INTERNATIONAL STANDARD

ISO 17190-9

Second edition
2020-10

Urine-absorbing aids for incontinence — Polyacrylate superabsorbent powders —

Part 9: Test method for gravimetric determination of flow rate and bulk density

Aides pour absorption d'urine — Méthodes d'essai pour caractériser les matériaux absorbants à base de polymères —

Partie 9: Détermination gravimétrique de la masse volumique

Reference number
ISO 17190-9:2020(E)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 173, *Assistive products*, Subcommittee SC 3, *Aids for ostomy and incontinence*.

This second edition cancels and replaces the first edition (ISO 17190-9:2001), which has been technically revised. It also incorporates the Technical Corrigendum ISO 17190-9:2001/Cor.1:2002. The main changes compared to the previous edition are as follows:

— full text review and new laboratory analysis with statistical evaluation;

— request for duplication removed.

A list of all parts in the ISO 17190 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html

Urine-absorbing aids for incontinence — Polyacrylate superabsorbent powders —

Part 9: Test method for gravimetric determination of flow rate and bulk density

WARNING — This document does not claim to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this document to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use. It is expected that the person performing this test has been fully trained in all aspects of this procedure.

1 Scope

This document provides a test method to determine the mass flow rate and bulk density (or apparent density) of polyacrylate superabsorbent powders.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 187, *Paper, board and pulps — Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
bulk density
mass of unit volume of the powder after free fall, expressed in grams per millilitre

3.2
flowability
time for a mass of the powder to pass through a specified funnel, with the mass of the powder, expressed in grams, and the flowability, in seconds

3.3
flow rate
mass of the powder flowing through a specified funnel per unit time, expressed in grams per second

3.4
sample
product or portion of a product taken from a production lot for testing purposes and identifiable and traceable back to its origin

3.5
specimen
specific portion of the identified *sample* (3.4) upon which a test is performed

4 Principle

The flowability of polyacrylate superabsorbent powders is determined by pouring a representative sample through a specified funnel and recording the time required for the entire sample to flow out of the funnel. The mass of the sample is divided by the time recorded to calculate the flow rate.

The bulk density of polyacrylate superabsorbent powders is determined by pouring a representative sample through a specified funnel into a density cup. The mass, expressed in grams, of the sample in the cup is divided by the volume, expressed in millilitres, of the density cup to calculate the bulk density of the polymer.

NOTE For the purpose of simplification of this test method, "flow rate" is used to mean "mass flow rate".

5 Apparatus

5.1 Density cup (see Figure A.1), consisting of a stainless-steel cylinder, smoothly finished inside (see steel designation X5CrNiMo 17-12-3), having the following characteristics:

a) Capacity (100,0 ± 0,5) ml;

b) Internal diameter (45,0 ± 0,1) mm;

c) Internal height (*h*) (63,1 ± 0,1) mm.

5.2 Funnel, with/without orifice damper, made of polished stainless steel (steel designation X5CrNiMo 17-12-3, with an Rz value of preferably 1,6), having the following characteristics:

a) Orifice internal diameter (10,00 ± 0,01) mm;

b) Inclination angle of cone 20°;

c) Height (145,0 ± 0,5) mm.

5.3 Camel hair brush or vacuum cleaner, for cleaning the funnel.

5.4 Flat metal blade, e.g. spatula, paint or palette knife.

5.5 Analytical balance, capable of weighing, to the nearest 0,01 g, for test specimens with a mass of 100,00 g plus the mass of the density cup.

5.6 Utility tray, 40 cm x 25 cm x 6 cm.

5.7 Beaker, with a capacity of 250 ml.

5.8 Ring stand, capable of holding the funnel in the ring.

5.9 Timer or stopwatch.