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Thermal insulation products — Evaluation of conformity

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National foreword

This British Standard is the UK implementation of EN 13172:2012. It supersedes BS EN 13172:2008, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/540, Energy performance of materials components and buildings.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Wärmedämmstoffe - Konformitätsbewertung

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Foreword

This document (EN 13172:2012) has been prepared by Technical Committee CEN/TC 88 “Thermal insulating materials and products”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 2012, and conflicting national standards shall be withdrawn at the latest by July 2012.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13172:2008.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association

The main changes to EN 13172:2008 are:

a) Clause 5.4.2 text has been reorganised and reworded to distinguish clearly between calibration (check of calibration) and internal checks on equipment;

b) Clause 5.4.5 text has been reworded to distinguish clearly between ITT and FPC. Also the use of statistics to reduce testing frequencies in case of "safe" values has been extended to other characteristics than dimensions;

c) Table A.1 has been divided into two tables, Table A.1 for building insulation products and Table A.2 for building equipment and industrial installations. Some adjustments of testing frequencies for the characteristics in the tables have been introduced.

This European Standard contains six informative annexes:

— Annex A, Certification of conformity (not for CE marking purposes);

— Annex B, Certification of conformity (for products of reaction to fire classes under system 1);

— Annex C, Declaration of conformity by the manufacturer (for the performance requirements under system 3);

— Annex D, Declaration of conformity by the manufacturer (for products of reaction to fire classes under system 4);

— Annex E, Guidance on the use of annex(es);

— Annex F, Criteria for assessing non-conformity – Procedure in case of a complaint.

Evaluation of conformity is necessary for products in order to provide support for CE marking and for voluntary certification. The guidance contained in annex ZA of the product standards will determine which of the above annexes shall be used for CE marking.

Annex E describes how to use the annexes together with the main body of this standard to fulfil the requirements to the certification and/or declaration of conformity for a product.

Although the annexes are informative in this standard, their use by the manufacturer will require that they assume a normative status. When an annex is used the requirements in the annex need to be followed, as given in the text.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies the procedures and the criteria for the evaluation of the conformity of a thermal insulating product with the relevant European product specification.

This European Standard applies to factory made products for buildings, factory made products for building equipment and industrial installations, in-situ products for buildings, in-situ products for building equipment and industrial installations and to external thermal insulation composite systems.

2 Normative references

Not applicable

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
product
thermal insulation product produced under conditions which are presumed uniform to a given specification and placed on the market

3.2
factory production control
permanent, internal control of production exercised either by the manufacturer or by his agent on the responsibility of the manufacturer himself

NOTE Factory production control comprises operational techniques and all measures necessary to regulate and maintain the conformity of the product to the requirements of the relevant product standard.

3.3
production line
assemblage of equipment that produces products using a continuous process

3.4
production unit
assemblage of equipment that produces products using a discontinuous process

3.5
production plant/factory
all the production equipment on the same site including all production lines and units

3.6
third party
approved organisation or body which is able to provide independent verification or approval

3.7
witness testing
test performed by the manufacturer at his own facilities monitored by the representative of the third party

4 General requirements

The evaluation of conformity involves either a manufacturer or a manufacturer in conjunction with a third party. The procedure is given either in the relevant product standard or agreed between parties; it shall include at least those tasks given in Clause 5. The tasks for the third party and/or the manufacturer shall be carried out in accordance with the requirements of Clause 7 of the product standard, which makes reference to this standard and one or more of the annexes B, C, or D for the purposes of CE marking.

NOTE 1 Annex A is included for the purposes of voluntary product certification.

NOTE 2 Annex F is included for the purposes of describing how to handle the case of a complaint (outside the scope of a voluntary certification, in which case the annex A rules apply).

The content of Clause 5 will also be met by supplementing the provisions of EN ISO 9001 with requirements of this standard.

For ITT and FPC, each production line is considered separately.

For ITT and FPC, production units using the same process in one factory are considered together (as if one production line).

Products may be collected into product groups for *declaration and testing purposes* subject to the following conditions:

- They shall have the same type of production process and shall be derived from the same family of raw material; a distinction is made between glass wool and rock wool and between foams with different blowing agents.
- They shall differ only in aspects that do not influence the properties required in the relevant product standard.
- They shall be covered by a single thermal insulation standard, e.g. from the series EN 13162 to EN 13171.
- Products which differ only with regard to some properties may be grouped together by their common properties.
- Products which are identical except the facing and for which the different facings have been shown to have the same effect on the declared characteristics (e.g. regarding thermal properties, the gas tight facings of some PU products), may be grouped.

Products covered by more than one European Standard may be grouped for *testing purposes only* providing that,

- They have a common production specification and that they are from the same type of production process and the same family of raw material, e.g. cellular glass for the EN 13167 and EN 14305.

The properties outside this (these) common group(s) shall be tested product by product.

Products which are outside the scope of a product standard cannot be grouped for declaration purposes with products declared under the scope of that standard.

Providing that a product within the group meets the requirements of the product standard then all products within the same group shall be deemed to comply with the product standard for the properties concerned. If the same product fails to comply with the product standard then the whole group shall be assumed to have failed to comply with the product standard.

5 Requirements for factory production control - Tasks for the manufacturer

5.1 General

This clause specifies the requirements for factory production control that shall be fulfilled by the manufacturer for each factory

5.2 Organisation

5.2.1 General

Factory production control shall be operated according to a documented system that shall be given in a quality manual.

5.2.2 Responsibility and authority

The responsibility, authority and the interrelationships between all personnel who manage, perform, or verify work affecting quality, shall be defined. This applies particularly to personnel who need the organisational freedom and authority to

a) initiate action to prevent the occurrence of product non-conformity;

b) identify and record any product quality problems.

5.2.3 Management representative for factory production control

At every place of production, a representative, with the appropriate knowledge and production experience, shall be appointed by the manufacturer and given responsibility for managing and supervising factory production control procedures and for ensuring that the requirements of this standard are implemented and maintained.

5.2.4 Management review

Management shall review at appropriate intervals the factory production control system to ensure its continuing suitability and effectiveness. Records of such reviews shall be maintained.

5.3 Quality manual

The manufacturer's documentation and procedures shall be relevant to the production and process control used during manufacture of the product, and shall provide the following details in a quality manual:

a) the quality aims and the organizational structure, responsibilities and authority of the management with regard to product conformity;

b) the procedures for specifying and verifying the raw materials and other constituent materials;

c) the manufacturer's production control and other techniques, processes and systematic actions that will be used;

d) the inspections and tests to be carried out before, during and after manufacture, together with their frequency (see 5.4) and possible retest procedures (see 5.5);

e) the procedures for handling, storage, packaging, marking and labelling the product (see 5.6);

f) the procedures for all personnel to receive training in the activities affecting quality (see 5.8).

