



SLOVENSKI STANDARD
SIST EN 12280-1:1999
01-marec-1999

**Gumirane ali plastificirane tekstilije - Pospešeni preskusi staranja - 1. del:
Toplotno staranje**

Rubber- or plastics- coated fabrics - Acceleratd ageing tests - Part 1: Heat ageing

Mit Kautschuk oder Kunststoff beschichtete Textilien - Beschleunigte Alterungsprüfungen
- Teil 1: Alterung in der Wärme

iTeh STANDARD PREVIEW

Supports textiles revetus de caoutchouc ou de plastique - Essais de vieillissement
accéléré - Partie 1: Vieillissement a la chaleur

[SIST EN 12280-1:1999](https://standards.iteh.ai/catalog/standards/sist/69bcca7-1084-40c8-baeb-157dcd5d8318/sist-en-12280-1-1999)

Ta slovenski standard je istoveten z: EN 12280-1:1997

ICS:

59.080.40	Površinsko prevlečene tekstilije	Coated fabrics
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SIST EN 12280-1:1999	en
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EUROPEAN STANDARD

EN 12280-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 1997

ICS 59.080.40

Descriptors: textiles, coated fabrics, fabrics coated with rubber, fabrics coated with plastic, artificial ageing tests, thermal tests, high temperature tests, weight losses, volatile matter, activated charcoal

English version

Rubber- or plastic- coated fabrics - Accelerated ageing tests - Part 1: Heat ageing

Supports textiles revêtus de caoutchouc ou de plastique -
Essais de vieillissement accéléré - Partie 1: Vieillissement
à la chaleur

Mit Kautschuk oder Kunststoff beschichtete Textilien -
Beschleunigte Alterungsprüfungen - Teil 1: Alterung in der
Wärme

This European Standard was approved by CEN on 30 October 1997.

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.

This European Standard exists 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 248 "Textiles and textile products", the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 1998, and conflicting national standards shall be withdrawn at the latest by May 1998.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This European Standard consists of the following parts :

- Part 1. Heat ageing
- Part 2. Photochemical ageing
- Part 3. Ageing in a reactive environment

Consideration is being given to preparing further parts, to cover such processes as biochemical ageing.

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NOTE: Persons using this standard should be familiar with normal laboratory practice. This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

Introduction

Ageing refers to all "slow and irreversible" changes in the properties of a material resulting from its own instability, or from the effects of the environment. This alteration may affect the chemical structure of the polymers or additives, the composition of the material, or its physical condition.

NOTE: Combustion is not considered to be an ageing process, as the deterioration happens very rapidly.

Accelerated ageing methods are used as it is practically impossible to obtain experimental results under normal conditions of utilisation.

These methods involve simulations which reproduce the normal conditions of utilisation as closely as possible, but where the parameters are set so that ageing occurs more rapidly.

This standard deals solely with accelerated ageing methods.

1 Scope

This standard specifies three test procedures to assess the effect of heat ageing on the relevant physical properties of coated fabrics.

2 Normative references

SIST EN 12280-1:1999

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This European standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- EN ISO 2231 Rubber- or plastics-coated fabrics - Standard atmospheres for conditioning and testing
- EN 22286 Rubber- or plastics-coated fabrics - Determination of roll characteristics
- ISO 565 Test sieves - Metal wire cloth, perforated metal plates and electroformed sheet - Nominal sizes of openings

3 Method 1: Oven method

3.1 Principle

This method consists of subjecting test specimens to hot air at a temperature of 70°C and at atmospheric pressure, after which the condition of the coated fabric is assessed.

This ageing test is applicable to all coated fabrics, particularly rubber coated fabrics; although attention is drawn to the comments below on coating thickness.

In this test the oxygen concentration is comparatively low and, if oxidation is fast, oxygen may not diffuse into the coating quickly enough to maintain uniform oxidation. The test is therefore liable to give misleading results with poor-ageing coatings unless the coatings are very thin.

If desired, selected samples may be aged for periods considerably in excess of those specified, in order to ensure that decomposition will occur. Such samples are then used to illustrate the effects of ageing.

3.2 Apparatus

3.2.1 air oven equipped with a ventilator capable of providing air five times to 15 times the internal volume of the oven per hour.

The incoming air shall be at the temperature specified before coming into contact with the test specimens.

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No copper or copper alloy shall be within the ageing chamber of the oven. The capacity of the air oven shall be of such a size that the total volume of the test specimens does not exceed 10 % of the free air space of the oven. Means shall be provided for suspending the test specimens vertically within the oven such that they are not within 10 mm of each other nor within 50 mm of the inner surfaces of the oven.

Means shall be provided for maintaining the temperature of the oven at (70 ± 1) °C or at a temperature otherwise specified.

