INTERNATIONAL STANDARD ISO 4576

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

Plastics — Aqueous dispersions of homopolymers and copolymers — Determination of gross particle content by sieve analysis

Plastiques — Dispersions aqueuses d'homopolymères et copolymères — Détermination de la teneur en grains par tamisage

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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 4576 was developed by Technical Committee ISO/TC 61, *Plastics*, and was circulated to the member bodies in July 1976.

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

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The member body of the following country expressed disapproval of the document on technical grounds :

Netherlands

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Plastics — Aqueous dispersions of homopolymers and copolymers — Determination of gross particle content by sieve analysis

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method of determining the gross particle content of aqueous dispersions of homopolymers and copolymers, i.e. of particles greater in diameter (for example, 10 or 100 times) than the mean diameter of the other particles.

This determination is carried out by sieve analysis. The sieves to be used are dependent upon the final use of the dispersion under test and are, in consequence, to be specified, or agreed upon, for each dispersion or group of dispersions.

2 PRINCIPLE

Dilution of the dispersion with deionized water.

Filtration of this diluted dispersion through a metal gauze of particular mesh size.

Washing of the residue with deionized water, followed by drying and weighing of the residue.

3 REAGENT

3.1 Deionized water.

4 APPARATUS

4.1 Series of stainless steel gauzes, 20 cm × 20 cm, comprising at least the following mesh sizes :

45 — 63 — 90 — 125 and 180 µm[1)]

NOTES

1 Gauzes of other mesh sizes may be used by agreement between the interested parties. (It is nevertheless preferable to use mesh sizes in the standard international series.)

2 Non-metallic gauzes may be used but this shall be indicated in the test report.

4.2 Laboratory balances, one having an accuracy of 1 g for weighing the sample, and the other having an accuracy of 0,1 mg for weighing the sieve (with and without the residue).

4.3 Oven, capable of maintaining a temperature of 105 ± 2 °C.

4.4 Desiccator, of sufficient dimensions to hold the gauzes.

Optionally :

4.5 Filtration apparatus; an example is shown in the figure.

5 PROCEDURE

Carefully mix the dispersion residue to be tested, for example by using a paddle producing adequate mixing without destroying agglomerates.

Dilute with deionized water (3.1), if necessary, up to twice the mass of the sample taken, in order to obtain homogeneity and mobility permitting rapid and complete filtration.

For each mesh size to be tested, weigh, to the nearest 1 g, a 100 g sample of the dispersion : mass m_0.

For each mesh size to be tested, prepare a square of metal gauze (4.1), dry it in the oven (4.3) at 105 ± 2 °C and, after cooling in the desiccator (4.4), weigh it to the nearest 0,1 mg : mass m_1.

Place this square of gauze on the top of a large supported glass funnel. Wash the gauze with deionized water (3.1) before filtering. Pour the diluted sample on the metal gauze, taking care to ensure that the sample is poured through the centre of the gauze.

NOTE — It is possible to fold the gauze to form a cone, but care must be taken not to distort and alter the mesh size. Alternatively, the filtration apparatus shown in the figure may be used.

After completion of the filtration, wash the residue on the filter with deionized water (3.1) until a clear filtrate is obtained.

Dry the gauze containing the residue in the oven at 105 ± 2 °C to constant mass (a time of 30 min is sufficent in most cases).

Cool the gauze containing the residue in the desiccator and weigh it to the nearest 0,1 mg : mass m_2.

The gauze shall not be re-used.

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1) These mesh sizes are taken from the series in ISO 565, *Test sieves — Woven metal wire cloth and perforated plate — Nominal sizes of apertures.*

6 EXPRESSION OF RESULTS

The gross particle content, using a particular sieve, expressed as a percentage, is given by the formula

$$\frac{m_2 - m_1}{m_0} \times 100$$

where m_0, m_1 and m_2 (in grams) are the masses indicated in clause 5.

7 TEST REPORT

The test report shall include the following particulars :

a) reference to this International Standard;

b) the type and identification of the dispersion;

c) the percentage residue and the mesh size of each sieve used;

d) any modifications of the procedure.