5.4 Inspection and testing

5.4.1 General

All necessary facilities, equipment and personnel shall be available to carry out the inspections and tests. The manufacturer, or his representative, may employ, under contract, a subcontractor who has the facilities, equipment and personnel to carry out the inspection and tests on behalf of the manufacturer. The manufacturer shall be responsible for control, calibration, and maintenance of testing, measuring, and inspection equipment, whether owned by or on loan to the manufacturer or a subcontractor.

Inspection and testing shall be performed by personnel qualified for such tasks on the basis of documented appropriate education, training and/or experience.

Equipment shall be used in a manner that ensures that any measurement uncertainty is not greater than the required measurement capability.

5.4.2 Test equipment

5.4.2.1 General

Tests to demonstrate conformity of the finished product to the relevant product standard shall be performed using equipment in accordance with the test methods referred to in the product standard.

The manufacturer shall ensure the on-going suitability of the test equipment.

The test equipment (including software) shall be capable of achieving the accuracy required by the test methods referred to in the product standard.

5.4.2.2 Calibration

The accuracy of the test equipment shall be ensured by periodic calibration. All calibrations shall be traceable to relevant internationally or, failing that, nationally recognised reference test specimens (standards). Where no such reference test specimens exist, the basis used for calibration shall be documented.

The manufacturer shall define compliance criteria for each piece of equipment.

The equipment shall be calibrated

— before being placed into service;

— periodically at a frequency described by the manufacturer respecting the minimum frequencies specified in Table 1;

— after any repair (see 5.4.2.4);

— to verify the test results obtained before being taken out of service. If internal checks are sufficient (e.g. Heat Flow Meter (HFM) equipment) then this calibration is not needed.

Equipment not listed in Table 1 shall be calibrated in accordance with the manufacturer's documented procedures.

The manufacturer shall assess the calibration results and document the results of such assessments. The calibration records shall be maintained for a period of 10 years.

5.4.2.3 Internal checks on equipment

In addition to the traceable calibration, the manufacturer shall carry out internal checks to verify the stability of the equipment. The manufacturer shall define compliance criteria for results of internal checks. Internal checks shall be carried out at frequencies respecting the minimum frequencies given in Table 1.

Equipment not listed in Table 1 shall be checked in accordance with the manufacturer's documented procedures. Records of internal checks shall be maintained for a period of 10 years.

Table 1 — Minimum frequencies of checks and calibrations of test equipment

Properties	Internal checks	Calibration of test equipment
Thickness	Once per month[a]	Prior to first use of equipment and thereafter annually
Mass	Once per month[a]	
Mechanical properties	-	
Thermal properties [b]:		
- heat flow meter	Once per two weeks	
- guarded hot plate	Once per year	

[a] A lower frequency of once every 3 months may be used when stability has been verified for a period of at least one year. If any single measurement indicates significant variation, the frequency reverts to once a month.

[b] For thermal properties a part of the calibration shall be to compare test results obtained by the manufacturer with those obtained by an approved body on the same sample. The reference test specimen to be used is the IRMM 440 defining the European thermal conductivity level.

5.4.2.4 Defective equipment

Equipment that has been subjected to abuse or mishandling, which gives suspect results or has been shown to be defective or outside specified limits, shall be taken out of service immediately and marked as defective.

The manufacturer shall examine whether or not defective equipment gives cause for concern regarding the conformity of the products tested using the defective equipment. This examination shall be documented.

In case of any doubt regarding conformity of products, 5.5 applies.

After any repair, calibration shall be repeated before the equipment is placed into use.

5.4.3 Inspection and testing of raw materials and other constituent materials

The manufacturer shall ensure that raw materials and other constituent materials conform to his specified requirements. In determining the checks necessary consideration shall be given to the control exercised by the supplier and the documented evidence of conformity supplied (often referred to as supplier certified components or certified raw materials).

The manufacturer shall ensure that incoming raw materials and other constituent materials are used or processed only after they have been verified as conforming to the specified requirements. Where incoming material is released for urgent production purposes prior to verification it shall be identified and recorded in order to permit immediate recall in the event of non-conformity.

5.4.4 Inspection and testing during manufacture

In order to manufacture products which meet the requirements of the product standard the manufacturer shall control his process and perform inspection and tests as described in his quality manual.

5.4.5 Product testing

5.4.5.1 General

Prior to placing a product on the market, the manufacturer shall ensure that initial type testing in accordance with Clause 6 is carried out.

The manufacturer shall test the finished products in accordance with the relevant product standard, using direct and/or indirect testing, in accordance with 5.4.5.3. One test is considered as the test(s) on one sample of the product using one or more test specimens as specified in the relevant test or product standard.

The samples shall be drawn periodically from each production unit (line) according to the manufacturer's test plan. The minimum testing frequencies for the relevant properties for continuous production conditions are specified in the annex "Factory production control" of the relevant product standard. For properties that are automatically recorded during the manufacturing process at a higher frequency than given in this annex, the testing frequency may be lowered.

5.4.5.2 Direct testing

Direct testing shall be applied according to the test regime specified in the relevant product standard.

Reduced testing frequencies for direct testing may be used for well established production lines/units for properties other than reaction to fire and thermal resistance/conductivity:

- in the case of a given characteristic where a well controlled production process can be demonstrated, the testing frequency may be reduced as described below following the relevant statistical rule.
- the frequency for direct testing cannot be reduced to less than 10 % of the minimum frequency given in the relevant product standard. In no case may the frequency be less than once a year.
- the risk of failure in a test shall not exceed 1,0 %. For dimensional tolerances the confidence level shall be at least 99 %, for other characteristics the confidence level shall be at least 50 %.

Three situations arise:

I) for characteristics with declared classes – tolerance interval, T (one-sided interval for dimensional characteristics where only a plus or a minus tolerance interval is declared and two-sided interval for e.g. dimensional characteristics where a plus-minus tolerance interval is declared).

If the Gaussian distribution can be assumed for the test results, then Equation 1 applies.

$$T^2 \geq (k_{99/99} \times s)^2 \quad (1)$$

where

T is the tolerance interval for the test results obtained over a period not exceeding 3 years;

s is the estimate of the standard deviation of the test results obtained over a period not exceeding 3 years;

k is a factor corresponding to the number of test results, n, available over a period not exceeding 3 years at the reduced testing frequency.

