
International Standard



125

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Rubber latex, natural — Determination of alkalinity

Latex de caoutchouc — Détermination de l'alcalinité

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been authorized 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.

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.

International Standard ISO 125 was developed by Technical Committee ISO/TC 45, *Rubber and rubber products*.

This third edition was submitted directly to the ISO Council, in accordance with clause 6.11.2 of part 1 of the Directives for the technical work of ISO. It cancels and replaces the second edition (i.e. ISO 125-1977), which had been approved by the member bodies of the following countries :

Australia	India	Sri Lanka
Austria	Ireland	Sweden
Belgium	Korea, Rep. of	Switzerland
Chile	Malaysia	Turkey
Czechoslovakia	Netherlands	United Kingdom
Egypt, Arab Rep. of	New Zealand	USA
France	Romania	USSR
Germany, F. R.	South Africa, Rep. of	
Hungary	Spain	

No member body had expressed disapproval of the document.

The second edition, which superseded ISO 125-1974, incorporated a draft Amendment, which was circulated to the member bodies in August 1976 and had been approved by the following countries :

Austria	Hungary	Spain
Belgium	India	Sweden
Brazil	Italy	Turkey
Bulgaria	Netherlands	United Kingdom
Canada	New Zealand	USA
France	Poland	USSR
Germany, F. R.	Romania	

No member body had expressed disapproval of the document.

Rubber latex, natural — Determination of alkalinity

1 Scope and field of application

This International Standard specifies a method for the determination of the alkalinity of natural rubber latex which contains preservative agents and which has been submitted to some type of concentration process.

The method is not necessarily suitable for latices from natural sources other than *Hevea brasiliensis* or for synthetic rubber latices, compounded latex, vulcanized latex or artificial dispersions of rubber.

2 References

ISO 123, *Rubber latices — Sampling.*

ISO 976, *Rubber latices — Determination of pH.*

3 Principle

Titration of latex to pH 6,0 in the presence of a stabilizer, either electrometrically or, alternatively, with methyl red as visual indicator, and calculation of its alkalinity from the quantity of acid which is required.

4 Reagents

Distilled water or water of equivalent purity shall be used wherever water is specified.

4.1 Stabilizer solution : 5 % (*m/m*) solution of a non-ionic stabilizer of the ethylene oxide condensate type. Before use, the pH of the solution shall be adjusted to a value of $6,0 \pm 0,1$.

The following reagents shall be of recognized analytical quality :

4.2 Sulfuric acid, $c(\text{H}_2\text{SO}_4) = 0,05 \text{ mol/dm}^3$, or **hydrochloric acid**, $c(\text{HCl}) = 0,1 \text{ mol/dm}^3$, standard volumetric solution.

NOTE — These concentrations of hydrochloric and sulfuric acids were expressed as 0,1 N in the previous edition of this International Standard. They are now expressed in moles per cubic decimetre to conform with ISO practice. This requires the introduction of the variable factors (F_1 and F_2) in the calculations (8.1 and 8.2).

4.3 Methyl red, 0,1 % solution in ethanol of 95 % minimum purity.

This solution is not required when electrometric titration is used.

5 Apparatus

The following apparatus is required when electrometric titration is used :

5.1 pH-meter, equipped with glass electrode and saturated calomel cell, and capable of being read to 0,02 unit.

5.2 Glass electrode, of a type suitable for use in solutions of pH up to 12,0.

5.3 Mechanical stirrer, with earthed (grounded) motor and non-metallic paddle, or magnetic stirrer.

6 Sampling

Carry out the sampling in accordance with one of the methods specified in ISO 123.

7 Procedure

Calibrate the pH meter using the method specified in ISO 976.

To about 200 cm³ of water contained in a 400 cm³ beaker add, while stirring, 10 cm³ of the stabilizer solution (4.1). Weighing to the nearest 10 mg, add by difference from a weighing bottle between 5 and 10 g of the latex and stir thoroughly.

Insert the electrodes and, with continual stirring, add from a burette the sulfuric acid or hydrochloric acid solution (4.2) until the pH is reduced to a value of $6,0 \pm 0,05$. Add the acid drop by drop on approaching the end-point.

As an alternative to electrometric titration, use methyl red (4.3) as visual indicator, taking the end-point as the colour change to pink.

Carry out the determination in duplicate.

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8 Expression of results

Calculate the alkalinity of the latex as specified in 8.1 or 8.2, whichever is appropriate.

8.1 If the latex is preserved with ammonia calculate the alkalinity as grams of ammonia (NH₃) per 100 g of latex as follows :

$$\text{Alkalinity (as NH}_3\text{)} = \frac{F_1 \times c \times V}{m}$$

where

F_1 is the factor, 1,7 for hydrochloric acid or 3,4 for sulfuric acid;

c is the actual concentration, expressed in moles of HCl or H₂SO₄ per cubic decimetre, of acid used;

V is the volume, in cubic centimetres, of acid used;

m is the mass, in grams, of the test portion.

The results of the duplicate determinations shall not differ by more than 0,02 unit where the actual alkalinity is above 0,5 unit, or shall not differ by more than 0,01 unit where the actual alkalinity is 0,5 unit or less.

8.2 If the latex is preserved with potassium hydroxide, calculate its alkalinity as grams of potassium hydroxide per 100 g of latex, as follows :

$$\text{Alkalinity (as KOH)} = \frac{F_2 \times c \times V}{m}$$

where

F_2 is the factor, 5,61 for hydrochloric acid or 11,22 for sulfuric acid;

c , V and m are as defined in 8.1.

The results of duplicate determinations shall not differ by more than 0,03 unit.

9 Test report

The test report shall include the following information :

- a) reference to this International Standard;
- b) the results, and the form in which they are expressed;
- c) any operation not included in this International Standard or regarded as optional.

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