INTERNATIONAL STANDARD

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Thermal insulation — Insulating materials and products for buildings — Conformity control systems

Part 1: Factory-made products

Isolation thermique — Matériaux et produits d'isolation pour le bâtiment — Systèmes de contrôle de la conformité

Partie 1: Produits fabriqués en usine

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 12576 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 12576-1 was prepared by Technical Committee ISO/TC 163, *Thermal insulation*, Subcommittee SC 3, *Insulation products for building applications*.

ISO 12576 consists of the following parts, under the general title *Thermal insulation — Insulating materials and products for buildings — Conformity control systems*

— *Part 1: Factory-made products*

Part 2 (Site-made products) is in course of preparation.

Thermal insulation — Insulating materials and products for buildings — Conformity control systems

Part 1:
Factory-made products

1 Scope

This part of ISO 12576 establishes five systems for the conformity control of thermal insulating materials and products for buildings that are factory made.

Its purpose is to provide uniform methods that are used to determine whether a production or a consignment of a thermal insulating material should be accepted as conforming to the relevant specification requirements.

This part of ISO 12576 provides minimum requirements for each of the systems.

Other systems may be additionally applied when agreed upon between the supplier and purchaser.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 12576. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 12576 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 2859-1:1999, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*.

ISO 9001:2000, *Quality management systems — Requirements*.

ISO 9229:1991, *Thermal insulation — Materials, products and systems — Vocabulary*.

ISO 14001:1996, *Environmental management systems — Specification with guidance for use*.

ISO 14004:1996, *Environmental management systems — General guidelines on principles, systems and supporting techniques*.

ISO/IEC Guide 40:1983, *General requirements for the acceptance of certification bodies*.

ISO/IEC 17025:1999, *General requirements for the competence of testing and calibration laboratories*.

3 Terms and definitions

For the purposes of this part of ISO 12576, the terms and definitions given in ISO 9229 and the following apply.

3.1
acceptance testing
tests to be carried out to prove whether a product may be accepted as conforming to specified requirements

3.2
Acceptance Quality Limit
AQL
designated value of percent nonconforming (or nonconformities per 100 units) that will be accepted most of the time by the sampling scheme to be used

NOTE See ISO 2859-1:1999.

3.3
assessment of factory production control
action by an approved body demonstrating that the factory production control is in conformity with the requirements, based on initial inspection of the factory and the factory production control and continuous surveillance of it

3.4
audit test
one or more tests usually performed by, or on behalf of a certification body, to confirm that a product continues to conform to the requirements of a specification and to provide information to assess the effectiveness of the factory production control

3.5
certification body
body that conducts certification

NOTE A certification body may operate its own testing and inspection activities or oversee these activities carried out on its behalf by other bodies.

[ISO/IEC Guide 2:1996, definition 15.2]

3.6
certification of conformity

action by an approved certification body demonstrating that adequate confidence is provided that a product is in conformity with the relevant product specification

3.7
conformity control
performance of control methods to prove whether a product may be accepted as conforming to specified requirements

3.8
consignment
quantity of packages or boards of the same category delivered at one time

NOTE The consignment may consist of one or more inspection lots or parts of an inspection lot.

3.9
factory production control
permanent internal control of production exercised by the manufacturer or his agent

NOTE Factory production control comprises operational techniques and all measures necessary to maintain and to regulate the quality of the product up to delivery. It consists of inspections and tests and the utilization of their results with regard to equipment, basic materials and constituents, manufacturing processes and the products themselves, and of taking into account the corresponding requirements given by the product specification.

3.10
initial type test
one or more tests performed on a product prior to commencing normal production to prove that the product is capable of conforming to the relevant requirements of a specification

3.11
inspection lot
definite quantity of packages (product items) manufactured under conditions which are presumed uniform, and that are submitted for inspection and accepted or rejected as a whole, depending on the quality found by inspection of the representative samples drawn from the lot

3.12
item
defined quantity of material, on which a set of observations may be made

EXAMPLE A full-size product, board, roll or package.

3.13
lot testing
system under which a lot, represented by a specified number of items of the product, is tested and the result used to judge the measure of conformity with the specification

NOTE The judgement is on the lot and not on the ongoing production as a whole.