Table 2 gives the *k* factors corresponding to a 99 % tolerance interval with a confidence level of 99 % (99/99).

II) for characteristics with limit values – one-sided tolerance interval

If the Gaussian distribution can be assumed for the test results, the equation 2 or 3 applies.

$$\bar{x} - x_D \geq k_{90/50} \cdot s \qquad \text{for minimum values} \qquad (2)$$

$$x_D - \bar{x} \geq k_{90/50} \cdot s \qquad \text{for maximum values} \qquad (3)$$

where

$\bar{x}$ is the mean of the measured values;

x_D is the declared value;

s is the estimate of the standard deviation of the test results obtained over a period not exceeding 3 years;

k is a factor corresponding to the number of test results, n, available over a period not exceeding 3 years at the reduced testing frequency.

Table 2 gives the *k* factors corresponding to a 90 % tolerance interval with a confidence level of 50 % (90/50).

Table 2 — *k* factors for estimated standard deviations

Number of test results *n*	*k* factors		
	$k_{99,99}$		$k_{90,50}$
	One-sided interval [a]	Two-sided interval [b]	One-sided interval [c]
10	5,074	5,611	2,411
20	3,932	4,175	2,366
50	3,125	3,390	2,342
100	2,850	3,098	2,334
200	2,679	2,922	2,330

[a] Applicable for a plus or a minus-tolerance.
[b] Applicable for plus-minus-tolerances.
[c] Applicable for limit values.

For other numbers of test results see ISO 16269-6, *Statistical interpretation of data – Determination of statistical tolerance intervals*.

NOTE Linear interpolation is acceptable.

III) For characteristics where test results are expressed in terms of pass/fail, a binominal distribution can be assumed. To lower the frequency it is required that the test shall be performed on at least 100 different samples from different production days and 99 % shall pass.

Satisfaction of the conditions for reduced testing frequencies (I, II or III), shall be verified in the event of failure and at least once a year.

5.4.5.3 Indirect testing

Indirect testing is a means by which a given property may be assessed through tests on one or more other properties, with which a correlation has been established. Indirect testing may also be used to reduce the testing frequency of direct testing.

The correlation shall be established by suitable statistical means, e.g. regression analysis on the basis of adequate preliminary tests for each production unit (line). It shall be re-examined at prescribed intervals and after changes or modifications if these are likely to affect the correlation.

For each indirect testing procedure applied at the place of production the sampling plan and the compliance criteria, for the indirect property, shall be specified taking into account the relevant correlation between the corresponding properties.

The use of indirect testing shall result in at least the same confidence level on the property concerned as when using the direct testing.

In case of dispute the test method specified for the relevant property in the product standard shall be used.

5.4.6 Inspection and test status

The conformity or non-conformity of a product with the product standard shall be determined by tests and inspection which records passed, failed or due to be reclassified.

5.4.7 Inspection and test records (manufacturer's log)

The results of finished products inspection and testing shall be recorded in the manufacturer's log. The log shall contain a record of the product identification, the date and time of manufacture and for each property the test methods, the test results, the required level, the inspection result and the identification of the person carrying out the inspection.

Where products do not meet the requirements of the product standard, a note shall be made in the manufacturer's log of the remedial measures taken.

The manufacturer's log shall be kept for at least 10 years.

5.5 Actions in the case of nonconforming products

If the result of a test or the inspection of a product is a failure, the manufacturer shall immediately take the steps necessary to rectify the deficiency. Products, which do not conform to the requirements of the product standard, shall be marked accordingly. When the deficiency has been identified and rectified, the test or inspection in question shall be repeated without delay according to the quality manual, to provide evidence that the defects have been overcome.

In the event that products are dispatched before the result of the inspection is available prompt notification shall be given to the customer to prevent any consequential damage and a record maintained of such notification.

Products, which have not met the value intended to be declared by the manufacturer for a given property shall be permitted to qualify for a less stringent value of that property and shall be labelled accordingly.

5.6 Handling, storage, packaging, and marking of products

In accordance with the quality manual (see 5.3) the manufacturer shall:

1) provide methods of handling that prevent damage or deterioration;

2) provide suitable storage areas or stock rooms to prevent damage or deterioration of the product;

3) control the packaging, storage and the marking processes.

5.7 Traceability of products

Individual products or product batches shall be identifiable and traceable with regard to their production origin.

5.8 Training of personnel

The manufacturer shall establish and maintain procedures for the identification of the training needs and shall provide for the training of all personnel in activities affecting quality.

Personnel performing specific assigned tasks shall be qualified on the basis of appropriate education, training and/or experience, as required.

Records of training shall be kept up to date.

6 Initial type testing

Prior to placing a product on the market, the manufacturer shall ensure that initial type testing is carried out in order to ensure product conformity. Initial type testing of relevant properties shall be repeated on changes or modifications if these are likely to affect the conformity of the products.

These tests shall be carried out in accordance with the product standard, by direct testing. One test is considered as the test of one sample of the product consisting of one or more test specimens as specified in the relevant test or product standard.

For CE marking purposes the initial type testing of some characteristics shall be performed by an approved body (see the product standard).

Annex A
(informative)

Certification of conformity (not for CE marking purposes)

NOTE This annex supports the standards for thermal insulation products. When used in the evaluation of conformity of these products its use is mandatory. For this reason the text of the annex, where appropriate, is written in the imperative form.

A.1 Bodies involved in the evaluation of conformity procedure

The following external bodies may be involved in the evaluation of conformity of products with this standard:

1) certification body which provides conformity certification;

2) inspection body, which performs assessments, makes recommendations on the acceptability of manufacturer's factory production control, performs subsequent audits and which selects samples of products for testing;

3) testing laboratory, which measures, examines, tests or otherwise determines the characteristics or performance of materials or products and which calibrates equipment.

NOTE The functions of these three bodies may be performed by the certification body or by different bodies. If different bodies are involved, the inspection body and/or the testing laboratory carry out their functions on behalf of the certification body.

In this annex these bodies are referred to by the term "approved body".

A.2 Tasks for the approved body

A.2.1 General

A.2 specifies the tasks for the approved body in the evaluation of conformity procedure and also the manufacturer's duties arising in connection with them.

If a quality system certified to a quality system standard, such as EN ISO 9001, is used, this certification shall be taken into account by the product certification body for those elements that are common to both systems.

A.2.2 Initial inspection

The initial inspection shall determine whether the prerequisites for staff and equipment, for continuous and orderly manufacture and for the corresponding factory production control, are in accordance with Clause 5.

