SLOVENSKI STANDARD
SIST EN 12280-3:2002

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Gumirane ali plastificirane tekstilije - Preskusi pospešenega staranja - 3. del: Okoliško staranje

Rubber- or plastic-coated fabrics - Accelerated ageing tests - Part 3: Environmental ageing

Mit Kautschuk oder Kunststoff beschichtete Textilien - Beschleunigte Alterungsprüfungen - Teil 3: Umweltbezogene Alterung

Supports textiles revetus de caoutchouc ou de plastique - Essais de vieillissement accéléré - Partie 3: Vieillissement dans un environnement

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English version

Rubber- or plastic-coated fabrics - Accelerated ageing tests - Part 3: Environmental ageing

Supports textiles revêtus de caoutchouc ou de plastique - Essais de vieillissement accéléré - Partie 3: Vieillissement dans un environnement réactif

Mit Kautschuk oder Kunststoff beschichtete Textilien - Beschleunigte Alterungsprüfungen - Teil 3: Umweltbezogene Alterung

This European Standard was approved by CEN on 17 May 2002.

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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 Management Centre has the same status as the official versions.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document EN 12280-3:2002 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of an identical text or by endorsement, at the latest by February 2003, and conflicting national standards shall be withdrawn at the latest by February 2003.

This European Standard 12280 “Rubber- or plastic coated fabrics- Accelerated ageing tests” consists of the following parts:

Part 1: Heat ageing

Part 2: Physical ageing: effect of light or weathering

Part 3: Environmental ageing

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

This Part contains an annex A informative.

WARNING 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.

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, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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 can 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 European Standard describes a test procedure to assess the effect of humidity in combination with relatively high temperatures on the relevant physical properties of coated fabrics.

It is applicable to all coated fabrics for which it is necessary to assess the long-term resistance to hydrolysis which can result from exposure to warm atmospheres with high moisture content. It is not recommended to evaluate materials that are immersed in water during use.

2 Normative references

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 by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN ISO 2231, *Rubber- or plastics-coated fabrics — Standard atmospheres for conditioning and testing (ISO 2231:1989).*

EN ISO 2286-1, *Rubber- or plastics-coated fabrics — Determination of roll characteristics — Part 1: Methods for determination of length, width and net mass (ISO 2286-1:1998).*

3 Principle

Test specimens of coated fabrics are exposed for at least 1 week to an atmosphere of air having at least 95 % relative humidity and a temperature of 70 °C. Selected physical properties are determined on unexposed test specimens and on other test specimens after exposure.

NOTE If higher temperatures are used, for example for faster quality control, the results should be verified by comparison with this reference method.

4 Apparatus

4.1 Air oven equipped with a ventilator capable of providing air 5 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.

NOTE The air speed at the thermometer and hygrometer contact should be not less than 3 $m \cdot s^{-1}$.

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 ± 2) °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.

Do not inject directly live steam at temperature above 70 °C to achieve the required relative humidity of the atmosphere.

4.2 **Thermometer** or other temperature indicating device to record the ageing temperature.

4.3 **Wet-and-dry bulb hygrometer** indicating the relative humidity.

5 Test specimens

5.1 Selection

Test specimens shall be cut from an area with no functional or visible flaws and shall be located within the full length of the coated fabric and its usable width as defined in EN ISO 2286-1.

5.2 Dimensions

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

5.3 Quantity

The number of test specimens selected shall be as required by the particular physical tests selected (see clause 7).

6 Procedure

Pre-heat the oven to the operating atmosphere of (70 ± 2) °C and at least 95 % relative humidity.

Place the test specimens in the oven so that they are freely exposed to air on all sides and not exposed to light.

Avoid simultaneous ageing of different types of compounds.

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 for at least 24 h.

7 Assessment

Compare the properties of the aged material within 2 days, with those of the unaged material using appropriate test methods, e.g. those relevant to the material specification or to the characteristic under investigation.

8 Calculation and expression of results

Using the method(s) identified in clause 7, either calculate the actual value of test result after ageing, or the percentage change when compared against the unaged material.

9 Test report

The test report shall include the following:

a) reference to this European Standard;

b) the date of the test;

c) the conditioning and testing atmosphere;

d) the identification of the coated fabric;

e) the exposure period;

f) the properties measured and the results of the assessment conducted in accordance with clause 7;

g) details of any deviations from the standard test procedure.