Any electric elements used for heating the incoming air shall be shielded to avoid direct radiation onto the test specimens.

3.2.2 Thermometer, or other temperature indicating device, to record the ageing temperature.

3.3 Test specimens

Test specimens shall be cut from an area with no functional or visible flaw and shall be located within the full length of the coated fabric and its usable width as defined in EN 22286.

The dimensions of the test specimens shall be chosen so that they are suitable for the tests to be subsequently carried out after ageing (see 3.4).

The number of test specimens selected shall be as required by the particular physical tests selected to be carried out after ageing (see 3.4.2).

NOTE: It is recommended that in any event not less than five test specimens be chosen for post ageing comparisons.

3.4 Procedure

3.4.1 Oven treatment

Pre-heat the oven to the operating temperature. Place the test specimens in the oven so that they are free from stress, freely exposed to air on all sides and not exposed to light. Ensure that the pressure inside the oven does not exceed atmospheric pressure. Avoid simultaneous ageing of different types of compounds in order that migration of sulfur or antioxidant does not occur.

After (168 ± 2) h (i.e. 7 days) or (336 ± 2) h (i.e. 14 days), or multiples thereof, remove the test specimens from the oven and condition them in the appropriate atmosphere from EN ISO 2231.

NOTE: Shorter times of exposure may be used by mutual agreement between the parties.

3.4.2 Assessment

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Compare the properties of the aged material with those of the unaged material using appropriate test methods, e.g. those relevant to the material specification or to the characteristic under investigation.

3.5 Calculation and expression of results

Using the method(s) identified in 3.4.2, calculate the actual value of test results after ageing and/or the percentage change when compared with unaged material.

3.6 Test report

The test report shall include the following :

- a) the date of test;
- b) reference to method 1 of EN 12280-1;
- c) description of the coated fabric;
- d) the conditioning and testing atmosphere used;
- e) the results of the assessment conducted in accordance with 3.4.2;
- f) the period of exposure;
- g) details of any deviations from the standard test procedure.

4 Method 2: Volatile loss method

4.1 Principle

This method consists of exposing test specimens to hot air at atmospheric pressure.

By pre-drying the samples, the humidity content is eliminated. After that the content of volatile substances is determined at a temperature preferably about 105°C. Higher temperatures may also be used.

By weighing the samples before and after heat storage the content of volatile components is determined.

The test is applicable to all coated fabrics, preferably with plastics.

4.2 Apparatus

4.2.1 Air oven in which there is slow circulation of air. The incoming air shall be at the temperature specified before coming into contact with the test specimens.

No copper or copper alloy shall be within the ageing chamber of the oven. The capacity of the air oven shall be of such a size that the total volume of the test specimens do not exceed 10 % of the free air space of the oven. Means shall be provided for suspending the test specimens vertically within the oven such that they are not within 10 mm of each other nor within 50 mm or the inner surfaces of the oven.

Means shall be provided for maintaining the required temperature.

Any electric elements used for heating the incoming air shall be shielded to avoid direct radiation onto the test specimens.

4.2.2 Thermometer, or other temperature indicating device, for recording the ageing temperature.

4.2.3 Balance with an accuracy of 1 mg.

4.3 Test specimens

Test specimens shall be cut from an area with no functional or visible flaw and shall be located within the full length of the coated fabric and its usable width as defined in EN 22286.

The dimensions of the test specimens shall be square or circular with an area of (100 ± 1) cm².

The number of test specimens shall be not less than three.

4.4 Procedure

4.4.1 Pre-drying of test specimens

The test specimens shall be stored for (120 ± 15) min in a vertical hanging position at $(105 \pm 2)^\circ\text{C}$ between absorbent filter paper. The mass, m_0 , shall be measured and noted 10 min to 15 min after storage.

4.4.2 Determination of volatile components

The test specimens measured in 4.4.1 shall be stored for (16 ± 1) h in a vertical hanging position at $(105 \pm 2)^\circ\text{C}$ between absorbent filter paper.

The mass, m_1 , shall be measured 10 min to 15 min. after removal from the oven.

In order to avoid interactions store only identical test specimens in the same oven.

NOTE : Other temperatures and time periods may be used by mutual agreement of the parties.

4.5 Calculation and expression of results

Calculate for each test specimen the loss of volatile components :

$$L = \frac{m_0 - m_1}{m_0} \times 100$$

Where

L is the loss of volatile components, in %

m_0 is the total mass of the test piece after pre-drying;

m_1 is the total mass of the test piece after heat storage.

Calculate the arithmetic mean.

4.6 Test report

The test report shall include the following :

- a) the date of test;
- b) reference to method 2 of EN 12280-1;
- c) description of the coated fabric;
- d) the results of the assessment conducted in accordance with 4.5;
- e) time and temperature of exposure;
- f) details of any deviations from the standard test procedure.