The results and recommendations from the initial inspection shall be documented in an assessment report. This shall include evidence that all the requirements of Clause 5 have been assessed.

A.2.3 Initial type testing

Each product, which is submitted for assessment, shall be tested by the approved body in accordance with the product standard.

ITT will be performed by the approved body for all characteristics declared by the manufacturer. The number of test results to be determined by the approved body is two except for reaction to fire characteristics and compressive creep where only one test result is required.

As four test results are required for mechanical characteristics (excluding compressive creep), audit tests shall be performed after one and two years in addition to the ITT thereby fulfilling the requirements in Annex C for ITT testing.

Sampling for initial type testing shall be carried out by the representative of the approved body, normally during the initial inspection, with the manufacturer's representative present. The sample shall be taken from products identified in accordance with 5.4.6 as conforming to the product standard (finished products ready for delivery). 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 approved body shall record the following details:

1) manufacturer name and address;

2) description of the product;

3) how the product is identified;

4) manufacturer's marking of the product;

5) inspection lot size;

6) sample size;

7) location and date of sampling;

8) all necessary information about the product for testing, including shift or time of production and production line/unit or traceability code .

The record shall be agreed and signed by the representative of the approved body and the manufacturer’s representative.

NOTE 1 The minimum stock of products from which the sample is taken should be large enough to obtain a representative sample for the tests required.

Unless otherwise specified, the sample shall be taken from four different production dates and shall, for factory made products, cover the range of thickness declared by the manufacturer. One test result shall be determined for the required characteristics on specimens from each production date. For reaction to fire characteristics and other characteristics where only one or two test results are required test specimens from one or more of the four different production dates shall be used.

All test results for each characteristic shall be better than or equal to the declared value.

NOTE 2 For new production lines/units the normal evaluation of conformity procedures apply. For the manufacturer starting a line/unit, identical in terms of product performance to an existing line/unit, and for existing products/product groups, a special agreement may be made to handle the practical start of production and the performance of ITT ensuring that all evaluation of conformity requirements are finalised within a period of less than 6 months. In any case the manufacturer has the full responsibility for the declared values.

A.2.4 Continuous surveillance

A.2.4.1 General

Production shall be subjected to continuous surveillance by an approved inspection body, consisting of routine inspections (see A.2.4.2), audit testing (see A.2.4.3), actions in the case of non-conformity (see A.2.4.4) and extraordinary inspections (see A.2.4.5).

The representative of the inspection body shall be allowed to enter the factory including the warehouse(s), without announcement, at any time during the working hours in order to carry out the necessary works in connection with the surveillance. He shall have access to all relevant information about the product in connection with the surveillance and shall be provided with adequate assistance, particularly for sampling and testing.

The manufacturer shall inform the certification body of changes in the quality system that are (or might be) directly connected to the conformity of the products.

A.2.4.2 Routine Inspections

Routine inspections shall be performed to assess the continued conformity of the manufacturer's factory production control system to the requirements of Clause 5. Reference shall be made to the records of the initial inspection and/or previous routine inspections to ensure changes to the manufacturer's factory production control system are assessed.

Records of inspections shall include details of the status of the factory production control system as it exists on the date of the inspection.

During each routine inspection, the following shall be specifically examined:

1) results of the manufacturer's own testing to check:

   a) whether tests have been performed at the specified frequency and

   b) that only products that have conformed to the product standard have been released;

2) that proper corrective actions have been taken when required;

3) the calibration and maintenance of test equipment;

4) the marking and labelling of products.

The results of the routine inspections shall be documented in a record of the inspection.

The routine inspections shall be performed twice a year, unless additional extraordinary inspections are carried out according to A.2.4.5. The routine inspections shall be planned to ensure that all relevant functions of the manufacturer are assessed during a prescribed period. The inspections shall aim at reflecting the normal working manner of the factory. Inspections may be carried out without any previous announcement.

A.2.4.3 Audit testing

Audit samples shall be taken for checking conformity with the product standard. Samples shall be taken at random normally during a routine inspection at the factory and they shall be representative of the normal production. Only if it is agreed between the approved body and the manufacturer, shall samples be taken from elsewhere.

The representative of the approved body shall ensure that the manufacturer is aware of his responsibility to forward the selected samples to the testing laboratory in proper condition and without undue delay.

Audit testing shall be conducted for the characteristics listed in Table A.1 for building insulation products and Table A.2 for products for building equipment and industrial installations once a year, except for the reaction to fire and the maximum service temperature (for e.g. EN 14303 through EN 14309, EN 14313, EN 14314) , where the frequency shall be once every 2 years. For each product group the approved body shall select one sample for test (from each factory).

Audit testing shall only be performed for the characteristics from Table A.1 and Table A.2 if they are declared.

Testing shall be carried out in accordance with the relevant product standard bearing in mind the number of tests necessary to achieve one test result.

Where appropriate a comparison shall be made between the manufacturer's routine test results, results of witness testing, and the results of testing by the approved body.

Table A.1 — Audit testing to be performed for each factory – Building insulation products

Characteristic	Test method
Thermal resistance – Thermal conductivity	EN 12667, *Thermal performance of building materials and products – Determination of thermal resistance by means of guarded hot plate and heat flow meter methods – Products of high and medium thermal resistance* and EN 12939, *Thermal performance of building materials and products – Determination of thermal resistance by means of guarded hot plate and heat flow meter methods – Thick products of high and medium thermal resistance*
Thickness	EN 823, *Thermal insulating products for building applications – Determination of thickness* or EN 12431, *Thermal insulating products for building applications – Determination of thickness for floating floor insulation products*
Reaction to fire	EN 13501-1, *Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire test*
Compressive stress or compressive strength (where relevant)	EN 826, *Thermal insulating products for building applications – Determination of compression behaviour*

Table A.2 — Audit testing to be performed for each factory – Products for building equipment and industrial installations

Characteristic	Test method
Thermal resistance – Thermal conductivity	EN 12667, *Thermal performance of building materials and products – Determination of thermal resistance by means of guarded hot plate and heat flow meter methods – Products of high and medium thermal resistance* EN 12939, *Thermal performance of building materials and products – Determination of thermal resistance by means of guarded hot plate and heat flow meter methods – Thick products of high and medium thermal resistance* and prCEN/TS 15548-1, *Thermal insulation products for building equipment and industrial insulations – Determination of thermal resistance by means of the guarded hot plate method – Part 1: Measurements at elevated temperatures from 100 °C to 850 °C* or EN ISO 8497, *Thermal insulation – Determination of steady-state thermal transmission properties of thermal insulation for circular pipes (ISO 8497:1994)*
Thickness	EN 823, *Thermal insulating products for building applications – Determination of thickness* or EN 13467, *Thermal insulating for building equipment and industrial installations – Determination of the dimensions, squareness and linearity of preformed pipe insulation*
Reaction to fire	EN 13501-1, *Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire test*

