

International Standard



3374

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

Textile glass — Glass mats — Determination of mass per unit area

Verre textile — Mats de verre — Détermination de la masse surfacique ou «grammage».

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

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 3374 was developed by Technical Committee ISO/TC 61, *Plastics*, and was circulated to the member bodies in November 1975.

It has been approved by the member bodies of the following countries:

Australia	Germany, F.R.	Romania
Austria	Hungary	Spain
Belgium	Israel	Sweden
Brazil	Italy	Switzerland
Canada	Japan	Turkey
Czechoslovakia	Netherlands	United Kingdom
Finland	New Zealand	USA
France	Poland	

No member body expressed disapproval of the document.

Textile glass — Glass mats — Determination of mass per unit area

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for determining the mass per unit area of a glass mat.

2 REFERENCES

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

ISO 3344, *Textile glass products — Determination of moisture content*.

3 DEFINITION

mass per unit area: The ratio of the mass of a piece of mat of specified dimensions to the area. This mass includes both the chopped glass strands and the binder.

4 PRINCIPLE

Drying of a test specimen of known surface area to constant mass in a ventilated oven and determination of the mass, then calculation of the mass per unit area.

NOTE — For routine tests or by agreement between purchaser and supplier the specimens may be weighed as received.

5 APPARATUS

5.1 Polished metal template, for preparing the test specimens. The preferred shape is a square with sides of 316 mm with a tolerance of ± 1 mm.

NOTE — Other shapes of test specimen may be used as long as their surface area is 0,1 m², for example test specimens 400 mm $\times$ 250 mm.

5.2 Suitable trimming tool, for example knife, scissors or cutting disc.

5.3 Specimen container, which provides optimum air circulation around the specimen, made from a heat resistant

material and such that there is no loss of the test products. This may be a basket constructed from stainless steel wire mesh.

5.4 Ventilated drying oven, with an air change rate of 20 to 50 times per hour, capable of maintaining a temperature of 105 °C or other chosen temperature within ± 2 °C (see clause 7).

5.5 Desiccator, containing a suitable drying agent (for example silica gel, calcium chloride, phosphorus pentoxide).

5.6 Balance, accurate to 0,1 g.

5.7 Stainless steel tongs for handling the specimen and container.

6 TEST SPECIMENS

Cut a strip at least 650 mm wide¹⁾, from across the whole width of the mat.

Cut the test specimens from this strip, using the template (5.1) and the trimming tool (5.2).

Take the number of test specimens indicated in the tables in figures 1 and 2.

Take the test specimens at equal distances across the mat; take test specimens in a second row covering the gaps left by the specimens in the first row.

Figures 1 and 2 are examples of sampling plans for trimmed mat suitable for the selection of 316 mm square or 400 mm $\times$ 250 mm rectangular test specimens respectively. In the case of mats with widths smaller than 1 000 mm, and for untrimmed mats, the sampling shall be defined by agreement between the interested parties.

Other distributions may be used but ensure that the test specimens cover the whole width of mat with the exception of two strips 12 mm wide on each edge.

1) Increase this width to a minimum of 820 mm when cutting test specimens of 400 mm $\times$ 250 mm.

7 PROCEDURE

For each test specimen carry out the following procedure :

Weigh the wire basket (5.3) to the nearest 0,1 g; m_1 being its mass in grams.

Put the test specimen in the basket.

Introduce the basket with the test specimen into the ventilated oven (5.4) maintained at a temperature of $105 \pm 2^\circ\text{C}$.

NOTE — In the case of mats which contain products which are volatile or susceptible to change at this standard temperature, a lower temperature may be chosen by agreement between the interested parties; this temperature shall be at least 50°C . Maintain the chosen temperature to $\pm 2^\circ\text{C}$.

Continue drying the mat until two successive weighings, separated by at least 10 min of drying, differ by less than 0,1 %.

Remove the wire basket and test specimen from the oven and allow to cool to standard ambient temperature inside the desiccator (5.5).

Remove from the desiccator the test specimen in the wire basket and weigh them immediately to the nearest 0,1 g; m_2 being the combined mass in grams.

8 EXPRESSION OF RESULTS

Calculate the mass, m , of the dried specimen by means of the formula

$$m = m_2 - m_1$$

Calculate the mass per unit area ρ_A , in grams per square metre, by the formula

$$\rho_A = \frac{m}{A} = \frac{m}{0,1} = 10 m$$

where

m is the mass, in grams, of the dried specimen;

m_1 is the mass, in grams, of the basket;

m_2 is the mass, in grams, of the dried test specimen and the basket;

A is the surface area, in square metres, of one test specimen i.e. $0,1 \text{ m}^2$.

The mass per unit area, in grams per square metre, of the mat under test is the arithmetic mean of the values obtained for each test specimen.

