



SLOVENSKI STANDARD
SIST EN ISO 8975:1999

01-maj-1999

Polimerni materiali – Fenolne smole – Določevanje pH (ISO 8975:1989)

Plastics - Phenolic resins - Determination of pH (ISO 8975:1989)

Kunststoffe - Phenolharze - Messung des pH-Wertes (ISO 8975:1989)

Plastiques - Résines phénoliques - Détermination du pH (ISO 8975:1989)

Ta slovenski standard je istoveten z: EN ISO 8975:1995

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83.080.10 Duromeri Thermosetting materials

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EUROPEAN STANDARD

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EUROPÄISCHE NORM

July 1995

ICS 83.080.10

Descriptors: plastics, phenoplasts, resins, determination, pH

English version

**Plastics - Phenolic resins - Determination of pH
(ISO 8975:1989)**

Plastiques - Résines phénoliques - Kunststoffe Phenolharze - Messung des
Détermination du pH (ISO 8975:1989) pH-Wertes (ISO 8975:1989)

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

CEN

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

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

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Foreword

The text of the International Standard from ISO/TC 61 "Plastics" of the International Organization for Standardization (ISO) has been taken over as a European Standard by the Technical Committee CEN/TC 249 "Plastics".

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of an identical text or by endorsement, at the latest by January 1996, and conflicting national standards shall be withdrawn at the latest by January 1996.

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

Endorsement notice

The text of the International Standard ISO 8975:1989 has been approved by CEN as a European Standard without any modification.

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INTERNATIONAL STANDARD

ISO
8975

First edition
1989-10-01

Plastics — Phenolic resins — Determination of pH

Plastiques — Résines phénoliques — Détermination du pH

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Reference number
ISO 8975:1989(E)

ISO 8975:1989(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8975 was prepared by Technical Committee ISO/TC 61, *Plastics*.

Annex A of this International Standard is for information only.

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Plastics — Phenolic resins — Determination of pH

1 Scope

This International Standard specifies a method for the determination of the pH of liquid phenolic resins at the manufacturing stage or on the market.

NOTE 1 A variant of this method, applicable to solid phenolic resins, is described in annex A. With liquid resins having a viscosity greater than 2 Pa·s, it may be necessary to use this variant, which calls for a magnetic stirrer.

2 Principle

The potential difference between a glass electrode and a reference electrode, immersed in the same solution is used to determine the pH.

3 Reagents

During the analysis, use only reagents of recognized analytical grade and only distilled water or water of equivalent purity.

Standard solutions, with acid pH (≈ 4), neutral pH (≈ 7) or alkaline pH (≈ 9), or **buffer solutions**.

The following standard or buffer solutions are specified:

3.1 Potassium hydrogen phthalate, standard solution, $c(\text{KCOOC}_6\text{H}_4\text{COOH}) = 0,05 \text{ mol/l}$, pH = 4,00 at 23 °C.

Dissolve 10,21 g of potassium hydrogen phthalate, previously dried by heating at 100 °C to 130 °C for 2 h, in water and make up to 1 000 ml.

This solution shall be stored in a glass vessel and kept away from any traces of acid or base; it may be kept longer by adding a crystal of thymol. Slight cloudiness in the solution indicates microbial contamination. The thymol is no longer effective and such a solution shall be discarded.

3.2 Hydrogen phosphate buffer solution, containing approximately 0,025 mol of potassium dihydrogen phosphate (KH_2PO_4) per litre and approximately 0,025 mol of sodium hydrogen phosphate (Na_2HPO_4) per litre, pH = 6,88 at 23 °C.

Dissolve 3,39 g of potassium dihydrogen phosphate (KH_2PO_4) and 3,53 g of sodium hydrogen phosphate (Na_2HPO_4), previously dried by heating at 110 °C to 130 °C for 2 h, in water and make up to 1 000 ml.

This solution may be kept longer by adding a crystal of thymol.

3.3 Sodium tetraborate (Borax), standard solution, $c(\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}) = 0,01 \text{ mol/l}$, pH = 9,22 at 23 °C.

Dissolve 3,80 g of sodium tetraborate decahydrate ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$) in water and dilute to 1 000 ml.

4 Apparatus

4.1 pH-meter, accurate to 0,1 pH-units.

