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# INTERNATIONAL STANDARD



# 2558

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

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## Textile glass chopped-strand mats for reinforcement of plastics — Determination of time of dissolution of the binder in styrene

*Mats de verre textile à fils coupés pour renforcement des matières plastiques — Détermination du temps de dissolution du liant dans le styrène*

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**Descriptors** : textile-glass, styrene, binders, tests, dissolving, delay, determination, time measurement.

## FOREWORD

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Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 2558 was drawn up by Technical Committee ISO/TC 61, *Plastics*, and circulated to the Member Bodies in September 1971.

It has been approved by the Member Bodies of the following countries :

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No Member Body expressed disapproval of the document.

# Textile glass chopped-strand mats for reinforcement of plastics – Determination of time of dissolution of the binder in styrene

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method of determining the time taken for an arbitrary tensile load to break the bond between the strands of a textile glass chopped-strand mat, used for the reinforcement of plastics, which is immersed in styrene.

## 2 REFERENCE

ISO/R 291, *Matières plastiques – Atmosphères normales pour le conditionnement et les essais*.

## 3 PRINCIPLE

Vertical suspension of a test specimen in pure styrene with application of an arbitrary tensile load by means of a weight attached to its lower end; the time for the weight to fall an arbitrary distance is recorded.

NOTE – Better distinction between mats with binders of high solubility is possible using a stabilized emulsion of styrene in water: this is only applicable if the mat binder is completely insoluble in water. Concentration of the emulsion should be chosen from the following: 80 %, 60 %, 40 %, 20 %, and should be noted in the test report. Styrene emulsions in water may be prepared by the addition of a suitable emulsifying agent.

## 4 APPARATUS

**4.1 Template**, to cut test specimens of 125 mm × 100 mm.

**4.2 Trimming tool**, for example, knife, scissors or disc.

**4.3 Beaker**, minimum capacity 2 000 ml and minimum depth 195 mm.

**4.4 Circular sieve**, stainless steel, to fit the beaker (see example in figure 1), with supporting bars long enough to ensure a distance of 50 mm between the lower clamp and the sieve. This sieve is used for removal of the lower clamp and the disintegrated strands from the beaker at the end of the test.

**4.5 Pair of clamps**, stainless steel, suitable for gripping test specimens over their whole width. The lower clamp shall have a total mass of  $100 \pm 2$  g and shall be balanced. An example of suitable clamps is given in figure 2.

**4.6 Stop-watch**, accurate to 1 s.

## 5 SOLVENT

**Styrene monomer**,  $d_{20} = 0,907$ .

Two litres of styrene allow the testing of 150 test specimens.

## 6 TEST SPECIMENS

### 6.1 Selection

Use at least five test specimens obtained as follows:

Cut a strip at least 125 mm wide from the whole width of the mat; by means of the template and trimming tool, cut out from the strip:

– one 100 mm × 125 mm test specimen at each end, but not nearer than 10 mm from the edges, in the case of trimmed edges and with a suitable extra allowance in the case of untrimmed mats, and

– at least three 100 mm × 125 mm test specimens evenly distributed in the remaining width,

in such a way that the length of the test specimens is parallel with the length direction of the mat (see figure 3).

### 6.2 Conditioning

Condition the test specimens before the test for 1 h at the chosen test temperature (see clause 7).

## 7 PROCEDURE

Carry out the test at one of the temperatures recommended in ISO/R 291, recording the chosen temperature in the test report. (Ensure that the beaker, styrene, sieve and clamps are at this temperature.)

It is recommended that a suitable ventilating system capable of dealing with styrene vapours be used.

Fix the clamps to the ends of the test specimen in such a way as to leave a free rectangular area of 100 mm × 100 mm between the clamps.

Place the sieve (4.4) in the beaker (4.3) partly filled with styrene (5). Immerse the lower clamp and the test specimen in the beaker and ensure that the styrene reaches the level of the upper clamp. The distance between the bottom of the lower clamp and the sieve, at this moment, shall be 50 mm.

Start the stop-watch when the upper clamp has touched the edge of the beaker.

Stop the watch when the lower clamp touches the sieve. Discontinue the test if the break has not occurred within 10 min.

Record the time  $t_i$  in seconds indicated by the stop-watch.

Repeat the test for the remaining specimens.

