SLOVENSKI STANDARD
oSIST prEN ISO 182-3:2022

01-september-2022

Polimerni materiali - Ugotavljanje tendence zmesi in proizvodov na osnovi homo- in kopolimerov vinilklorida, da pri povišanih temperaturah sproščajo klorovodik ali druge kisle produkte - 3. del: Konduktometrijska metoda (ISO/DIS 182-3:2022)

Plastics - Determination of the tendency of compounds and products based on vinyl chloride homopolymers and copolymers to evolve hydrogen chloride and any other acidic products at elevated temperatures - Part 3: Conductometric method (ISO/DIS 182-3:2022)

Kunststoffe - Bestimmung der Neigung von Formmassen und Erzeugnissen auf der Basis von Vinylchlorid-Homopolymeren und -Copolymeren, bei erhöhten Temperaturen Chlorwasserstoff und andere saure Produkte abzugeben - Teil 3: Leitfähigkeitsverfahren (ISO/DIS 182-3:2022)

Plastiques - Détermination de la tendance des compositions et produits à base d'homopolymères et de copolymères du chlorure de vinyle à dégager du chlorure d'hydrogène et éventuellement d'autres produits acides à températures élevées - Partie 3: Méthode conductimétrique (ISO/DIS 182-3:2022)

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ICS:

83.080.20	Plastomeri	Thermoplastic materials

oSIST prEN ISO 182-3:2022 **en,fr,de**

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ISO/DIS 182-3

ISO/TC **61**/SC **9**

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Plastics — Determination of the tendency of compounds and products based on vinyl chloride homopolymers and copolymers to evolve hydrogen chloride and any other acidic products at elevated temperatures —

Part 3:
Conductometric method

Plastiques — Détermination de la tendance des compositions à base d'homopolymères et copolymères du chlorure de vinyle à dégager du chlorure d'hydrogène et éventuellement d'autres produits acides à températures élevées —

Partie 3: Méthode conductimétrique

ICS: 83.080.20

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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.

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 61, *Plastics*, Subcommittee SC 9, *Thermoplastic materials*.

This second edition cancels and replaces the first edition (ISO 182-3:1993), which has been technically revised.

The main changes compared to the previous edition are as follows:

— adding the use of alternative heating baths such as metal blocks

A list of all parts in the ISO 182 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.

Plastics — Determination of the tendency of compounds and products based on vinyl chloride homopolymers and copolymers to evolve hydrogen chloride and any other acidic products at elevated temperatures —

Part 3: Conductometric method

WARNING — The use of this part of ISO 182 may involve hazardous materials, operations and equipment. This part of ISO 182 does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this part of ISO 182 to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1 Scope

1.1 This document specifies a method for the determination of the thermal stability at elevated temperature of compounds and products based on vinyl chloride homopolymers and copolymers (in the following text abbreviated as PVC) which undergo dehydrochlorination (the evolution of hydrogen chloride).

1.2 This document is applicable to the characterization of PVC compounds and products, especially with regard to the effectiveness of their heat-stabilizing systems.

It is applicable to coloured PVC compounds and products where a discolouration test under the action of heat may be unsatisfactory.

1.3 This document is applicable to compounded PVC materials and products. It can be applicable to polymers in powder form under appropriate conditions, to be agreed upon between the interested parties.

This document does not apply to PVC compounds in the form of dry blends, since such materials can be not sufficiently homogeneous.

1.4 This document does not apply to PVC compounds and products which evolve other decomposition products, in addition to hydrogen chloride, at elevated temperatures that can affect the conductivity of water when they are absorbed into it. In this case a method suitable for the determination of chloride ion (Cl^-) in the absorbing solution shall be used (see ISO 182-4).

1.5 This document can also be applied to other plastics materials which can evolve hydrogen chloride or other hydrogen halides when heated under the conditions prescribed by the relevant specifications, or as agreed upon between the interested parties.