Table A.2 *(continued)*

Characteristic	Test method
Compressive stress or compressive strength (where relevant)	EN 826, *Thermal insulating products for building applications – Determination of compression behaviour*
Maximum service temperature (where relevant)	EN 14706, *Thermal insulating products for building equipment and industrial installations — Determination of maximum service temperature* or EN 14707, *Thermal insulating products for building equipment and industrial installations — Determination of maximum service temperature for preformed pipe insulation*
Trace quantity of chloride and pH (where relevant)	EN 13468, *Thermal insulating products for building equipment and industrial installations — Determination of trace quantities of water soluble chloride, fluoride, silicate, sodium ions and pH*
Water vapour diffusion resistance (where relevant)	EN 12086, *Thermal insulating products for building applications — Determination of water vapour transmission properties* or EN 13469, *Thermal insulating products for building equipment and industrial installations — Determination of water vapour transmission properties of preformed pipe insulation*

A.2.4.4 Actions in the case of non-conformity

Identified cases of non-conformity are:

a) defects that have been revealed by the approved body in the factory production control process/measurements;

b) the manufacturer has not met his commitments according to A.2.4.2, thus preventing the approved body from performing its surveillance tasks properly;

c) a product tested has failed to achieve the declared value in one or more of the properties listed in Table A.1 or Table A.2 as relevant. For thermal resistance and thermal conductivity a simplified statistical procedure shall be used, see below.

In the case of non-conformity, the following actions are required:

In the case of a) or b) the certification body shall ask the manufacturer to rectify the non-conformity and to report within four weeks. The approved body shall take further action depending on the particular circumstances. Such activities may include extraordinary inspection, in particular after failure of a routine inspection, or the approved body may accept documentary evidence that the fault has been rectified. If such a rectification is not documented, A.3.3.1 applies.

In the case of c) the approved body shall take a new sample of the product concerned within 4 weeks and retest all relevant characteristics without delay, in accordance with Table A.1, for this particular product. If some characteristics by nature of the product are not influenced (no change in the declared value) by changes in the characteristics that failed, those characteristics shall not be retested.

If retesting shows conformity with the product standard, the product shall be considered to have passed. If the product fails again in one of the follow up tests, it is deemed to have failed, see A.3.3.3.

A.2.4.5 Extraordinary inspection

Extraordinary inspections shall be carried out:

1) in the case of non-conformity (see A.2.4.4);

2) after production line/unit has been idle for a period of more than 6 months;

3) because of a significant change in the factory production control procedure, or process or product;

4) at the request of a third party with the agreement of the certification body and the manufacturer.

The scope, type, and timing of an extraordinary inspection will depend on the particular circumstances (e.g. product concerned and/or production conditions).

A.3 Conformity mark

A.3.1 General

For each product where conformity has been established:

1) the manufacturer is entitled to use the conformity mark as soon as the certificate of conformity has been issued by the certification body (see A.3.2);

2) the validity of the certification scheme shall be confirmed every year;

3) the manufacturer is no longer entitled to use the conformity mark, if the certificate of conformity is withdrawn for any reason (see A.3.3);

4) the manufacturer is not entitled to make any published statement to the effect that he has ‘applied for conformity mark’ for a product.

NOTE This mark should not be confused with the CE marking. For CE marking requirements see ZA.3 of the relevant product standard.

A.3.2 Certificate of conformity

When the factory unit and the product have passed the initial inspection and initial type testing in accordance with A.2.2 and A.2.3 respectively, the certification body shall issue a certificate of conformity for the product.

NOTE This certificate should not be confused with the EC certificate granted under CE marking requirements (see ZA.3 of the relevant product standard).

A.3.3 Withdrawal of certificate

A.3.3.1 General

In case of withdrawal of a certificate of conformity, the certification body shall inform the manufacturer about this and publish the information in an appropriate way.

A.3.3.2 Factory production control failure

If an extraordinary inspection, performed in response to cases a) or b) of A.2.4.4, has not been passed, or the manufacturer has, in spite of the procedures in accordance with A.2.4.4, not met the requirements, the certification body shall withdraw all certificates of conformity issued for the entire production under this certification scheme.

A.3.3.3 Product failure

If a product has not passed the retesting performed in response to case c) of A.2.4.4, the certification body shall withdraw the certificate of conformity for the product group represented by the product tested without delay.

A full ITT is not needed in case of withdrawal of the certificate for a product group where some of the products in the group (with unchanged declaration) are re-submitted for certification as a new group within two months. The ITT shall consist of only one test result of the characteristics subject to audit testing for the product (see Table A. 1 of this standard).

If some characteristics by nature of the product are obviously not influenced (no change in the declared value) by changes in the characteristics that failed, those characteristics shall not be retested.

Annex B
(informative)

Certification of conformity (for products of reaction to fire classes under system 1 [1)]

NOTE 1 Under the CPD, this annex always applies cumulatively with Annex C.

NOTE 2 This annex supports the standards for thermal insulation products. When used in the evaluation of conformity of these products its use is mandatory. For this reason the text of the annex, where appropriate, is written in the imperative form.

B.1 Bodies involved in the evaluation of conformity procedure

In addition to the manufacturer, the following external bodies may be involved in the evaluation of conformity of products with this standard:

1) certification body which provides conformity certification;

2) inspection body, which performs assessments, makes recommendations on the acceptability of manufacturer's factory production control, performs continuous surveillance of factory production control and which selects samples of products for initial type testing;

3) testing laboratory, which measures, examines, tests or otherwise determines the characteristics or performance of materials or products and which calibrates equipment.

NOTE The functions of these three bodies may be performed by the certification body or by different bodies. If different bodies are involved, the inspection body and/or the testing laboratory carry out their functions on behalf of the certification body.

Within this evaluation of conformity procedure only testing laboratories, inspection bodies and certification bodies notified by the EEA Member States and mentioned in the Nando database shall be involved. In this standard they are referred to by the term "approved body".

B.2 Tasks for the approved body

B.2.1 General

B.2 specifies the tasks for the approved body in the evaluation of conformity procedure and also the manufacturer's duties arising in connection with them.

If a quality system certified to a quality system standard, such as EN ISO 9001, is used, this certification will be taken into account by the product certification body for those elements that are common to both systems.