4.2 Electrodes

4.2.1 Measuring electrode: glass electrode.

4.2.2 Reference electrode: calomel electrode.

4.2.3 Maintenance of the electrodes

For all types of electrode, follow the manufacturer's instructions specifying the maintenance procedures necessary to keep the electrodes in the correct condition.

In particular, clean the glass electrode at regular intervals as directed by the manufacturer.

NOTE 2 When not in use over a long period, glass electrodes and certain calomel electrodes may be stored in the dry condition if permitted by the manufacturer.

For reconditioning, soak the glass electrode in acidified distilled water (pH 4 to 5) for several hours

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and the calomel electrode in saturated potassium chloride solution.

Before each determination, wash the electrodes with water and leave them to soak in water for at least 2 min before making any measurements.

5 Procedure

5.1 Test temperature

Carry out the test at $23\text{ }^{\circ}\text{C} \pm 0,5\text{ }^{\circ}\text{C}$.

5.2 Calibration of the pH-meter/electrode unit

Carry out the calibration in accordance with the manufacturer's instructions.

For the calibration, use two of the standard or buffer solutions (clause 3) which bracket the assumed value to be measured.

5.2.1 Adjustment of the apparatus

Rinse the electrodes with water and lightly wipe the electrode tips (with filter paper, for example) to remove any excess water.

Rinse the electrodes with one of the standard or buffer solutions by pouring the liquid down the outside of the stem.

Pour an adequate volume of the same standard or buffer solution into the clean, dry measuring vessel and immerse the electrodes in the solution.

Set the pH-meter reading to the pH-value of the standard or buffer solution, taking into account its temperature.

Remove the electrodes and discard the standard or buffer solution contained in the measuring vessel.

5.2.2 Verification of the response accuracy

Rinse the electrodes with water and then with the second standard or buffer solution, as described in 5.2.1.

Wash the measuring vessel with water (or use another clean, dry vessel), rinse it with the second standard or buffer solution, pour an adequate volume of the solution into the vessel and immerse the electrodes in the solution.

Record the pH-meter reading without changing the setting of the apparatus and, in particular, without touching the temperature correction or calibration/buffer control.

— If this reading is within the permissible tolerances ($\pm 0,1$ pH-units) at the known pH-value of

the standard or buffer solution, taking into account its temperature, the apparatus is in operating condition and is suitably calibrated.

— If this is not the case, determine the cause (such as operating error, defective electrode, incorrect temperature correction) and remedy the defect.

5.3 Determination

5.3.1 Test portion and preparation of the test solution

Allow the temperature of the resin to stabilize at $23\text{ }^{\circ}\text{C} \pm 0,5\text{ }^{\circ}\text{C}$.

Prepare a 50 % (*m/m*) solution of the resin in water.

If phase separation occurs, wait until a sufficient volume of the aqueous phase for measurement has separated out in a dropping funnel. Transfer the aqueous phase to a graduated flask and carry out the measurement.

5.3.2 Measurement of the pH

Once the apparatus has been calibrated, wash the electrodes (4.2) and the measuring vessel, first with water then with the test solution, as described in 5.2.1 and 5.2.2. Mix the test solution, pour an adequate volume of it into the measuring vessel (another dry, clean vessel may also be used) and immerse the electrodes in the solution. Check that the pH-meter reading is stable, and, if so, record it.

Repeat these operations with a fresh portion of the test solution.

— If the new reading of the pH-meter is identical to the previous one, or only differs from it by 0,2 pH-units, the test is complete (unless otherwise indicated in special standards).

— If this is not the case, carry out these operations a third time with a fresh portion of the test solution, carrying out all the checks necessary to determine the source of the error. If this third measurement does not give a conclusive result, repeat all the operations, including the calibration.

In order to determine the pH of a solution likely to change with time, particularly when in contact with the carbon dioxide in the air, proceed under the appropriate conditions (purge with a stream of nitrogen, for example).

6 Expression of results

Calculate the mean of the two measurements carried out in accordance with 5.3.2 and round to the nearest 0,1 pH-units.

7 Test report

The test report shall include the following information:

- a) a reference to this International Standard;
- b) a complete identification of the resin tested;
- c) the test result, calculated as specified in clause 6, as well as the test temperature if the latter is not $23\text{ °C} \pm 0,5\text{ °C}$;
- d) the date of the test.

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