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

ISO 4793, *Laboratory sintered (fritted) filters — Porosity grading, classification and designation*

ISO 6353-2, *Reagents for chemical analysis — Part 2: Specifications — First series*

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 https://www.electropedia.org/

3.1
stability time
t_s
time, measured by reference to a predetermined change in the conductivity of absorbing demineralized water, required for a certain amount of hydrogen chloride to be evolved when a prescribed mass of PVC compound or product is maintained at an elevated temperature under the test conditions specified in this document

4 Principle

A test portion of the PVC compound or product is maintained at an agreed temperature in a nitrogen gas stream and the hydrogen chloride evolved is absorbed in a given amount of demineralized water. The amount of hydrogen chloride evolved is determined in relation to the recorded change in conductivity of the water.

5 Reagents

During the test, use only reagents of recognized analytical grade in accordance with ISO 6353-2.

5.1 Pure nitrogen, containing less than 6 ppm oxygen and less than 0,1 ppm carbon dioxide by volume. The purity shall be such that when the gas is passed through demineralized water (see 5.2) for 1 h at a rate of (7,2 ± 0,1) l/h, the conductivity of the water remains unchanged.

The gas shall be dried by passing it through a suitable drying agent, and the flow-rate through the dehydrochlorination cell adjusted by means of a needle valve and measured using a suitable flowmeter.

5.2 Demineralized water, with a conductivity not higher than 5 µS/cm.

6 Apparatus

The general arrangement of the apparatus is shown in Figure 1.

6.1 Dehydrochlorination cells.

6.1.1 Cell A (re-usable), with shape and dimensions as shown in Figure 2.

A recommended procedure for cleaning the cell is given in Annex A.

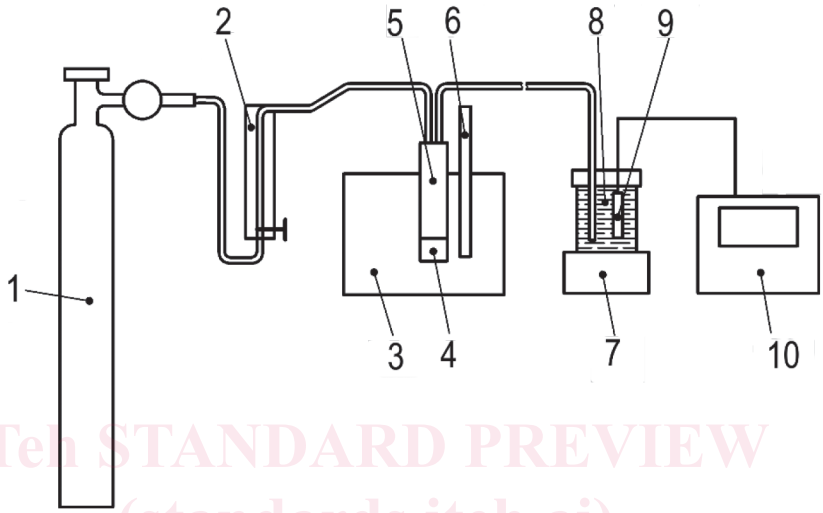
6.1.2 Cell B (disposable), with shape and dimensions as shown in Figure 3.

NOTE Other types of cell can be employed if it has been proved that the results obtained are equivalent to those obtained with one of the cells described in 6.1.1 and 6.1.2.

6.2 Test portion holder, for use with cell A. The test portion is supported on a porous sintered-glass disc grade P 100 specified in ISO 4793, 10 mm in diameter.

To prevent blocking of the porous disc, it is advisable to place a thin, soft layer of glass wool between it and the test portion.

A recommended procedure for cleaning the disc support is given in Annex A.

