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**AMENDMENT 1**
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# Fibre-cement slates and fittings

## AMENDMENT 1

*Ardoises et leurs accessoires en fibres-ciment*

*AMENDEMENT 1*

Reference number
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## Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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 document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

Amendment 1 to ISO 9125:1990 was prepared by Technical Committee ISO/TC 77, *Products in fibre reinforced cement*.

# Fibre-cement slates and fittings

## AMENDMENT 1

*Page 1, Clause 2*

Replace the contents of Clause 2 with the following:

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 390:1993, *Products in fibre reinforced cement — Sampling and inspection*

ISO 395:1983, *Asbestos-cement slates*

ISO 2602:1980, *Statistical interpretation of test results — Estimation of the mean — Confidence interval*

*Page 2*

Add a new subclause, 3.3.3.6.

### 3.3.3.6 Soak dry

When slates are tested as specified in 3.5.6, the limit $L_i$ of the average ratio $\bar{r}$, as defined in 3.5.6.4, shall be greater than 0,75.

*Page 2*

Add a new subclause, 3.3.4.

### 3.3.4 Reaction to fire

The details of the specifications and acceptance criteria of reaction to fire may be defined by national standards.

*Page 2, subclause 3.4.1*

Replace the text by:

### 3.4.1 General

The objective of an acceptance test is to establish whether a batch of products conforms to a specification. The tests are performed on samples drawn either from continuous production or from a consignment.

NOTE Test methods and specification limit values are defined in this International Standard. Sampling levels and acceptance criteria are defined in national documents or by default in ISO 390.

Acceptance tests as described in 3.4.2. to 3.4.5. shall be performed on as-delivered slates.

*Page 3, subclause 3.4.4*

Renumber the paragraphs and replace the text of the first of these as follows:

**3.4.4 Bending test** (obligatory)

**3.4.4.1 General**

The test shall be carried out on full size slates or cut specimens. These specimens shall be preconditioned in ambient (above 5 °C) or wet conditions or as specified by national standards.

In the absence of national standards, this test shall be carried out on wet preconditioned specimens, immersed in water for 24 h (except for slates of category 1 where the time of immersion shall be reduced to 2 h). Specimens shall be tested immediately after removal from the water.

*Page 3, subclause 3.4.4.1*

Renumber as 3.4.4.2.

*Page 3, subclause 3.4.4.1.1*

Renumber as 3.4.4.2.1.

*Page 3, subclause 3.4.4.1.2*

Replace the text by:

**3.4.4.2.2 Micrometer**, reading to 0,05 mm with flat metal jaws between 6 mm to 15 mm diameter.

*Page 3, subclause 3.4.4.2*

Renumber as 3.4.4.3.

*Page 4, subclause 3.4.4.3*

Renumber as 3.4.4.4.

*Page 4, subclause 3.5.1*

Replace the text by:

**3.5.1 General**

A type test is concerned with the approval of a new product and/or a fundamental change in formulation and/or method of manufacture.

The test is performed on the as-delivered product.

The test is required to demonstrate conformity of a generic product to a specification but is not required for each production batch.

*Page 5, subclause 3.5.2.1*

Replace the text by:

**3.5.2.1 Preparation of specimens**

The water permeability shall be checked on three slates. The specimen shall be kept in a laboratory atmosphere at a temperature which is constantly above 5 °C.

*Page 5, subclause 3.5.2.2.1*

Replace the text by:

**3.5.2.2.1 Vertical transparent water column**, minimum 300 mm long. The internal dimension of the column in contact with the surface of the test piece shall be a minimum of 35 mm in diameter or 31 mm square.

*Page 5, subclause 3.5.2.3*

Replace the text by:

**3.5.2.3 Procedure**

The vertical transparent water column is sealed to the middle of a test piece placed horizontally on a transparent container. The column is filled with water and maintained at a minimum height of 250 mm, measured from the upper surface of the test piece. The specimen is placed in a laboratory atmosphere at a temperature above 5 °C. The duration of the test shall be 24 h. The result of the test is considered to be satisfactory if it conforms to the requirements of 3.3.3.1.

*Page 5, subclause 3.5.4.1*

Replace the text by:

**3.5.4.1 Apparatus**

The apparatus shall consist of any suitable construction with an inclined frame into which the slates shall be mounted and alternately heated uniformly by radiant heat and sprayed with water.

