SLOVENSKI STANDARD
SIST EN 4426:2020

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Aeronavtika - Nekovinski materiali - Tekstilije - Preskusne metode - Določanje prevodnosti in pH vodnih ekstraktov

Aerospace series - Non-metallic materials - Textiles - Test method - Determination of conductivity and pH of aqueous extracts

Luft- und Raumfahrt - Nichtmetallische Werkstoffe - Textilien - Prüfverfahren - Bestimmung der Leitfähigkeit und des pH-Werts in wässerigen Lösungen

Série aérospatiale - Matériaux non-métalliques - Textiles - Méthode d'essai - Détermination de la conductivité et du pH des résidus aqueux

Ta slovenski standard je istoveten z: **EN 4426:2020**

ICS:

49.025.60	Tekstilije	Textiles

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EUROPEAN STANDARD
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English Version

Aerospace series - Non-metallic materials - Textiles - Test method - Determination of conductivity and pH of aqueous extracts

Série aérospatiale - Matériaux non-métalliques - Textiles - Méthode d'essai - Détermination de la conductivité et du pH des extraits aqueux

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COMITÉ EUROPÉEN DE NORMALISATION
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Contents

Page

European foreword

This document (EN 4426:2020) has been prepared by the Aerospace and Defence Industries Association of Europe — Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

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of an identical text or by endorsement, at the latest by August 2020, and conflicting national standards shall be withdrawn at the latest by August 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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Introduction

This document is part of the series of EN non-metallic materials standards for aerospace applications. The general organization of this series is described in EN 4385. This document is a level 3 document as defined in EN 4385.

1 Scope

This document specifies the requirements for the determination of conductivity and pH of aqueous extracts of textile materials.

This method has been written in response to an aerospace requirement for a method of extraction using hot water as the EN 1413 requires only a cold water extraction method.

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.

EN 1413, *Textiles — Determination of pH of the aqueous extract* 1)

EN 4385, *Aerospace series — Non-metallic materials — General organisation of standardization — Links between types of standards* 2)

EN ISO 2231, *Rubber — or plastics-coated fabrics — Standard atmospheres for conditioning and testing* 3)

ISO 383, *Laboratory glassware — Interchangeable conical ground joints* 3)

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 http://www.iso.org/obp
- IEC Electropedia: available at http://www.electropedia.org/

3.1
conductivity
reciprocal of the resistance of an electric current to pass through an electrolyte; the purer the electrolyte the higher the electrical resistance, conversely the lower the conductivity

3.2
pH
cologarithm of the hydrogen ion concentration in an aqueous extract

4 Health, safety and environment

This document does not necessarily include all health and safety requirements associated with its use.

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1) This document has been withdrawn in May 2006.

2) Published as ASD-STAN Standard at the date of publication of this document by AeroSpace and Defence industries Association of Europe - Standardization (ASD-STAN), http://www.asd-stan.org/

3) Published by International Organization for Standardization (ISO), http://www.iso.ch/

Persons using this document shall be familiar with normal laboratory/test house practices.

It is the responsibility of the user to establish satisfactory health and safety practices and to ensure conformity with any European, national or local laws/regulations.

5 Principle/technique

An aqueous extract is prepared using de-ionised (low conductivity) water. For conductivity the extract is measured to determine the ease by which a small electric current can be passed through the extract. The higher the amount of impurities in the extract the higher the conductivity reading. For pH the number of free hydrogen ions are measured using a pH electrode. pH is measured on a scale of 1 to 14, 1 being acidic, 7 neutral and 14 alkaline.

6 Resources

6.1 Apparatus/facilities

6.1.1 Round bottomed flasks of chemically resistant glass with a volume of 250 ml and a ground glass neck of size 24/29 in accordance with ISO 383.

6.1.2 A glass stopper incorporating a stopcock with P.T.F.E. core liner to prevent sticking of the glass core in the neck of the stopcock.

NOTE Grease shall not be used for this purpose.

6.1.3 Water-cooled condensers.

6.1.4 Laboratory balance, accurate to 0,05 g.

6.1.5 Conductivity cell. A cell constant (K) of 0,1 cm^{-1} is suitable (electrodes 10 mm diameter, 1 mm to 10 mm apart). The electrodes shall be platinized. Each cell shall be calibrated at 20 °C with potassium chloride solution of concentration 0,001 mol/l which has a conductivity of 12,780 mS/m at 20 °C.

6.1.6 Conductivity meter.

6.1.7 pH meter with glass electrode, capable of measuring to at least 0,1 unit of pH.

6.2 Materials/reagents

6.2.1 Low conductivity (de-ionised) water with a conductivity of less than 0,2 mS/m.

6.3 Qualification of personnel

No specific technical requirements.

7 Test samples/test pieces

Samples shall be taken representative of the bulk and of sufficient size to provide all the test specimens required. All samples shall be kept identifiable to the bulk textiles which they represent. Cut the sample under test into pieces of such size that all parts readily wet out.

Care must be taken to avoid any contamination of samples and handling must be kept to an absolute minimum.

NOTE Nominal 10 mm squares have been found suitable.

Samples shall be conditioned and weighed under standard atmosphere conditions specified in EN ISO 2231.

8 Test procedure

8.1 Flasks used for the determination of conductivity shall not be used for any other purpose and shall be steamed out immediately before use by refluxing low conductivity water (6.2.1) in the flask for 1 h and cooled to (20 ± 2) °C in accordance with subclauses 8.4 and 8.5 below. The conductivity is then measured and shall not exceed 0,2 mS/m. Any flasks which do not meet the requirements of 0,2 mS/m shall not be used for conductivity measurement.

8.2 Cut the sample into nominal 10 mm squares and weigh (5 ± 0,05) g of conditioned sample into flask (6.1.1).

8.3 To the flask containing the sample under test add (100 ± 0,1) ml of low conductivity water (6.2.1).

NOTE For sample weight of less than 5 g the liquor ratio should be maintained at 1:20, i.e. 1 g of sample to 20 ml of water.

8.4 Connect the flask containing the sample and water to the water cooled condenser (6.1.3). Quickly bring contents to the boil and continue to boil liquor gently for 60 min. After this period disconnect and remove flask from condenser whilst liquor is still boiling close immediately with the glass stopcock (6.1.2).

8.5 Do not filter or make up volume but cool rapidly to (20 ± 2) °C to ensure a partial vacuum is created to ensure the extract is not contaminated. Do not remove the stopcock or open the tap until ready to make conductivity measurement.

8.6 For pH measurements prepare above extract in triplicate.

8.7 Measurement of conductivity: when ready to make conductivity measurement remove the stopcock from the flask and transfer some of the aqueous extract to the conductivity cell. Wash the cell with two (2) or three (3) changes of extract re-stoppering the flask as soon as possible. Measure the electrical resistance of the extract with the meter (6.1.6) and the temperature of the extract. Calculate the conductivity from the formula given in 9.2.

NOTE A direct reading conductivity may be used in place of the conductivity cell and meter as an alternative meter except in cases of dispute.

8.8 Measurement of pH: standardize the pH meter at the temperature of the extract to be measured and calibrate the pH meter using two buffer solutions. For acidic values calibrate using buffer solution 4 pH and 7 pH. For alkaline values calibrate using buffer solution 7 pH and 9 pH.

8.8.1 Decant first extract with the exclusion of the textile into a beaker, immerse the electrode and determine the pH value once pH meter has stabilised.

8.8.2 Transfer the electrode without washing into second beaker and determine pH values for the extracts as described above. Decant third extract and determine pH as above.

Record the pH value obtained from the second and third extracts.