International Standard 8620

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

Plastics — Phenolic resin powder — Sieve analysis using air-jet sieve apparatus

Plastiques — Résines phénoliques en poudre — Analyse granulométrique sur tamiseuse à dépression d'air

First edition — 1986-09-01

UDC 678.632-492.2 : 620.128 **Ref. No. ISO 8620-1986 (E)**

Descriptors : plastics, powdery materials, phenoplasts, tests, sieve analysis, test equipment.

Price based on 2 pages

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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8620 was prepared by Technical Committee ISO/TC 61, *Plastics*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Printed in Switzerland

Plastics — Phenolic resin powder — Sieve analysis using air-jet sieve apparatus

0 Introduction

At the time of publication of this International Standard, ISO 4610 deals with a similar test for PVC homopolymer and copolymer resins. An International Standard for general application does not exist. If such a general International Standard is published, this Standard will be replaced by a part of the new Standard.

1 Scope and field of application

This International Standard specifies a method for the determination of the sieve retention and particle-size distribution of phenolic resin powders using an air-jet sieve.

2 Reference

ISO 565, *Test sieves — Woven-metal wire cloth, perforated plate and electroformed sheet — Nominal sizes of openings.*

3 Principle

A test portion of powdered resin is placed on a sieve in a closed container and subjected to an air stream produced from a rotating jet beneath the sieve, and to suction downwards through the sieve. The test results are dependent on the mesh of the sieves used, the negative pressure and the duration of sifting.

4 Apparatus

4.1 Sieves, of 200 mm diameter (see note 1), complying with the requirements of ISO 565, adapted for incorporating a cover. Sieves may be selected from the R 20/3 (main range) or R 20 (subsidiary range) series.

NOTES

1 The sieves used usually have openings of 80 or 90 µm; smaller sizes (mainly 63 and 40 µm) may also be used. The nominal sizes of the apertures are specified in ISO 565.

2 An ultrasonic bath filled with water containing detergents is recommended for cleaning blocked sieves. Sieves should not be brushed.

4.2 Air-jet sieve apparatus (see the figure), consisting of a sieve in a container, fitted with an air-supply tube and a suction tube. The container has a transparent lid to permit observation of the sieving process. The air-supply tube ends in a slot-shaped jet which revolves radially directly beneath the sieve. This jet rotates in such a way that the underside of the sieve is subjected to a constant current of air, thus leaving the particles in suspension. The jet is driven by a motor. The suction tube draws these particles through the sieve. The performance of this device is controlled by the negative pressure, the values for which are displayed on a manometer. This pressure can be regulated by adjusting a side aperture above the intake system. The volume of air flowing through the apparatus is 48 to 58 m^3/h.

4.3 Timer showing minutes and seconds, which, if desired, can automatically stop the motor of the sieve appliance.

4.4 Balance, accurate to 0,01 g.

5 Procedure

5.1 The screening process shall be undertaken one sieve at a time, each sieve containing its own test portion (about 25 g) of resin.

NOTE — If the product charges itself electrostatically, an antistatic agent should be added to the resin before starting the test to avoid problems during sifting. For example: gamma aluminium oxide [approximately 0,1 % (m/m)], carbon black (small amount), aerosil.

5.2 Weigh (see 5.1), to the nearest 0,01 g, the test portion (m_0) and place it (without any loss) on the sieve (4.1) which has already been attached to the air-jet sieve apparatus (4.2). Place the transparent cover on the sieve. Adjust the level of suction so that a defined negative pressure of 1,5 to 2,5 kPa (150 to 250 mmH_2O) is produced (see 4.2); 2 kPa is recommended. Operate the sieve apparatus for 3 min ± 15 s. Weigh, to the nearest 0,01 g, the residue remaining on the sieve (m_1).

5.3 Make at least duplicate tests.

6 Expression of results

6.1 Calculate the sieve retention, R, using the equation

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

where

m_0 is the mass, in grams, of the test portion;

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

Report the result to one decimal place.

6.2 Calculate the arithmetic mean of the two (or more) determinations.

6.3 Express the results either

a) as percentage residue for each sieve, or

b) in the form of a table or a curve showing the particle-size distribution.

