following minimum characteristics:

PU / XPS / PSE	Elasticated PSE	MW
Wp<1.0 kg/m^2 according to Standard EN 1609	Wp<1.0 kg/m^2 according to Standard EN 1609	Wp<1.0 kg/m^2 according to Standard EN 1609
TR50	TR20	Semi-rigidity criterion

- Evidence of conformity of the plasterboard with NF 081 - Plasterboard or equivalent.

- The spread per m² of the adhesive used to assemble the components of the thermal/acoustic insulation composite.

3 Characteristics that can be certified

Characteristics that can be certified are the characteristics linked to the product listed in paragraph 4 of the NF EN 13950 Standard:

- Reaction to fire (EN 13950 §4.2.1);

- Water vapour permeability (EN 13950 §4.3);

- Flexural strength (EN 13950 §4.4);

- Thermal resistance of the panel (EN 13950 §4.8);

- Dimensions and tolerances (EN 13950 §4.9);

- Offset (EN 13950 §4.10);

- Flatness of the composite (EN 13950 §4.11);

- Adhesion/cohesion of the insulating material (EN 13950 §4.12);

And supplemented by the following characteristics:

- Permeability class P1, 2 or 3.

4 Methods of determination of the certified characteristics by the pilot laboratories

The test methods applied by the pilot laboratory for each of the characteristics are defined in paragraph 5 of the NF EN 13950 Standard, supplemented by the following provisions.

4.1 Thermal resistance

The certified thermal resistance is defined as the addition of the thermal resistance of the insulation stated in the corresponding ACERMI certificate and the thermal resistance of the plasterboard(s) with the standard value of 0.05 m².K/W per board.

4.2 Reaction to fire

The provisions in Technical Specification No.3 apply.

4.3 Permeability class

There are three categories (P1, P2 and P3) of insulated plasterboard according to the permeability π/e (expressed in g/m².h.mm.Hg) where "π" is the water vapour permeability and "e" is the thickness of the insulation in metres:
- Category P1, composed of composites the permeability of which is greater than 60.10^{-3} and sandwich panels the permeability of which is greater than 300.10^{-3}. They are marked P1;
- Category P2, composed of composites the permeability of which is between 15.10^{-3} and $60.10^{-3}$and sandwich panels the permeability of which is between 15.10^{-3} and 300.10^{-3}. They are marked P2;
- Category P3, composed of composites and sandwich panels the permeability of which is less than or equal to 15.10^{-3}. They are marked P3.

The P class of the composite is determined using the water vapour transmission results for the insulation panel.

5 Quality assurance operations on raw materials

5.1 Inspection of components used in insulation composite systems

Upon receipt and before use, the manufacturer is required to check that the products used in its production are compliant with the specifications in the order placed.

This verification must provide information concerning the points set out below in particular.

During an initial period of three months, the inspection frequency is as stated below.
This frequency may then be modified according to the guarantees obtained concerning the requirements of the above paragraph.

5.1.1 Insulating materials:

At least once a week, a visual inspection shall be made of the flatness and general appearance of the insulation, in particular the absence of deterioration or accidental moistening.

If the dimensional stability is not ACERMI certified, the holder shall conduct an inspection once a week in accordance with its internal specifications.
Inspection of the dimensional stability may be limited to verification in the factory of the storage life. A corroboration test shall be conducted once a year.

5.1.2 Plaster facing panels:

At least once a week, a visual inspection shall be made of the flatness and general appearance of the panels in terms of their integrity (paper defects, holes, missing plaster, etc.), in particular the absence of deterioration or accidental moistening.

5.1.3 Physical or chemical adhesive (glues):

Each supply batch shall be inspected by the adhesive producer according to the specifications defined for the type of adhesive and the process:

• For thermoplastic adhesives: density, dry extract according to the dilution, consistency.

• For thermosetting adhesives: density and consistency of each component, reactivity of the mixture.

In this case, the supplier sends the manufacturer the inspection sheets corresponding to each supply batch.

ACERMI must be informed of any change in the adhesive with a copy of the adhesive datasheet and the results of checks verifying the corresponding performances and that these performances are maintained.

6 Factory production control

Production control in the production unit satisfies the requirements of paragraph 6.3 of European Standard NF EN 13950.