For a statistical evaluation of the results, apply the calculations given in ISO 2602, applicable to batches of packages of glass mats.

9 TEST REPORT

The test report shall include the following particulars :

- reference to this International Standard;
- complete reference to the mat tested;
- dimensions of the test specimens;
- number of test specimens tested;
- the type of test specimen container used;
- drying oven temperature (if it is different from $105 \pm 2^\circ\text{C}$);
- mean value for the mass per unit area and the standard deviation;
- details of procedure not provided for in this International Standard and any incidents liable to have influenced the results.

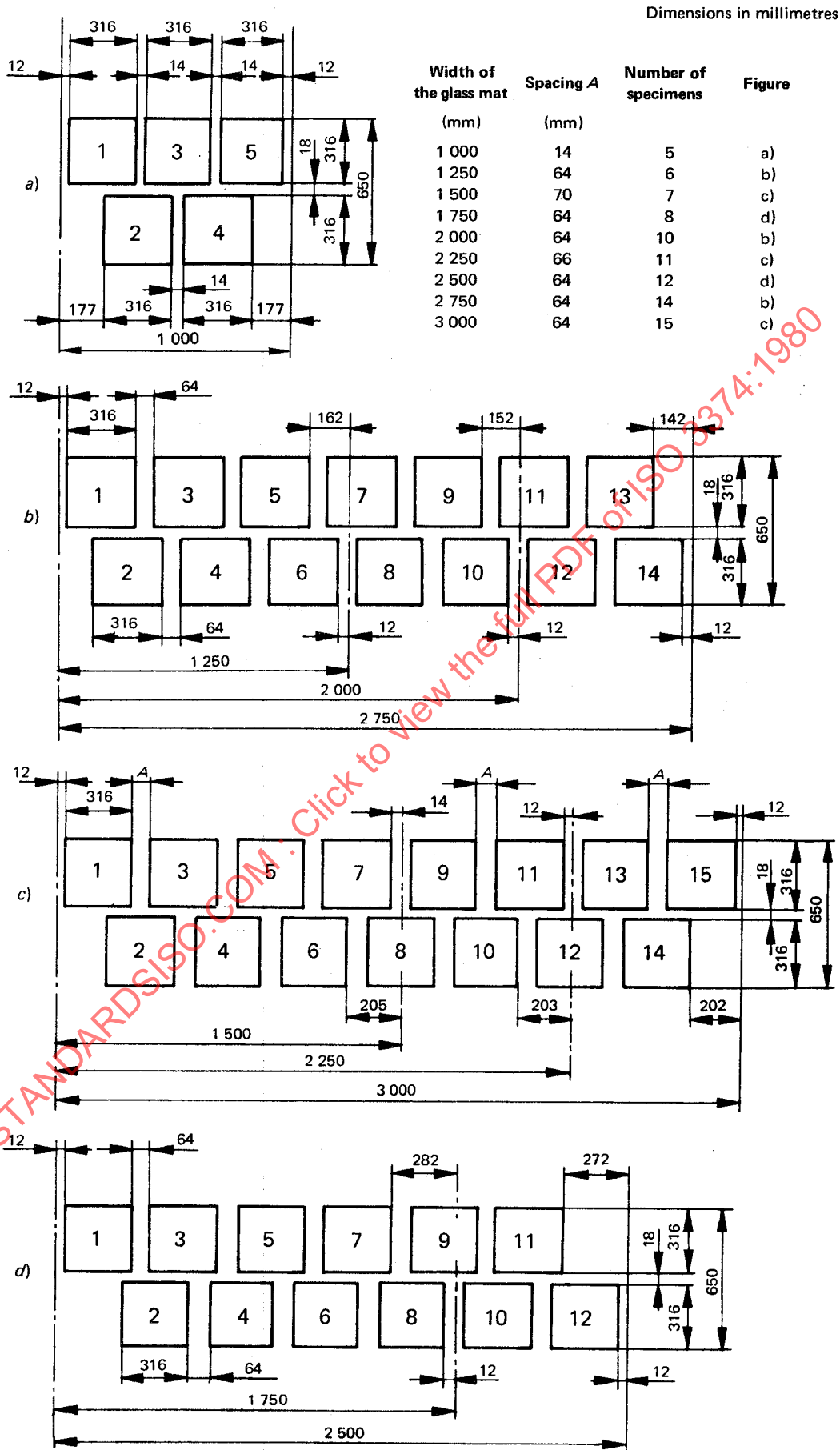


FIGURE 1 — Suggested distribution of square test specimens (316 mm x 316 mm)

Technical drawing of a wall section showing two windows. Window 14 is on the left, window 15 is on the right. Dimensions include 250, 400, and 8. A red stamp '3374.1980' is visible.