The total area of the slate to be tested shall be approximately square, from 1 $m^2$ to 5 $m^2$ depending on the slate size and shall contain not less than 11 full slates.

The specimen shall be tested at 90° pitch for façades, and at any angle defined by national standards for roofs.

Quantity of water:

— 2,5 l/min/$m^2$ for roofing;

— 1 l/min/$m^2$ for façades.

The heating device shall be calibrated in order to maintain a uniform black body[6)] surface temperature equal to 70 °C ± 5 °C for roofs and to 60 °C ± 5 °C for façades, during the heating period.

It should provide an approximately uniform power output during this period.

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6) For the definition of a black body see ASTM E 638-78. For this test an aluminium plate of 1 mm thickness painted with a matt black paint is used as a black body.

The measurement device is a thermocouple or a similar device fixed on the surface of the aluminium plate.

*Page 6*

Add a new subclause, 3.5.6.

**3.5.6 Soak dry** (optional)

**3.5.6.1 Preparation of specimens**

Sample 10 slates as delivered by the producer. Cut 10 sets of paired specimens to suit the bending test in 3.4.4. Each pair of specimens shall be given the same number for later comparison of results.

**3.5.6.2 Apparatus**

The apparatus includes the following items.

**3.5.6.2.1 Ventilated oven**, capable of achieving a temperature of 60 °C ± 5 °C and a relative humidity of ⩽ 20 % with a full load of specimens.

**3.5.6.2.2 Bath**, filled with water at ambient temperature of more than 5 °C.

**3.5.6.2.3 Testing equipment**, for determination of bending strength as defined in 3.4.4.1.1.

**3.5.6.3 Procedure**

Divide the paired specimens to form two lots of 10 specimens each. After the conditioning procedure, submit the first lot of 10 specimens to the bending tests as described in 3.4.4.

At the same time submit the second lot to 25 soak dry cycles consisting of

— immersion in water at ambient temperature (above 5 °C) for 18 h;

— drying in a ventilated oven at 60 °C ± 5 °C and relative humidity < 20 % for 6 h.

If necessary, an interval of up to 72 h between cycles is allowed. During this interval, the specimens shall be stored in immersed conditions.

After 25 cycles, place the specimens in a laboratory atmosphere for 7 d.

At the end of this period, carry out the wet bending test as specified in 3.4.4.2.

**3.5.6.4 Expression and interpretation of results**

For each pair of specimens $i$ ($i$ = 1 to 10), calculate the individual ratio, $r_i$, as follows:

$$r_i = M_{\mathrm{f}i} / M_{\mathrm{fc}i}$$

where

$M_{\mathrm{f}i}$ is the modulus of rupture of the $i$th test specimen after the soak-dry cycling;

$M_{\mathrm{fc}i}$ is the modulus of rupture of the $i$th reference test specimen (from the first lot).

Calculate the average, $\bar{r}$, and standard deviation, $s$, of the individual ratios, $r_i$ (see ISO 2602). Calculate the 95 % lower confidence limit, $L_{\mathrm{i}}$, of the average ratio $\bar{r}$, as follows:

$$L_{\mathrm{i}} = \bar{r} - 0{,}58s$$

Assess the ratio against the specifications of 3.3.3.6.

*Page 7, subclause 5.1*

Replace the text by:

### 5.1 Conformity with requirements

The manufacturer shall establish and maintain an effective documented quality control system, developed, e.g., on the basis of the standards of the series ISO 9000.

For the acceptance tests, 90 % of the delivered products shall fulfil the requirements of 3.3.1 to 3.3.3. In the absence of national documents, the sampling schemes provided in ISO 390 with an AQL of 4 % and an inspection level $S_3$ ensure that, for large batches, approximately 90 % of the items fulfil these requirements. Other methods may be used provided they give the same level of quality.

For each type-test, in the absence of a fundamental change to the formulation and/or method of manufacture, results from one test performed should be taken as a reference of conformity to the specification.

*Page 7, subclause 5.2*

Replace the text by:

### 5.2 Evidence of conformity of consignment of finished products

When tenders and/or orders do not specify receiving inspection, the lots delivered are presumed to be in conformity with this International Standard.

Inspection of a consignment of finished products should take place only where there is no third-party certification.

It is conducted, e.g., in accordance with ISO 390, which gives an AQL of 4 % with an inspection level $S_3$ and in accordance with Annex A.

For special applications, different levels of quality may be applied after agreement between manufacturer and purchaser.