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Dimensions in millimetres

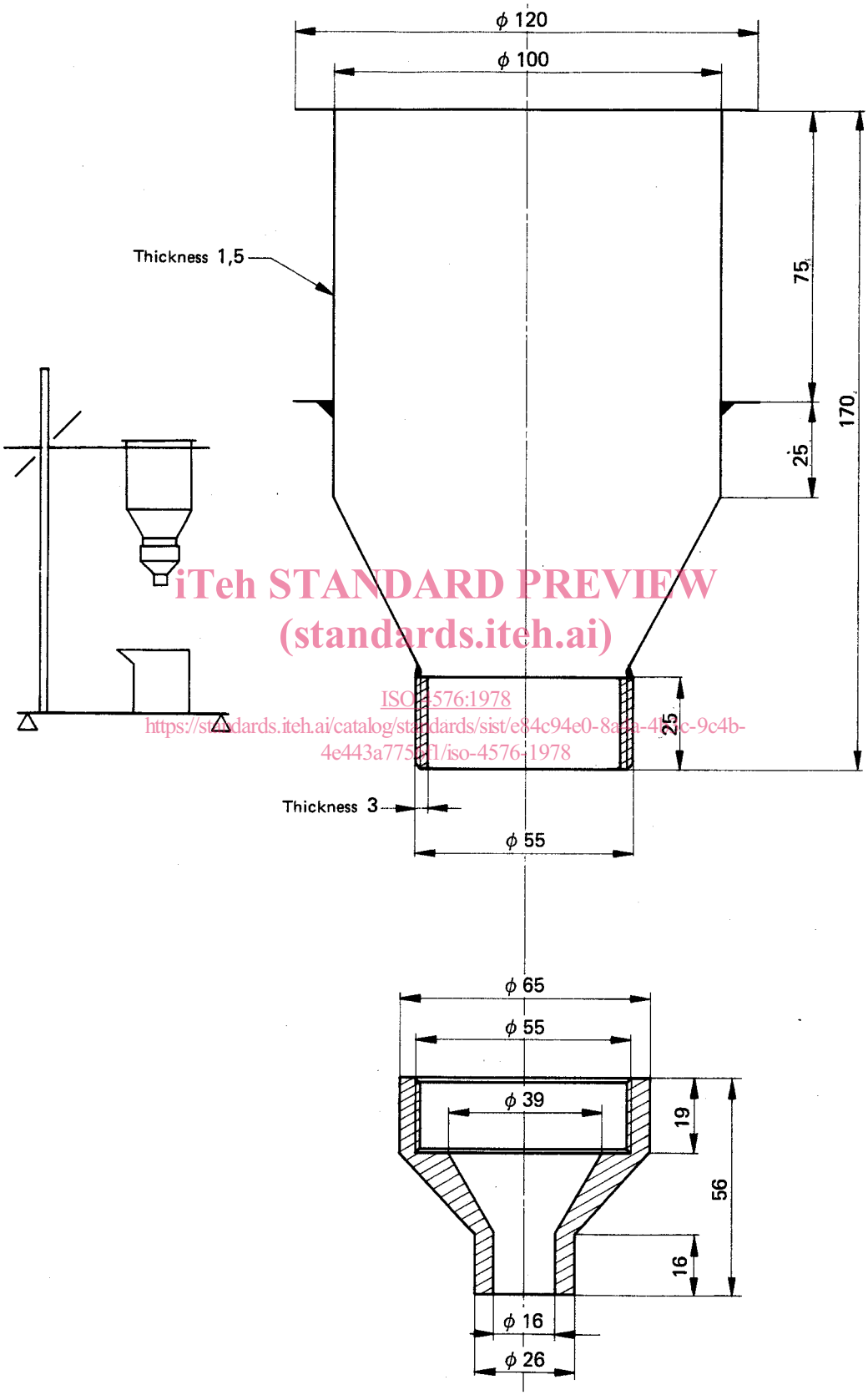

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FIGURE — **Example of filtration apparatus**

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