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Plastics — Vinyl chloride homopolymer and copolymer resins — Particle size determination by mechanical sieving

Plastiques — Résines d'homopolymères et de copolymères de chlorure de vinyle — Détermination de la taille des particules par tamisage mécanique

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 22498 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 9, *Thermoplastic materials*.

Plastics — Vinyl chloride homopolymer and copolymer resins — Particle size determination by mechanical sieving

1 Scope

This International Standard specifies a method for the determination of the size distribution of particles of vinyl chloride homopolymer and copolymer resins by measuring the amounts retained on a selection of sieves having meshes of various aperture sizes.

The results can be expressed either in terms of the amount retained on the individual sieves or as the mean particle size for the whole test sample.

The method is not recommended for use with sieves having mesh sizes smaller than 0,038 mm.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

ISO 868, *Plastics and ebonite — Determination of indentation hardness by means of a durometer (Shore hardness)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
sieve retention
percentage, by mass, of the resin test sample retained on a given sieve at the end of the test procedure

3.2
pan retention
percentage, by mass, of the resin test sample retained in the pan at the bottom of the stack of sieves, or under a single sieve, at the end of the test procedure

3.3
mean particle size
single value, expressed to the nearest 0,001 mm, representing the dominant particle of the whole test sample

4 Principle

A test sample of resin is sieved through a single sieve, or through a stack of sieves of various mesh sizes, assisted by mechanical shaking. When several sieves are chosen to form a stack, the sieves are assembled in ascending order of mesh size so that the largest mesh size is at the top.

5 Materials

5.1 Antistatic agent: aluminium oxide powder, carbon black or equivalent.

5.2 Blocks of non-sticking rubber, with a Shore A hardness typically between 70 and 80, and with dimensions of approximately 40 mm × 10 mm × 15 mm.

6 Apparatus

6.1 Balance, accurate to ± 0,001 g.

6.2 Balance, accurate to ± 0,1 g, range and size sufficient to accommodate the individual sieves and the resin retained on them.

6.3 Sieves, nominally 200 mm in diameter, conforming to ISO 565, complete with lid and base pan receiver. It is recommended that sieves with mesh sizes of 0,425 mm, 0,250 mm, 0,150 mm, 0,106 mm, 0,075 mm and 0,063 mm are available as a minimum. In cases of dispute, the sieve mesh sizes to be used shall be agreed between the interested parties.

6.4 Sieve shaker: a mechanical device preferably fitted with an automatic time switch. The device shall be capable of subjecting the sieve, or stack of sieves, to a uniform vertical motion that is completed by a "tap" or "jerk" at the end of each stroke. The "tapping rate" shall be 150 ± 15 taps per minute.

6.5 Soft-bristle brush.

6.6 Vacuum cleaner, suitable for and electrically safe with very fine powders.

7 Procedure

7.1 Ensure that the sieve or sieves, the lid and the pan are free from resin particles by cleaning with the vacuum cleaner (6.6), releasing any stubborn remains by gentle use of the brush (6.5).

7.2 Examine the sieve or sieves for damage to the mesh or distortion of the mesh matrix. Replace any sieve found to show these defects.

7.3 Weigh the sieve, or each individual sieve, to the nearest 0,1 g.

7.4 Weigh the pan to the nearest 0,1 g.

7.5 Assemble the sieve or sieves and the pan, one on top of the other, adding two or three blocks of rubber (5.2) to each sieve. When assembling a stack of sieves, ensure that they are assembled in ascending order of mesh size so that the sieve with the largest apertures is at the top.

When using a stack of sieves to determine mean particle size (see 9.3), it is necessary to choose a selection of mesh aperture sizes such that the combined retentions on the top sieve and pan are < 4,0 % of the test sample. As many sieves as practical shall be used having a graded distribution of mesh sizes. A possible combination of sieves is given in 6.3.