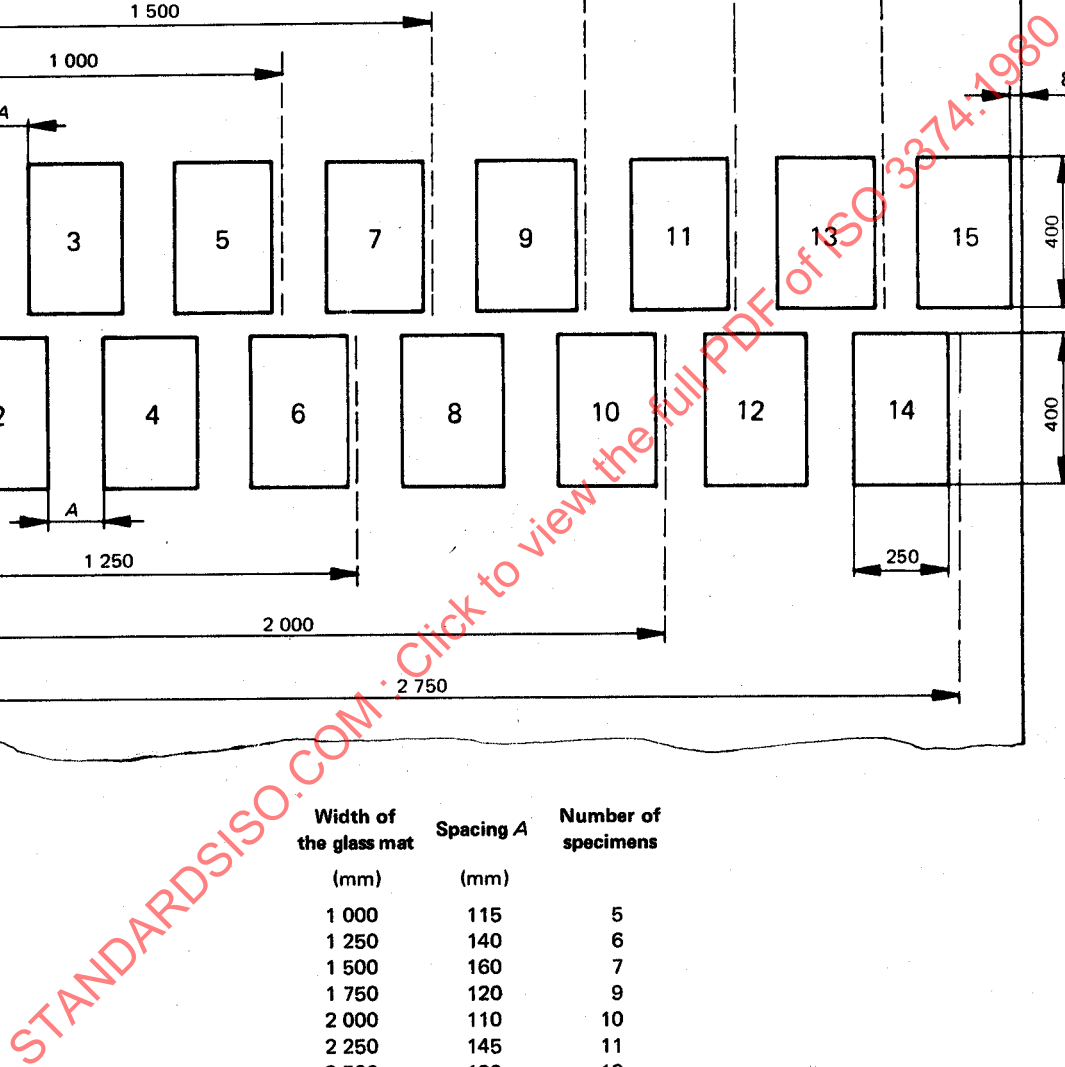


Diagram illustrating the layout of the test specimens (numbered 2 through 15) and the dimensions of the glass mat and specimens.

The layout shows two rows of specimens. The top row contains specimens 3, 5, 7, 9, 11, 13, and 15. The bottom row contains specimens 2, 4, 6, 8, 10, 12, and 14. The overall dimensions of the test area are 2 750 mm (width) and 2 000 mm (height). The width of the glass mat is 1 500 mm. The spacing between specimens is 1 000 mm. The width of each specimen is 125 mm. The height of each specimen is 400 mm. The spacing between the rows is 250 mm. The diagram is labeled with 'A' for the width of the glass mat and 'B' for the height of the glass mat.

Width of the glass mat (mm)	Spacing A (mm)	Number of specimens
1 000	115	5
1 250	140	6
1 500	160	7
1 750	120	9
2 000	110	10
2 250	145	11

FIGURE 2 — Suggested distribution of test specimens 400 mm X 250 mm