B.2.2 Initial inspection of factory and factory production control

The initial inspection shall determine whether the prerequisites for staff and equipment, for continuous and orderly manufacture and for the corresponding factory production control, are in accordance with Clause 5.

The results and recommendations from the initial inspection shall be documented in an assessment report. This shall include evidence that all the requirements of Clause 5 have been assessed.

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1) System 1: See CPD, annex III.2 (i), without audit testing of samples.

B.2.3 Initial type testing

Each product which is submitted for assessment shall be tested by the approved body in accordance with the product standard. Under the scope of this annex, initial type testing shall only be performed for the Euroclass characteristics for reaction to fire.

Sampling for initial type testing shall be carried out by the representative of the approved body, normally during the initial inspection, with the manufacturer's representative present. The sample shall be taken from products identified in accordance with 5.4.6 as conforming to the product standard (finished products ready for delivery). 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 approved body shall record the following details:

1) manufacturer name and address;

2) description of the product;

3) how the product is identified;

4) manufacturer's marking of the product;

5) inspection lot size;

6) sample size;

7) location and date of sampling;

8) all necessary information about the product for testing, including shift or time of production and production line/unit or traceability code .

The record shall be signed by the representative of the approved body.

NOTE 1 The minimum stock of products from which the sample is taken should be large enough to obtain a representative sample for the tests required.

Unless otherwise specified the sample shall be taken from four different production dates and shall, for factory made products, cover the range of thickness declared by the manufacturer. One test result, as defined in the product standard, shall be determined for each of the required characteristics using test specimens from the different production dates. For characteristics where only one test result is required test specimens from one or more of the four different production dates shall be used.

All test results for each characteristic shall be better than or equal to the declared value.

NOTE 2 For new production lines/units the normal evaluation of conformity procedures applies. For the manufacturer starting a line/unit, identical in terms of product performance to an existing line/unit, and for existing products/product groups, a special agreement may be made to handle the practical start of production and the performance of ITT ensuring that all evaluation of conformity requirements are finalised within a period of less than 6 months. In any case, the manufacturer has the full responsibility for the declared values.

B.2.4 Continuous surveillance, assessment and approval of the factory production control

B.2.4.1 General

Factory production control regarding parameters, equipment, etc. related to all relevant characteristics but in particular to reaction to fire characteristics shall be subjected to continuous surveillance, assessment and approval by an approved inspection body, consisting of routine inspections (see B.2.4.2), actions in the case of non-conformity (see B.2.4.3) and extraordinary inspections (see B.2.4.4).

The representative of the inspection body shall be allowed to enter the factory including the warehouse(s), without announcement, at any time during the working hours in order to carry out the necessary works in connection with the surveillance. He shall have access to all relevant information about the product in connection with the surveillance and shall be provided with adequate assistance, particularly for sampling and testing.

The manufacturer shall inform the certification body of changes in the quality system that are (or may be) directly connected to the quality of the products.

B.2.4.2 Routine Inspections

Routine inspections shall be performed to assess the continued conformity of the manufacturer's factory production control system to the requirements of Clause 5. Reference shall be made to the records of the initial inspection and/or previous routine inspections to ensure changes to the manufacturer's factory production control system are assessed.

Records of inspections shall include details of the status of the factory production control system as it exists on the date of the inspection.

During each routine inspection, the following shall be specifically examined:

1) results of the manufacturer's own testing to check:

   a) that tests have been performed at the specified frequency and

   b) that only products that have conformed to the product standard have been released;

2) that proper corrective actions have been taken when required;

3) calibration and maintenance of test equipment;

4) marking and labelling of products.

The results of the routine inspections shall be documented in a record of the inspection.

The routine inspections shall be performed twice a year, unless additional extraordinary inspections are carried out according to B.2.4.4. The routine inspections shall be planned to ensure that all relevant functions of the manufacturer are assessed during a prescribed period. The inspections shall aim at reflecting the normal working manner of the factory. Inspections may be carried out without any previous announcement.

B.2.4.3 Actions in the case of non-conformity

Identified cases of non-conformity are:

a) defects that have been revealed by the approved body in the factory production control;

b) manufacturer has not met his commitments according to B.2.4.2, thus preventing the approved body from performing its surveillance tasks properly.

In the case of non-conformity the following actions are required:

In the case of a) or b) the certification body shall ask the manufacturer to rectify the non-conformity and to report within a month. The approved body shall take further action depending on the particular circumstances. Such activities may include extraordinary inspection, in particular after failure of a routine inspection, or the approved body may accept documentary evidence that the fault has been rectified. If such a rectification is not documented, B.3.2.2 applies.

B.2.4.4 Extraordinary inspection

Extraordinary inspections shall be carried out:

1) in the case of non-conformity (see B.2.4.3);

2) after production line/unit has been idle for a period of more than 6 months;

3) because of a significant change in the factory production control procedure, or process or product;

4) at the request of a third party with the agreement of the certification body and the manufacturer.

The scope, type, and timing of an extraordinary inspection depend on the particular circumstances (e.g. product concerned and/or production).

B.3 Conformity mark

B.3.1 General

For each product where conformity has been established:

1) The manufacturer is entitled to use the conformity mark as soon as the certificate of conformity has been issued by the certification body (see B.3.2), and the initial type testing and factory production control carried out by the manufacturer provide acceptable results, that is compliance with the CE marking requirements is achieved;

NOTE Before affixing the CE marking the manufacturer also needs to draw up and sign a declaration of conformity.

2) The validity of the certification shall be confirmed every year;

3) The manufacturer is no longer entitled to use the conformity mark, if the certificate of conformity is withdrawn for any reason (see B.3.3);

4) Where the CE marking is legally required the manufacturer can not place the product on the market before he affixes the CE marking, having successfully completed all the required actions.

B.3.2 Certificate of conformity

When the factory unit and the product have passed the initial inspection and initial type testing in accordance with B.2.2 and B.2.3 respectively, the certification body shall issue a certificate of conformity for the product.

B.3.3 Withdrawal of certificate

B.3.3.1 General

In case of withdrawal of a certificate of conformity the certification body shall inform the manufacturer about this and publish the information in an appropriate way.

B.3.3.2 Factory production control failure

If an extraordinary inspection, performed in response to cases a) or b) of B.2.4.3, has not been passed, or the manufacturer has, in spite of the procedures in accordance with B.2.4.3, not met the requirements, the certification body shall withdraw all certificates of conformity issued for the entire production under this certification scheme.

