
INTERNATIONAL STANDARD



4610

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

Plastics — Vinyl chloride homopolymer and copolymer resins — Sieve analysis using air-jet sieve apparatus

Plastiques — Résines d'homopolymères et copolymères de chlorure de vinyle — Analyse granulométrique sur tamiseuse à dépression d'air

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[ISO 4610:1977](https://standards.iteh.ai/catalog/standards/sist/8445c963-fd8c-450c-a1e0-c5be26741c68/iso-4610-1977)

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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 4610 was developed by Technical Committee ISO/TC 61, *Plastics*, and was circulated to the member bodies in December 1975.

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

| | | |
|----------------|-------------|----------------|
| Austria | Iran | Portugal |
| Belgium | Ireland | Romania |
| Brazil | Israel | Spain |
| Canada | Italy | Switzerland |
| Czechoslovakia | Japan | Turkey |
| Finland | Mexico | United Kingdom |
| France | Netherlands | U.S.A. |
| Germany | New Zealand | U.S.S.R. |
| Hungary | Peru | Yugoslavia |
| India | Poland | |

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

South Africa, Rep. of

Plastics — Vinyl chloride homopolymer and copolymer resins — Sieve analysis using air-jet sieve apparatus

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for the determination of the sieve retention and particle size distribution of vinyl chloride homopolymer and copolymer resins prepared by the “suspension” and “bulk” processes. Control of these characteristics can help to ensure consistency of supply and predictable processing behaviour.

2 REFERENCE

ISO 565, *Test sieves — Woven metal wire cloth and perforated plate — Nominal sizes of apertures.*

3 DEFINITION

For the purpose of this International Standard, the following definition applies :

sieve retention : The percentage of the mass of resin remaining on the sieve after the test.

4 SAMPLING

A sample shall be taken which is representative of the resin as delivered and of sufficient size to permit the determination of the size distribution (for each sieve a duplicate determination is conducted on the sample).

Generally, 25 g shall be used for each sieve test. For fine particle resins, smaller quantities may be used, for example 10 g.

5 SAMPLE PREPARATION

Unless otherwise agreed, the sample shall be tested as received (i.e. as delivered).

If the sample is not tested on the day of receipt, it shall be kept in a sealed container under cool and dry conditions.

To prevent difficulty in sieving caused by electrostatic charging of the resin, an antistatic agent, for example 0,1 % (*m/m*) of gamma alumina¹⁾, may be added to the resin at the start of the test.

6 APPARATUS

6.1 Sieves, circular, having a sieving surface corresponding to a diameter of 200 mm. The sides and mesh of the sieve are metal. The mesh is defined in ISO 565. The choice of mesh aperture depends on the requirements and the particle size distribution of the resin to be examined.

NOTE — A suitable method of cleaning sieves is to use an ultrasonic cleaning device containing water and a detergent.

6.2 Air-jet sieve apparatus (see figure) consisting of a casing to contain a sieve (6.1), in the lower part of which are an outlet, to which vacuum may be applied, and an air inlet. The casing is covered with a transparent lid.

The air inlet is fitted with a rotating jet consisting of a slot-shaped nozzle arranged radially beneath and very close to the sieve mesh, so that when in rotation it blows air continuously through the sieve to keep the particles suspended.

The exhaust air pulls the finer particles through the sieve. The flow of air can be controlled by adjusting the working pressure, measured at the outlet; this may be achieved by means of an adjustable slot on the vacuum attachment.

6.3 Timer (or stopwatch) which indicates minutes and seconds and is equipped, if required, with a disconnecting switch for the motor of the sieve apparatus (6.2).

6.4 Balance, accurate to $\pm 0,05$ g.

1) Degussa P 110 C I aluminium oxide is an example of a suitable quality.

