

Surface active agents - Determination of surface tension

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 14370:2004 sisaldab Euroopa standardi EN 14370:2004 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 23.11.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 14370:2004 consists of the English text of the European standard EN 14370:2004.</p> <p>This document is endorsed on 23.11.2004 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: This document specifies test methods for the determination of surface tension of liquids, particularly surface active agent solutions. The methods are suitable for determining the static surface tension of liquids, for example inorganic and organic liquids and solutions.</p>	<p>Scope: This document specifies test methods for the determination of surface tension of liquids, particularly surface active agent solutions. The methods are suitable for determining the static surface tension of liquids, for example inorganic and organic liquids and solutions.</p>
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ICS 71.100.40

Võtmesõnad: measurement, methods, mixtures, organic, preparation, samples, shallow, soluble matter, solutions, static, substances, surface active, surface tension, surfactants, tensiometers, test equipment, testing, viscous

ICS 71.100.40

English version

Surface active agents - Determination of surface tension

Agents de surface - Détermination de la tension
superficielleGrenzflächenaktive Stoffe - Bestimmung der
Oberflächenspannung

This European Standard was approved by CEN on 1 July 2004.

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Foreword

This document (EN 14370:2004) has been prepared by Technical Committee CEN/TC 276 "Surface active agents", the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by March 2005, and conflicting national standards shall be withdrawn at the latest by March 2005.

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

1 Scope

This document specifies test methods for the determination of surface tension of liquids, particularly surface active agent solutions.

The methods are suitable for determining the static surface tension of liquids, for example inorganic and organic liquids and solutions.

2 Normative references

The following referenced documents are indispensable for the application 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 304, *Surface active agents – Determination of surface tension by drawing up liquid films*

3 Principle

The force, F , exerted either by the surface tension on a plate which is brought vertically into contact with the liquid and is completely wetted by it (static method) or which is necessary to pull a horizontally suspended stirrup or ring out of the liquid surface (quasi-static method) is measured (see [1] and [2]). The surface tension is obtained by calculation (see Clause 8).

In the static method, the plate is stationary so that an equilibrium value is obtained. The quasi-static method requires movement of the ring or stirrup. By using sufficiently small and slow changes in ring or stirrup position during the measurement, deviations from equilibrium are minimised.

4 Apparatus

4.1 Tensiometer

The tensiometer shall be designed for a plate, stirrup or ring, and shall consist mainly of two parts:

- a) support for the sample vessel in the form of a small horizontal platform which can be moved up and down, for example using a micrometer screw;
- b) apparatus for measuring the force exerted on the plate, stirrup or ring; the uncertainty of measurement shall not exceed $\pm 10^{-6}$ N, which corresponds to a maximum error of $\pm 0,1$ mg in determining the mass.

NOTE Instead of a torsion balance, a lever balance or an electronic balance (laboratory, analytical or microbalance) can be used as an alternative. To obtain higher efficiency and reproducibility, an automatic tensiometer incorporating a balance, motor-driven platform and evaluation unit should be used.

4.2 Plate

The plate shall consist of platinum or platinum/iridium sheet. It shall be about 20 mm long, about 0,2 mm thick and at least 10 mm high, and shall be roughened to improve its wetting power.

NOTE Satisfactory roughening can be achieved by sandblasting, by rubbing with emery or by sintering a platinum black layer onto the platinum sheet.

The plate shall be suspended at a point in the axis of symmetry. The platinum, platinum/iridium plate shall have an effective height of at least 10 mm to keep wetting errors as low as possible (see Figure 1).