Annex C
(informative)

Declaration of conformity by the manufacturer (for the performance requirements under system 3 [2])

NOTE This Annex supports the standards for thermal insulation products. When used in the evaluation of conformity of these products its use is mandatory. For this reason the text of the annex, where appropriate, is written in the imperative form.

C.1 Bodies involved in the evaluation of conformity procedure

In addition to the manufacturer, the following external bodies may be involved in the evaluation of conformity of products with this standard:

1) inspection body, which selects samples of products for testing (only when this annex is used cumulatively with Annex B);

2) testing laboratory, which measures, examines, tests or otherwise determines the characteristics or performance of materials or products and which calibrates equipment.

Within this evaluation of conformity procedure only testing laboratories and inspection bodies notified by the EEA Member States and mentioned in the Nando database shall be involved. In this standard they are referred to by the term "approved body".

C.2 Tasks for the approved body

C.2.1 General

C.2 specifies the tasks for the approved body in the evaluation of conformity procedure and also the manufacturer's duties arising in connection with them.

C.2.2 Initial type testing

Each product which is submitted for assessment shall be tested by the approved body in accordance with the relevant product standard. The tasks of the approved body for the initial type testing are limited to the characteristics specified in ZA.2 of the product standard.

If Annex B applies for the reaction to fire then the sampling for initial type testing shall be carried out by the representative of the approved body with the manufacturer's representative present. If Annex B does not apply then the sampling shall be carried out by the manufacturer. The sample shall be taken from products identified in accordance with 5.4.6 as conforming to the product standard (finished products ready for delivery). The sample shall be taken at random and shall be representative of normal production and shall be clearly identified to ensure that the sample is used for testing. The representative of the approved body or the manufacturer, as appropriate, shall record the following details:

1) manufacturer name and address;

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2) System 3: See CPD, annex III.2 (ii), second possibility.

2) description of the product;

3) how the product is identified;

4) manufacturer's marking of the product;

5) inspection lot size;

6) sample size;

7) location and date of sampling;

8) all necessary information about the product for testing, including shift or time of production and production line/unit or traceability code.

The record shall be agreed and signed by the representative of the approved body or the manufacturer's representative as appropriate.

NOTE The minimum stock of products from which the sample is taken should be large enough to obtain a representative sample for the tests required.

Unless otherwise specified the sample shall be taken from four different production dates and shall, for factory made products, cover the range of thickness declared by the manufacturer. One test result shall be determined for the required characteristics on specimens from each production date. For reaction to fire characteristics and other characteristics where only one test result, as defined in the product standard, is required, test specimens from one or more of the four different production dates shall be used.

All test results for each characteristic shall be better than or equal to the declared value.

C.3 Conformity mark

C.3.1 General

For each product where conformity has been established:

1) the manufacturer is entitled to use the conformity mark as soon as the initial type testing report has been issued by the notified laboratory (see C.2.2), the declared performances established and factory production control is correctly being carried out, that is compliance with the CE marking requirements is achieved;

NOTE Before affixing the CE marking the manufacturer also needs to draw up and sign a declaration of conformity.

2) the manufacturer is no longer entitled to use the conformity mark, if the requirements of this standard and of the relevant product standard are no longer fulfilled;

3) where the CE marking is legally required the manufacturer can not place the product on the market before he affixes the CE marking, having successfully completed all the required actions.

C.3.2 Declaration of conformity

When the product has passed the initial type testing in accordance with C.2.2, and factory production control is correctly carried out, that is compliance with the CE marking requirements is achieved the manufacturer can issue a declaration of conformity for the product.

Annex D
(informative)

Declaration of conformity by the manufacturer (for products of reaction to fire classes under system 4 [3])

NOTE Under the CPD, this annex always applies cumulatively with Annex C.

D.1 Conformity mark

For each product where conformity has been established:

1) The manufacturer is entitled to use the conformity mark as soon as the requirements of this standard and the relevant product standard are fulfilled;

2) The manufacturer is no longer entitled to use the conformity mark, if the requirements of this standard and the relevant product standard are no longer fulfilled.

3) System 4: See CPD, annex III.2 (ii), third possibility.

Annex E
(informative)

Guidance on the use of annex(es)

E.1 CE marking

The attestation of conformity system for all CE marked thermal insulation products shall include a factory production control system according to the requirements given in Clauses 4 and 5 as well as initial type testing according to the requirements given in Clause 6 of this standard.

For all products the attestation of conformity system, described in Annex C of this standard, is also required.

Depending on the reaction to fire declaration and the nature of the product itself additional requirements to the attestation system for the reaction to fire characteristics will be found in Annexes B or C or D.

The above systems of conformity attestation for CE marking are required by the Annex ZA of the product standard.

NOTE The attestation of conformity system for CE marking will lead to a manufacturer's declaration in any case, where the responsibility of the approved body will be limited to issue a test report on the initial type testing for a few characteristics. Only in some specified cases the approved body will additionally have to certify the product with respect to the factory production control related to all relevant characteristics but in particular the reaction to fire characteristics.

Table F.1 — Attestation of conformity systems for CE marking

	Chosen reaction to fire declaration	Attestation of conformity system		Annex of this standard	
		Due to reaction to fire	Due to other characte-ristics	Due to reaction to fire	Due to other characte-ristics
* Products 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)	A1 A2 B C	1	3	B	C
Products not covered by *	A1 A2 B C D E	3	3	C	C
Products that do not require to be tested for reaction to fire	A1 to E	4	3	D	C
Products in class F	F	4	3	D	C
Products for which reaction to fire is not declared	none	none	3	none	C

E.2 Voluntary product certification

The evaluation of conformity for a product subject to a voluntary product certification shall include a factory production control system according to the requirements given in Clauses 4 and 5 as well as initial type testing (ITT) according to the requirements given in Clause 6 of this standard and in addition the requirements of Annex A.

E.3 Overview of the elements of the evaluation of conformity systems

Table F.2 — Overview of the elements of the evaluation of conformity systems

Mandated Attestation of Conformity System (Annex III of the mandate M 103 and amendments M 126, M 130 and M 367)	**-**	**1**	**3**	**4**
Construction Products Directive annex III attestation of conformity system	-	III.2 (i) without audit testing	III.2 (ii) second possibility	III.2 (ii) third possibility
Annex of this standard	A	B [a]	C	D [a]
Tasks for the manufacturer:				
Factory production control (FPC)	+	+	+	+
Initial type testing (ITT) [b]	-	(-)	(-)	+
Testing of samples (see annex on FPC testing frequencies in the product standard)	+	+	+	+
Declaration of conformity for product	-	+	+	+
Tasks for the approved body:				
Initial inspection	+	+	-	-
Routine inspections	+	+	-	-
Initial type testing [b]	+	+	+	-
Audit testing	+	-	-	-
Certification of product	+	+[c]	-	-

[a] These two systems are related to the reaction to fire characteristics

[b] The initial type testing will only be performed by the approved body for some characteristics.