3.14
manufacturer's declaration of conformity
action by which a manufacturer declares under his own responsibility that the product is in conformity with the specification, without being under procedures of a third-party certification system

3.15
manufacturer's routine test
test performed by the manufacturer, at specified intervals, to confirm that the product conforms to the relevant requirements of the specification

3.16
production batch
definite quantity of some commodity manufactured or produced under conditions which are presumed uniform

3.17
production line
production unit
set of equipment which produces a product

3.18
sample
one or more items taken from a production batch and intended to provide information on the production batch and possibly to serve as a basis for a decision on the production batch or the process which produced it

3.19
sample size
number of items in the sample

[ISO 2859-1:1999]

3.20
sampling unit
for the purpose of sampling, an item taken from the production batch

3.21
sampling plan
plan, according to which the sample size, frequency of testing, etc. are defined, in order to obtain information and possibly to reach a decision for conformity control purposes

3.22
specification
document defining requirements for performance of the product

3.23
test specimen
single item or part of an item used for a test

3.24
thermal insulation product
thermal insulation material in its finished form including any facing or coatings

3.25
third party
person or body that is recognized as being independent of the parties involved, as concerns the issue in question

[ISO/IEC Guide 2:1996, definition 12.9]

3.26
third-party certification
certification provided by a person or body that is recognized as being independent of the parties involved as concerns the certification

3.27
type test
one or more tests performed to prove that a product is capable of conforming to all relevant requirements of a specification

3.28
verification
validation by a third party, independent of the manufacturer, of the manufacturer's declaration of conformity

4 Conformity systems, their elements and recommended application of the systems

4.1 General

In this part of ISO 12576, the following five systems for attestation of conformity are described.

System 1: Manufacturer's declaration of conformity, based on the manufacturer's factory production control, based on ISO 9001:2000, without any participation of a third party.

System 2: Manufacturer's declaration of conformity, based on the manufacturer's factory production control, and based on ISO 9001:2000, where the manufacturer's factory production control is certified by a third party.

System 3: Manufacturer's declaration of conformity, based on the manufacturer's factory production control, and based on ISO 9001:2000, where the manufacturer's factory production control is certified by a third party and initial type testing of the product by a third party.

System 4: Product certification by an independent approved certification body, based on the manufacturer's factory production control, and based on ISO 9001:2000, with surveillance of this and initial and audit testing by the certification body.

System 5: Lot testing by the customer or his representative, if possible based on a production which is under the manufacturer's factory production control, and based on ISO 9001:2000.

NOTE Systems 1 to 4 have a progressive increase in third-party involvement in the conformity control system. System 5 is only applicable for lot inspections.

4.2 System 1 — Manufacturer's declaration of conformity without any participation of a third party

This system is based on the following elements:

a) factory production control;

b) regular testing of factory samples by the manufacturer.

By the manufacturer's declaration of conformity, he verifies that his production is under factory production control (see clause 5) and that the results of the production control show that the delivered products are in conformity with the specifications.

4.3 System 2 — Manufacturer's declaration of conformity, where the manufacturer's production control is certified by a third party

This system is based on the following elements:

a) factory production control;

b) regular testing of factory samples by the manufacturer;

c) initial inspection of the plant and of the factory production by a certification body;

d) surveillance, assessment and approval of the ongoing factory production control by the certification body (routine inspections).

By the manufacturer's declaration of conformity, he verifies that his production is under factory production control (see clause 5), that this is certified and under ongoing surveillance of a certification body, and that the results of the production control show that the delivered products are in conformity with the specification. Certification bodies shall fulfil the criteria of ISO/IEC Guide 40 and be accredited according to national rules, ISO 14001, ISO 14004 and ISO/IEC 17025.

4.4 System 3 — Manufacturer's declaration of conformity, where the manufacturer's production control is certified by a third party and initial type testing is done by a third party

This system is based on the following elements:

a) factory production control;

b) regular testing of factory samples by the manufacturer;

c) initial inspection of the plant and of the factory production by a certification body;

d) surveillance, assessment and approval of the ongoing factory production control by the certification body (routine inspections);

e) initial type testing of the product by a third party.