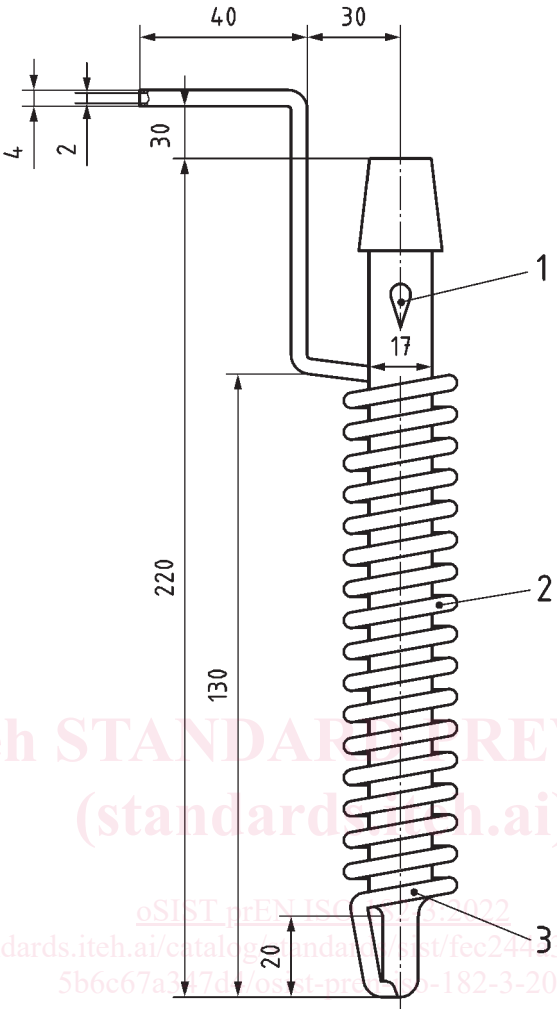


Key

1 N_2 cylinder with pure nitrogen
2 flowmeter
3 heating bath/heating block including temperature controller (scale division 0,1°C)
4 PVC test portion
5 dehydrochlorination cell (details see Figure 2 and 3)
6 Thermometer (scale division 0,1 °C)
7 Magnetic stirrer (in case using heating oil bath)
8 Absorbing solution
9 Measuring electrode(s)
10 Conductance meter

Figure 1 — General arrangement of apparatus

Dimensions in millimetres

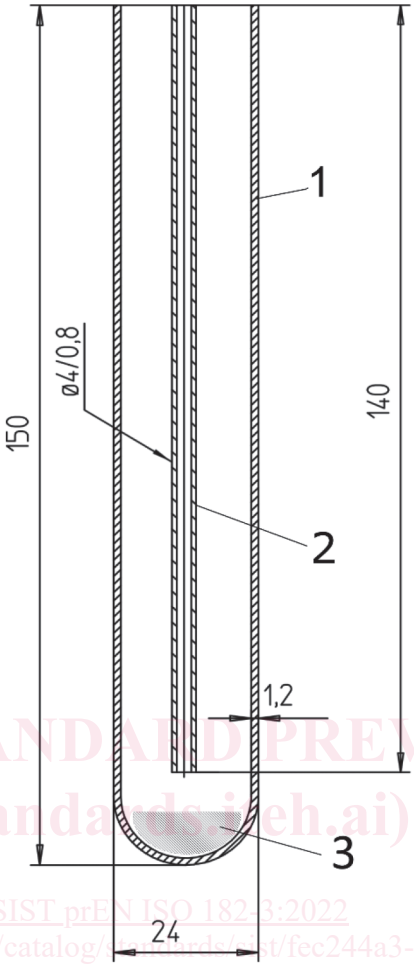


Key

1 spurs
2 17 coils
3 sintered-glass disc, 10 mm diameter (removable)

Figure 2 — Cell A (re-usable) for dehydrochlorination of PVC samples

Dimensions in millimetres



Key

1 disposable glass
2 disposable nitrogen inlet tube
3 sample

Figure 3 — Cell B (disposable) for dehydrochlorination of PVC samples

6.3 Glass connection tube, for use with cell A, connecting the dehydrochlorination cell to the measurement cell and having dimensions as shown in Figure 4. The connection tube is secured to cell A by two springs fixed to hooks on the ground-glass joints. The tube shall be provided with an insulating jacket.