For the CE marking ITT by the approved body will be performed for

- thermal resistance / thermal conductivity and thickness
- release of dangerous substances
- release of corrosive substances
- compressive stress/strength (for load-bearing applications)
- water absorption
- reaction to fire (for uses subject to regulations on reaction to fire, except if system 4)

The ITT for other relevant characteristics in the CE marking will be performed by the manufacturer

[c] Product certification in this case relates to the CE marking requirements only (i.e. no audit testing)

+ task is relevant

- task is not relevant

Annex F
(informative)

Criteria for assessing non-conformity – Procedures in case of a complaint

F.1 Complaint on the product declaration

F.1.1 General

Two different sets of rules are needed. One for thermal characteristics declared on statistical data and one for characteristics based on the declaration of limit values, classes or levels.

The complaining party shall ask for a representative sample to be taken by an approved body from, e.g. the market place. He shall ask the approved body to write a report giving the identification of the product, where it was bought, at what date and to give the identification number of the package.

The sample shall be transported, without significant deterioration, to an approved testing laboratory, chosen by the complaining party.

NOTE 1 If the product declaration is based on product certification the first complaint should normally be addressed to the third party responsible for the certification.

NOTE 2 If the manufacturer immediately agrees with the complainer and/or the approved body no further testing is necessary.

F.1.2 Complaint on the declared thermal resistance or thermal conductivity

An approved testing laboratory shall make four tests of thermal resistance or thermal conductivity following the procedure described in the relevant product standard.

NOTE 1 If before measuring the thermal characteristics a failure is found in the thickness measurement testing of thermal conductivity might not be relevant and the further procedure should be discussed between the involved parties.

NOTE 2 If an ageing procedure is specified in the relevant product standard, this should be followed. In case more than one option in the product standard the procedure to be used should be agreed between parties. For test specimens older than specified in the relevant product standard the ageing increments should be diminished bearing in mind that the accelerated ageing produced is supposed to represent 25 years of ageing. If the ageing procedure used for ITT is known this should be used.

The results of the four tests are expressed as R_1, R_2, R_3 and R_4 or λ_1, λ_2, λ_3 and λ_4. The average R_{mean} or $\overline{\lambda}$ and estimate standard deviation S_R or S_λ of these four measurements are calculated using the formulas with R or λ:

$$\overline{\lambda} = \frac{\sum_{1}^{4} \lambda_i}{4} \tag{F.1}$$

$$S_\lambda = \sqrt{\frac{\sum_{1}^{4} \left(\lambda_i - \overline{\lambda}\right)^2}{3}} \tag{F.2}$$

If $R_D > R_{mean} - 0,44 \cdot S_R$ or $\lambda_D < \overline{\lambda} + 0,44 \cdot S_\lambda$ the product shall be deemed to have failed.

NOTE 3 The value 0,44 has been determined by calculation based on the hypothesis that the manufacturer risk (for fractile 90 % declared) is less or equal to 5 %.

If the product fails the manufacturer and the complaining party shall be informed by the approved body.

If the product has failed the manufacturer shall agree to repeat the procedure described in A.2.3 or C.2.2 as relevant except that the sampling shall be made by the approved body, for the product or product group, by applying for a new initial type test within 4 weeks.

If the manufacturer does not agree to have a new initial type test then A.3.1 3) or C.3.1 2) as relevant applies.

NOTE 4 The procedure although based on a simplified approach for checking the declaration by a manufacturer follows the 90/90 % approach in principle.

For building equipment and industrial insulation products the procedures for thermal conductivity declaration described in EN ISO 13787 *Thermal insulation product for building equipment and industrial installation – Determination of the declared thermal conductivity (ISO 13787:2003)* shall be used.

F.1.3 Complaint on other characteristics

The approved testing laboratory shall make one test result of the relevant characteristic(s). If the result is worse than the declared value the product is deemed as failed.

If the product fails the manufacturer and the complaining party shall be informed by the approved body.

If the product has failed the manufacturer shall agree to repeat the procedure described in A.2.3 or C.2.2 as relevant except that the sampling shall be made by the approved body, for the product or product group, by applying for a new initial type test within 4 weeks.

If the manufacturer does not agree to have a new initial type test then A.3.1 3) or C.3.1 2) as relevant applies.

F.2 Complaint on a lot

The sample shall be taken from the lot as agreed between parties.

The sample shall be transported, without significant deterioration, to an approved testing laboratory, chosen by the complaining party.

NOTE 1 If the manufacturer immediately agrees with the complainer and/or the approved body no further testing is necessary.

The procedures in F.1.1 and F.1.2 shall be used for lot testing.

A lot failure on thermal characteristics will normally only relate to the specific lot.

NOTE 2 It might be relevant to ask the manufacturer for his documentation on the declaration before starting the testing.

Bibliography

EN ISO 9001, *Quality management systems – Requirements (ISO 9001)*

EN 13162, *Thermal insulation products for buildings — Factory made mineral wool (MW) products — Specification*

EN 13163, *Thermal insulation products for buildings — Factory made products of expanded polystyrene (EPS) — Specification*

EN 13164, *Thermal insulation products for buildings — Factory made products of extruded polystyrene foam (XPS) — Specification*

EN 13165, *Thermal insulation products for buildings — Factory made rigid polyurethane foam (PU) products — Specification*

EN 13166, *Thermal insulation products for buildings — Factory made products of phenolic foam (PF) — Specification*

EN 13167, *Thermal insulation products for buildings — Factory made cellular glass (CG) products — Specification*

EN 13168, *Thermal insulation products for buildings — Factory made wood wool (WW) products — Specification*

EN 13169, *Thermal insulation products for buildings — Factory made products of expanded perlite (EPB) — Specification*

EN 13170, *Thermal insulation products for buildings — Factory made products of expanded cork (ICB) — Specification*

EN 13171, *Thermal insulation products for buildings — Factory made wood fibre (WF) products — Specification*

EN 14305, *Thermal insulation products for building equipment and industrial installations — Factory made cellular glass (CG) products — Specification*

EN ISO 13787, *Thermal insulation product for building equipment and industrial installations – Determination of the declared thermal conductivity (ISO 13787)*

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