By the manufacturer's declaration of conformity, he verifies that his production is under factory production control (see clause 5), that this is certified and under ongoing surveillance of a certification body, and that the results of the production control show that the delivered products are in conformity with the specification. The manufacturer also declares that the product has been certified by a third party as having successfully completed initial type testing. Certification bodies shall fulfil the criteria of ISO/IEC Guide 40 and shall be accredited according to national rules, ISO 14001, ISO 14004 and ISO/IEC 17025.

4.5 System 4 — Product certification by an independent approved certification body

This system is based on the following elements:

a) factory production control;

b) regular testing of factory samples by the manufacturer;

c) initial inspection of the plant and of factory production control by the certification body;

d) initial type testing of the product by the certification body;

e) audit testing of samples taken by the certification body;

f) surveillance, assessment and approval of factory production by the certification body (routine inspections).

Certification bodies shall fulfil the criteria of ISO/IEC Guide 40 and be accredited according to national rules, ISO 14001, ISO 14004 and ISO/IEC 17025.

4.6 System 5 — Lot testing of the consignment by the customer or his representative

This system should be used

a) when consignments from unknown sources are delivered,

b) if the consignment is not accompanied by a manufacturer's declaration of conformity, or

c) if there are reasonable doubts in the specified properties of the consignment.

5 Factory production control

5.1 General

The purpose of the control is to ensure the products produced conform to the specification. Factory production control, as defined in this clause, is the most important element of Systems 1 to 4 for the attestation of conformity. If possible, it should also be the basis for System 5.

Factory production control comprises operational techniques and all measures necessary to maintain and regulate the quality of the product. It consists of continuous process monitoring, inspections and tests, and the utilization of their results with regard to equipment, raw materials and constituents, manufacturing processes and the product itself, and by taking account of the corresponding requirements given by the specification.

All necessary facilities, equipment and personnel shall be available to carry out the necessary inspections and tests indicated above. This requirement may also be fulfilled if, by means of a contract, the manufacturer or his agent involves a subcontractor having the necessary facilities, equipment and personnel.

5.2 Quality manual

For each manufacturing unit, the manufacturer shall provide a documented quality system (quality manual), which shall deal with the following elements of the manufacturer's quality system:

a) staffing and specifically the duties, responsibility and authority of the manufacturer's inspection personnel;

b) inspection methods and procedures in general, including complaints procedures and their documentation;

c) testing equipment and its calibration;

d) quality control of raw materials and constituents, batch identification and control;

e) nature, extent and frequency of tests on the product;

f) product marking and production code;

g) handling of rejected lots;

h) procedures for product corrections;

i) internal documentation, including test records, production records, material certificates, etc.

5.3 Nature, extent and frequency of inspections and tests

The nature, extent and frequency of inspections and tests, direct or indirect, depend on the kind of products, the basic materials, the specific conditions of the plant and the production line.

The minimum frequency of inspections and tests to be performed by the manufacturer who produces thermal insulating products are stated in the following three tables.

Table 1 shows the main components to be controlled and the minimum frequency of checking.

Table 2 gives the minimum frequency of calibrations, or checks for control of test equipment under normal conditions. The calibrations or checks shall be repeated if any repair or modification occurs.

Table 3 indicates the minimum frequency of tests for control of the finished thermal insulating product for each production line/unit, unless this is specified in the product specification. Table 3 states the purpose of conducting such controls for each type of product according to their intended application.

Table 3 also contains indirect tests, which for certain properties are not tested directly (see 5.4).

All controls on raw constituent materials and processes shall be agreed between the producer and the certification body according to the main principles given below. It shall be considered as basic information about the condition of the production.

Table 1 — Control of raw and constituent materials

Main component to be controlled	Minimum frequency
Raw material by the material producer	each batch
Raw materials delivered under a certification scheme	not required
Composition of the raw material supplied	random

Table 2 — Control of test equipment

Equipment for determination of the following characteristics	Frequency/Additional test required	Calibration or checked by
Mass	once per month	calibrated weights
Thermal resistance or thermal conductivity	once per week	internal reference sample
	once per year	independent body (see)
Mechanical properties, dimensional changes, temperature measurements	once per year	independent body
Burning characteristics	according to national regulations	