In addition to these provisions, for the following certified characteristics for the purposes of this Guideline and described in detail in the various Technical Specifications, the procedures (methods and minimum test frequencies) provided for in this Technical Specification apply:

- Reaction to fire

In addition, the following specific provisions must be complied with.

6.1 Adhesive application per m²

The amount of adhesive applied is measured by the difference between weighings of a substrate (kraft paper, polyethylene, etc.) measuring at least 1 m x 1 m before and after gluing or calculated according to the measurement read on a flowmeter. Any device enabling the same result to be obtained with at least equivalent accuracy can be used.

The weight of adhesive per m² is checked once a day and after any new adjustments are made to the gluing system.

A visual inspection of the regularity of gluing of the component is conducted in particular after any new adjustments are made to the gluing system.

6.2 Adhesion/cohesion control

This control is performed in accordance with paragraph 5.4 of Standard NF EN 13950 and after the time necessary for the adhesive used to dry. The controls are carried out on composites selected at random among those ready for shipment.

It is conducted twice a week during production and per insulation family. If production is sporadic, one control shall be performed per production run.

6.3 Flatness check of the composite

The check is performed:
- either in accordance with paragraph 5.5 of Standard NF EN 13950 and after seven days of storage in a natural atmosphere.
- or by the following method: it is measured on the surface of the composite facing after being stored flat for seven days. It must be less than or equal to 3 mm. The flatness check consists in moving a 2.00 m ruler over the surface of the panel in all directions and measuring the space between the ruler and the surface to within 1 mm, note the maximum gap.

This check is limited to composites having insulation of a thickness greater than or equal to 60 mm and is only performed for composites composed of elasticated PSE, XPS or PU insulation.

It is conducted on one panel at least once a week per type of insulation.

6.4 Inspection of dimensional characteristics and offsets:

Offsets and thickness must be measured respectively in accordance with paragraphs 5.3 and 5.2 of Standard NF EN 13950 once per production day and per insulation family on one item. One item corresponds to one composite insulation panel.

7 Tests performed during follow-up

For characteristics requiring monitoring, random tests are conducted at least once a year according to the table below when relevant to the product in question.

The tests are conducted in accordance with the provisions in European Standard NF EN 13950, supplemented, if applicable, by the procedures described in the Technical Specifications corresponding to the characteristics tested and in this guideline:

Characteristics on all products (NF EN 13950)	**Test methods**	**Place of performance of the tests**
Thickness	See paragraph 5.2 of Standard NF EN 13950	Production unit
Offset	See paragraph 5.3 of Standard NF EN 13950	Production unit
Flatness of the composite	See paragraph 5.5 of Standard NF EN 13950	Production unit
Adhesion/cohesion of the insulating material	See paragraph 5.4 of Standard NF EN 13950	Production unit
Adhesive application per m²	Article 6.1.1 of this guideline	Production unit

The certifying body may also perform verification tests for characteristics not listed in the table below, in particular if there is any doubt as to the compliance of the certified values.

Random testing is performed for reaction to fire in the case of products coming under attestation of conformity system 1 for CE marking or at the manufacturer's request.

8 Certificate maintenance rules

The certificate maintenance rules are defined in paragraph 4 of the General Guidelines.

Based on the results of the tests performed by the pilot body, product compliance is verified:

- For the dimensional characteristics according to the requirements of paragraph 4 of European Standard NF EN 13950 and paragraph 4.3 of this guideline;
- For the adhesion/cohesion characteristics according to the requirements of paragraph 4.1.2 of European Standard NF EN 13950;
- For thermal performance according to paragraphs 2.1 or 2.2 of Technical Specification E;
- For the following characteristics certified under these regulations and described in detail in the various Technical Specifications, according to the conditions stipulated in these Technical Specifications:
    - Reaction to fire

9 Marking rules

The marking rules laid out in Technical Specification D apply.

In particular, the information label complies with the measures in paragraph 3.1.1 of this Technical Specification D according to the following example:

Composite or insulating sandwich
panel certified
No.AA/XXX/YYY
Permeability PX

www.acermi.com

In addition, the marking on the composite shall comply with the following provisions:

- Content of the marking: Trade reference of the product – ACERMI and certificate number of the composite – code to allow traceability (manufacturing site, manufacturing date, etc.).

The marking may be supplemented by other elements (characteristic, DTA no., etc.).

- Frequency of at least one item in five.

- Recommended location on the edge of the items.