7 Test report

The test report shall include the following particulars:

a) reference to this International Standard;

b) complete identification of the sample tested;

c) values for test portion mass, negative pressure, and duration of sieving, if different from those specified;

d) if applicable, the antistatic agent used;

e) the individual test results and the arithmetic mean, including the mesh of the sieve used;

f) date of the test.

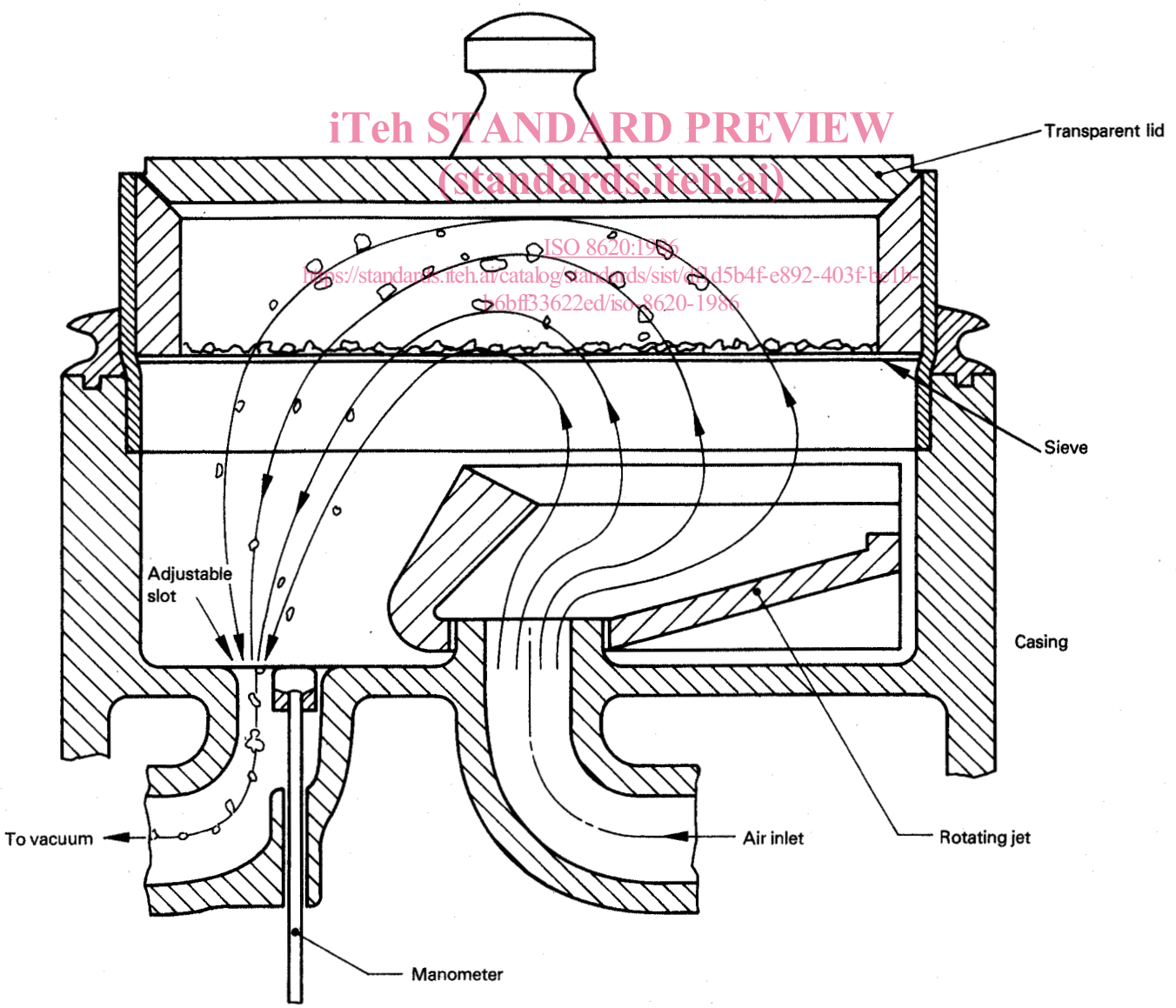

Figure — Air-jet sieve