### 8 EXPRESSION OF RESULTS

The time of dissolution of the binder of the chopped-strand mat under test is the arithmetic mean in seconds (rounded to the nearest second) of the times,  $t_i$ , noted for all the specimens tested.

### 9 TEST REPORT

The test report shall include the following particulars :

- a) the reference number of the chopped-strand mat;
- b) the test temperature;
- c) the concentration of the styrene emulsion;
- d) the arithmetic mean and the individual values of the time of dissolution of the binder;
- e) all details of procedure not given in this International Standard;
- f) any incidents which might have influenced the results.

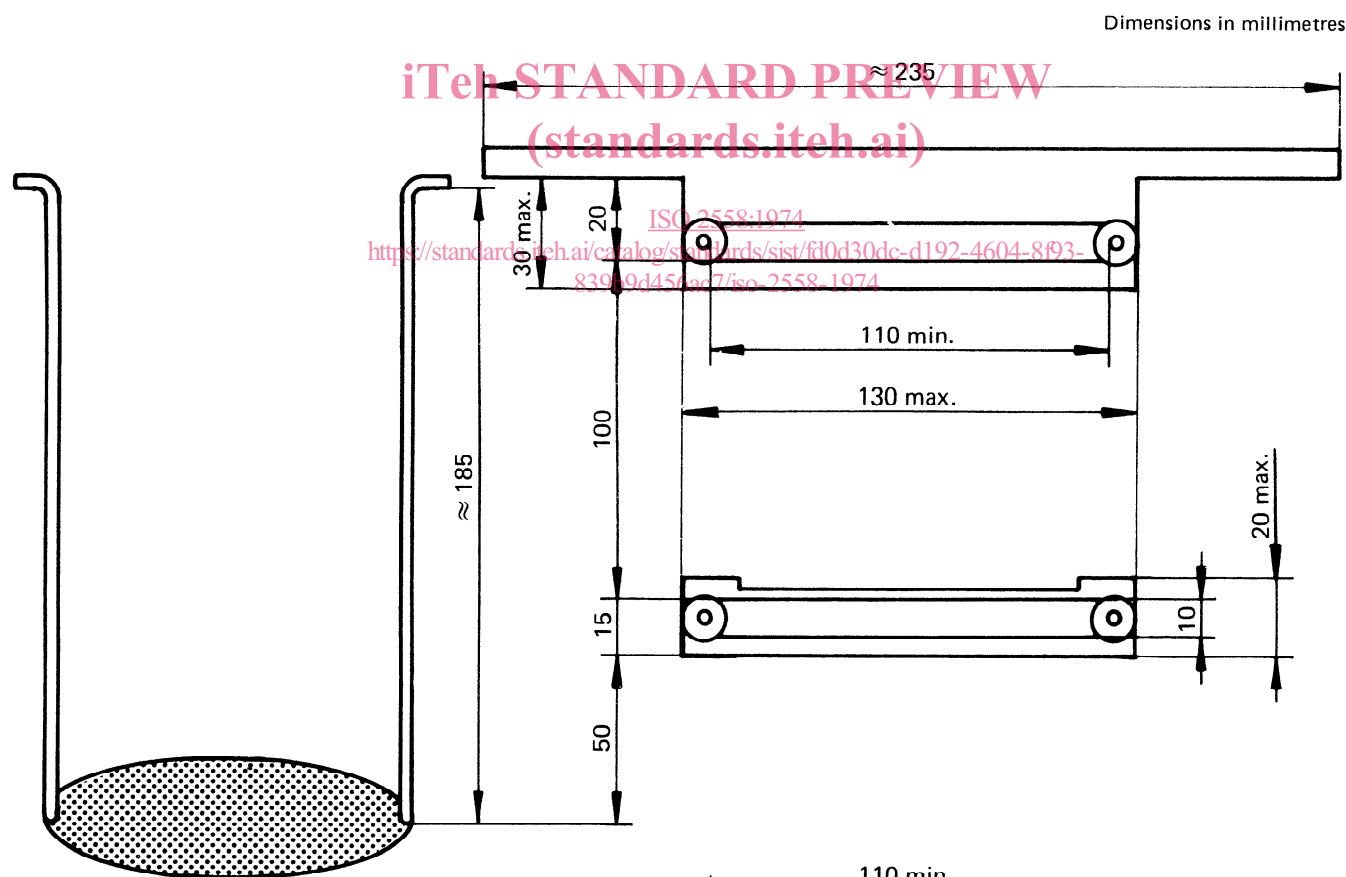


FIGURE 1 – Sieve

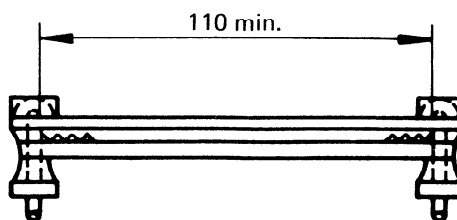
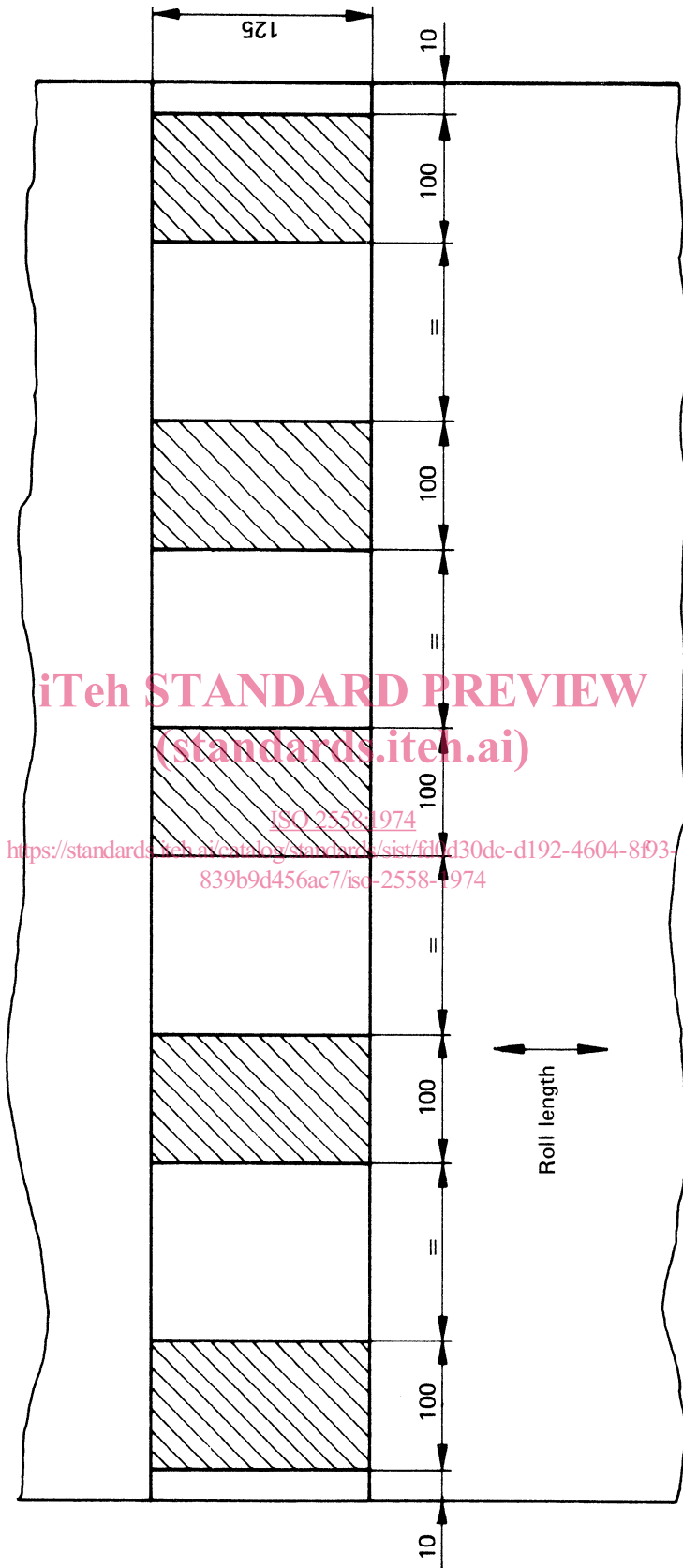


FIGURE 2 – Example of suitable apparatus

Dimensions in millimetres



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FIGURE 3 – Selection of test specimens

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