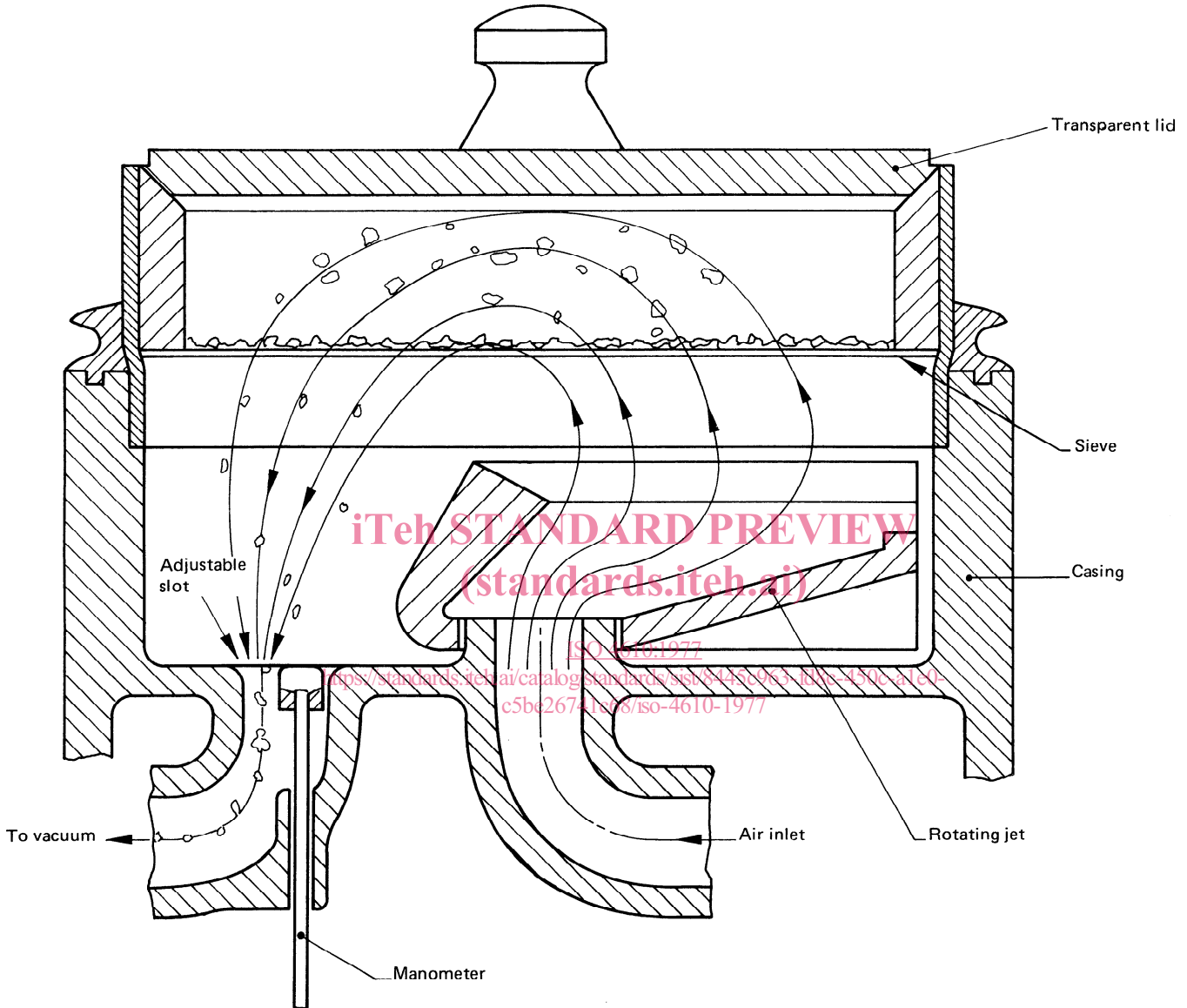


FIGURE — Air-jet sieve

7 PROCEDURE

Securely and separately fix each of the sieves (6.1) into the sieve apparatus (6.2).

Weigh the material to be sieved, to the nearest 0,1 g, transfer it onto the sieve, and place the transparent cover on the sieve apparatus.

Regulate the flow of air to give a partial vacuum of 2,5 kPa (for example by means of an adjustable slot on the vacuum attachment — see 6.2).

Operate the motors of the sieve apparatus and the vacuum device for 4 min ± 15 s for each sieving test.

NOTE — The accuracy and precision of the method are not as good when the screen residue is small (less than 5 %, for example). In such cases it is of interest to extend the sieving time (to 10 or even 15 min). However, for reference purposes (in particular for designation) the value obtained after 4 min ± 15 s shall be used.

After switching off the motors, weigh the residue on the sieve to the nearest 0,1 g (for example by weighing the sieve and its contents and subtracting the tare).

Carry out a second determination under the same conditions.

8 EXPRESSION OF RESULTS

8.1 Calculation

Each sieve retention, R , is calculated, as a percentage, by the formula

$$R = \frac{m_1}{m_0} \times 100$$

where

m_0 is the mass, in grams, of sample used for the test;

m_1 is the mass, in grams, of the residue on the sieve.

Report the result to one decimal place.

Calculate the arithmetic mean of the two determinations.

8.2 Repeatability

The results of two successive screen analyses on the same sample shall not differ by more than 1 % absolute for a residue equal to or greater than 5 %, or by more than 0,5 % absolute for a residue less than 5 %. Otherwise make two more determinations on a new sample and note this fact in the test report.

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9 TEST REPORT

The test report shall include the following information :

- reference to this International Standard;
- complete identification of the test resin;
- the percentage retained on each sieve used, and the percentage through the finest screen.

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