

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 2: pH method

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 182-2:2000 sisaldab Euroopa standardi EN ISO 182-2:1999 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 11.01.2000 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 182-2:2000 consists of the English text of the European standard EN ISO 182-2:1999.</p> <p>This document is endorsed on 11.01.2000 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala:</p> <p>This part specifies a method for the determination of the thermal stability at elevated temperatures of compounds and products based on vinyl chloride homopolymers and copolymers (in the following text abbreviated to PVC) which undergo dehydrochlorination (the evolution of hydrogen chloride)</p>	<p>Scope:</p> <p>This part specifies a method for the determination of the thermal stability at elevated temperatures of compounds and products based on vinyl chloride homopolymers and copolymers (in the following text abbreviated to PVC) which undergo dehydrochlorination (the evolution of hydrogen chloride)</p>
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ICS 83.080.01

Võtmesõnad: determination, high temperature tests, ph-metry, plastics, polyvinyl chloride, tests, thermal stability, thermal tests

English version

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 2: pH method
(ISO 182-2 : 1990)

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 2: Méthode au pH (ISO 182-2 : 1990)

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 2: pH-Messgerät-Verfahren (ISO 182-2 : 1990)

This European Standard was approved by CEN on 1999-05-06.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

International Standard

ISO 182-2 : 1990 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 2: pH method,

which was prepared by ISO/TC 61 'Plastics' of the International Organization for Standardization, has been adopted by Technical Committee CEN/TC 249 'Plastics', the Secretariat of which is held by IBN, as a European Standard.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, and conflicting national standards withdrawn, by December 1999 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard:

Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 182-2 : 1990 was approved by CEN as a European Standard without any modification.

NOTE: Normative references to international publications are listed in Annex ZA (normative).

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 part of ISO 182 specifies a method for the determination of the thermal stability at elevated temperatures of compounds and products based on vinyl chloride homopolymers and copolymers (in the following text abbreviated to PVC) which undergo dehydrochlorination (the evolution of hydrogen chloride).

1.2 The method may be used as a quality-control test during manufacture and conversion of PVC compounds. It may be used also for the characterization of PVC compounds and products, especially with regard to the effectiveness of their heat-stabilizing systems.

It is suitable for coloured compounds and products where a discolouration test under the action of heat may be unsatisfactory.

1.3 The method is recommended for compounded materials and products only, although the method can be used for polymers in powder form under appropriate conditions to be agreed upon between the interested parties. It is not recommended for compounds in the form of dry blends since such materials may not be sufficiently homogeneous.

PVC compounds and products may evolve decomposition products in addition to hydrogen chloride at elevated temperatures. A limited number of these decomposition products may affect the pH of an absorbing solution. It is not possible to compensate for this effect within the scope of this part of ISO 182, and therefore care is necessary in comparing results for dissimilar compounds and products. In this case, a method suitable for the determination of the chloride ions in the absorbing solution shall be used (see ISO 182-4).

1.4 The method may 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 when agreed upon between the interested parties.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 182. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 182 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC

and ISO maintain registers of currently valid International Standards.

ISO 565:1990, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings*.

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods*.

ISO 4793:1980, *Laboratory sintered (fritted) filters — Porosity grading, classification and designation*.

ISO 6353-2:1983, *Reagents for chemical analysis — Part 2: Specifications — First series*.

3 Definition

For the purposes of this part of ISO 182, the following definition applies.

stability time, t_s : The time, measured by reference to a predetermined change in the pH of an absorbing solution, required for a certain amount of hydrogen chloride to be evolved when a given mass of PVC compound or product is maintained at an elevated temperature under the conditions of test described in this part of ISO 182.

4 Principle

A test portion of the PVC compound or product is maintained at an agreed temperature in a gas stream and the hydrogen chloride evolved is absorbed in a 0,1 mol/l solution of sodium chloride. The amount of hydrogen chloride evolved is measured by recording the change in pH of the sodium chloride solution.

5 Reagents and materials

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

5.1 Supply of pure nitrogen, containing less than 6 ppm of oxygen and less than 0,1 ppm of carbon dioxide by volume. The purity shall be such that, when the gas is passed through a 0,1 mol/l solution of sodium chloride at pH 6 for 1 h at a rate of $7,2 \text{ l/h} \pm 0,1 \text{ l/h}$, the pH of the solution remains in the range 5,7 to 6,7. The gas shall be dried by passing it through a suitable drying agent, and the flow rate adjusted by means of a needle valve and measured using a suitable flowmeter.

5.2 Sodium chloride solution, $c(\text{NaCl}) = 0,1 \text{ mol/l}$.

Dissolve $5,84 \text{ g} \pm 0,01 \text{ g}$ of sodium chloride in grade 3 distilled water as defined in ISO 3696, which has been boiled to remove carbon dioxide. Dilute to 1 litre with boiled distilled water of the same grade.

5.3 Sodium hydroxide solution, $c(\text{NaOH}) = 0,1 \text{ mol/l}$.

5.4 Hydrochloric acid, $c(\text{HCl}) = 0,1 \text{ mol/l}$.

6 Apparatus

The general arrangement of the apparatus is shown in figure 1. The figure shows a re-usable dehydrochlorination cell A. This cell may be replaced by a disposable cell B.

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 is given in annex A.

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

6.1.3 Other types of cell may 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.