

---

---

**Urine-absorbing aids for  
incontinence — Polyacrylate  
superabsorbent powders —**

**Part 10:**

**Test method for determination of  
extractable polymer content by  
potentiometric titration**

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

*Partie 10: Détermination de la teneur en polymère extractible par  
titrage potentiométrique*

ISO 17190-10:2020

<https://standards.iteh.ai/catalog/standards/iso/9f2c64cf-b260-4981-897a-296112bbd96d/iso-17190-10-2020>



iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

ISO 17190-10:2020

<https://standards.iteh.ai/catalog/standards/iso/9f2c64cf-b260-4981-897a-296112bbd96d/iso-17190-10-2020>



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2020

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

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

Published in Switzerland

# Contents

	Page
Foreword .....	iv
<b>1 Scope .....</b>	<b>1</b>
<b>2 Normative references .....</b>	<b>1</b>
<b>3 Terms and definitions .....</b>	<b>1</b>
<b>4 Principle .....</b>	<b>2</b>
<b>5 Reagents and materials .....</b>	<b>2</b>
<b>6 Apparatus .....</b>	<b>2</b>
<b>7 Conditioning .....</b>	<b>4</b>
<b>8 Sampling .....</b>	<b>4</b>
<b>9 Procedure .....</b>	<b>4</b>
<b>10 Calculation .....</b>	<b>5</b>
<b>11 Report .....</b>	<b>6</b>
<b>12 Precision .....</b>	<b>7</b>
<b>Bibliography .....</b>	<b>8</b>

iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

[ISO 17190-10:2020](https://standards.iteh.ai/catalog/standards/iso/9f2c64cf-b260-4981-897a-296112bbd96d/iso-17190-10-2020)

<https://standards.iteh.ai/catalog/standards/iso/9f2c64cf-b260-4981-897a-296112bbd96d/iso-17190-10-2020>

## 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](http://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](http://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](http://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 17190-10:2001), which has been technically revised. The main changes compared to the previous edition are as follows:

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

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](http://www.iso.org/members.html).

# Urine-absorbing aids for incontinence — Polyacrylate superabsorbent powders —

## Part 10:

## Test method for determination of extractable polymer content by potentiometric titration

**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 fraction of soluble polymers present in crosslinked polyacrylate superabsorbent powders that can be extracted into saline solution.

### 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* 020

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

### 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

##### **extractables**

sum of the soluble acid and salt groups of monomeric, oligomeric and polymeric carboxylates extracted from the superabsorbent polymer

#### 3.2

##### **sample**

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

## 4 Principle

The amount of extractable polymer in polyacrylate superabsorbent powders is determined by mixing the polymer in saline solution for 1 hour. The resulting saline suspension is filtered in its entirety through a paper filter of  $<12\ \mu$  pore size. An aliquot of the filtrate is titrated against a standard base solution (NaOH) to pH 10,0 to determine the concentration of free carboxylic acid groups. The resulting solution is then back-titrated against a standard acid solution (HCl) to pH 2,7 to determine the concentration of neutralized carboxylate groups. The titration data are used to calculate the total amount of extractables present in the superabsorbent powder.

## 5 Reagents and materials

Use only reagents of recognized analytical grade, unless otherwise specified.

### 5.1 Water.

Grade 3 water in accordance with ISO 3696, with the exception that the conductivity can be as high as  $30\ \mu\text{S}/\text{cm}$ .

### 5.2 Sodium hydroxide solution.

$c(\text{NaOH}) = 0,1\ \text{mol}/\text{l}$ . Obtained as ready-made analytical grade solution.

### 5.3 Hydrochloric acid solution.

$c(\text{HCl}) = 0,1\ \text{mol}/\text{l}$ . Obtained as ready-made analytical grade solution.

### 5.4 Sodium chloride solution.

**5.4.1** 0,9 % mass fraction of sodium chloride solution in water. Weigh  $(9,00 \pm 0,01)$  g of sodium chloride into a 1 l beaker and add  $(991,0 \pm 0,1)$  g of deionized water (grade 3). Stir until dissolved.

**5.4.2** The conductivity of the solution should be checked prior to each use using properly calibrated measuring equipment. The expected conductivity of a 0,9 % saline solution is of the order of  $16\text{mS}/\text{cm}$  at  $25\ ^\circ\text{C}$ . Each testing lab shall determine the correct conductivity for the conditions obtaining in the lab. It is also recommended that the temperature of the solution be maintained at  $(23 \pm 2)\ ^\circ\text{C}$  for the duration of the test. As this matches the required laboratory temperature it is not necessary to record the solution temperature.

### 5.5 Standard buffer solutions.

Prepare 3 buffer solutions in accordance with ISO 10523 with pH values suitable to work in a range from pH 2,7 till pH 10. For instance

- $3,0 \pm 0,02$
- $7,0 \pm 0,02$
- $10,0 \pm 0,02$

## 6 Apparatus

**6.1 Analytical balance**, capable of weighing a mass of  $(1,000 \pm 0,001)$  g of polymer powder in combination with the mass of the weighing vessel or laboratory paper employed.