INTERNATIONAL STANDARD

ISO 35

Fourth edition
1995-10-15

Latex rubber, natural, concentrate — Determination of mechanical stability

Latex de caoutchouc naturel concentré — Détermination de la stabilité mécanique

Reference number
ISO 35:1995(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 voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 35 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 3, *Raw materials (including latex) for use in the rubber industry*.

This fourth edition cancels and replaces the third edition (ISO 35:1989), of which it constitutes a minor revision.

International Organization for Standardization
Case Postale 56 • CH-1211 Genève 20 • Switzerland
Printed in Switzerland

Latex rubber, natural, concentrate — Determination of mechanical stability

WARNING — Persons using this International 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.

1 Scope

This International Standard specifies a method for the determination of the mechanical stability of natural rubber latex concentrate. It is also applicable to pre-vulcanized natural rubber latex concentrate.

The method is not necessarily suitable for latices preserved with potassium hydroxide, latices from natural sources other than *Hevea brasiliensis*, or for compounded latex, or artificial dispersions of rubber, and is not applicable to synthetic rubber latices.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 123:1985, *Rubber latex — Sampling.*

ISO 124:1992, *Rubber latices — Determination of total solids content.*

ISO 125:1990, *Natural rubber latex concentrate — Determination of alkalinity.*

ISO 3310-1:1990, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth.*

3 Definition

For the purposes of this International Standard, the following definition applies.

3.1 natural rubber latex concentrate: Natural rubber latex containing ammonia and/or other preservatives and which has been subject to some process of concentration.

4 Principle

A test portion of latex concentrate is diluted to 55 % (m/m) total solids content and stirred at high speed. The time required to initiate visible flocculation is recorded, this being regarded as a measure of the mechanical stability.

5 Reagents

The ammonia solutions (5.1 and 5.2) shall be prepared from ammonium hydroxide of recognized analytical reagent quality and shall be stored in closed containers.

Carbonate-free distilled water or water of equivalent purity shall be used wherever water is specified.

5.1 Ammonia solution, containing 1,6 % (m/m) of ammonia (NH_3), for use with latex concentrate having an alkalinity of at least 0,30 % (with respect to the latex concentrate).

5.2 Ammonia solution, containing 0,6 % (m/m) of ammonia (NH_3), for use with latex concentrate having an alkalinity of less than 0,30 % (with respect to the latex concentrate).

6 Apparatus

6.1 Mechanical stability measuring apparatus [1], consisting of the items described in 6.1.1 to 6.1.3.

6.1.1 Latex container, flat-bottomed, cylindrical, at least 90 mm high, with an internal diameter of 58 mm ± 1 mm and a wall thickness of approximately 2,5 mm. The inner surface shall be smooth.

A poly(methyl methacrylate) or glass container is suitable.

6.1.2 Stirring apparatus, consisting of a vertical stainless steel shaft of sufficient length to reach to the bottom of the latex container (6.1.1) and tapering to approximately 6,3 mm in diameter at its lower end where an exactly centered, horizontal, smooth, stainless steel disc, 20,83 mm ± 0,03 mm in diameter and 1,57 mm ± 0,05 mm thick, is attached. The apparatus shall maintain stirring at a rotational frequency of 14 000 rev/min ± 200 rev/min throughout a test, at which frequency the shaft shall not run out of true by more than 0,25 mm.

6.1.3 Holder, for the latex container (6.1.1). The holding arrangement shall ensure that the axis of the rotating shaft is concentric with that of the latex container and that the bottom of the stirring disc is 13 mm ± 1 mm from the inner surface of the bottom of the latex container.

6.2 Means of heating.

Use either

— a water bath, capable of maintaining a temperature of 60 °C to 80 °C, or

— a glass tube, bent to a shape suitable for insertion in the latex concentrate together with a means of circulating water at a temperature of 60 °C to 80 °C through the tube.

6.3 Wire cloth, stainless steel, in accordance with ISO 3310-1, with an average aperture width of 180 µm ± 7,6 µm.

7 Sampling

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

NOTE 1 Mechanical stability may be adversely affected by the duration and temperature of storage of the sample.

8 Procedure

Carry out the determination in duplicate and within 24 h of first opening the sample bottle. If the total solids content and alkalinity of the latex concentrate are not known, determine them in accordance with ISO 124 and ISO 125, respectively.

NOTE 2 If the concentration of the carbon dioxide in the atmosphere in the vicinity of the mechanical stability measuring apparatus (6.1) is above normal [about 0,03 % (V/V)], the mechanical stability time of the latex will be reduced. This effect may be pronounced at carbon dioxide concetrations as low as 0,05 % (V/V). High carbon dioxide concentrations in the atmosphere may be caused by the proximity of any apparatus which generates carbon dioxide, such as certain gas heaters or oil heaters.

Dilute 100 g of latex concentrate, in a glass beaker, to 55,0 % (m/m) ± 0,2 % (m/m) total solids content with the appropriate ammonia solution (5.1 or 5.2). Without delay, warm the diluted latex with gentle stirring to 36 °C to 37 °C (i.e. slightly above the test temperature) by one of the means of heating (6.2). Immediately filter the diluted and warmed latex through the wire cloth (6.3) and weigh 80,0 g ± 0,5 g of the filtered latex into the container (6.1.1). Check that the temperature of the latex is 35 °C ± 1 °C. Place the container in position and stir the latex, ensuring that the rotational frequency of the stirrer is 14 000 rev/min ± 200 rev/min throughout the test, until the end-point is passed.

The arrival of the end-point is preceded by a marked decrease in the depth of the vortex around the stirring shaft.

Determine the end-point by removing a drop of the latex with a clean glass rod at intervals of 15 s and gently spreading the sample on a suitable surface, for example the palm of the hand, a glass microscope slide, the surface of water or the stainless steel wire cloth (6.3). Take the end-point as the first appearance

1) Suitable instruments are available commercially, e.g. from Klaxon Ltd., Warwick, Tyseley, Birmingham, B11 2HB, United Kingdom; telefax +44 121 708 1220.

of flocculum. Confirm the end-point by the presence of an increased amount of flocculum in a sample taken after stirring the latex for an additional 15 s.

9 Expression of results

Express the mechanical stability time of the latex concentrate as the number of seconds between the beginning of stirring and the end-point.

The results of the duplicate determinations shall agree to within 5 % of their mean value. If they do not, the test shall be repeated.

10 Test report

The test report shall include the following particulars:

a) all details necessary for the identification of the test sample;

b) a reference to this International Standard;

c) the mechanical stability time of the latex concentrate, quoted to the nearest 15 s;

d) the method used to detect the end-point (i.e. palm, microscope slide, water or wire cloth);

e) any unusual features noted during the determination;

f) details of any operation not included in this International Standard or in the International Standards to which reference is made, as well as details of any optional operation.

This page intentionally left blank

This page intentionally left blank

ICS 83.040.10

Descriptors: rubber, natural rubber, latex, concentrates, tests, mechanical tests, stability tests.

Price based on 3 pages