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Rubber latex, synthetic — Determination of high-speed mechanical stability

Latex de caoutchouc synthétique — Détermination de la stabilité mécanique à vitesse élevée

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Foreword

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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 2006 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*.

ISO 2006 was first published in 1974. This second edition cancels and replaces the first edition, of which it constitutes a minor revision.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Rubber latex, synthetic — Determination of high-speed mechanical stability

1 Scope and field of application

This International Standard specifies a method for the determination of the high-speed mechanical stability of synthetic rubber latex.

The stirring disk which is specified has a greater diameter than that specified for natural rubber latex concentrate in ISO 35, *Rubber latex, natural — Determination of mechanical stability*.

The test is applicable to synthetic rubber latices which have a viscosity, determined with the L instrument in accordance with ISO 1652, of up to 200 mPa·s (200 cP). Latices of higher viscosity shall be tested after dilution to a viscosity of 200 mPa·s (200 cP) or less, provided that such dilution[1] does not reduce the concentration of the latex by more than 10 % (m/m) total solids.

The duration of stirring shall be so selected that the latex does not increase in temperature to more than 60 °C and does not exceed a height of 100 mm in the latex container. The duration of stirring shall be agreed between the interested parties and shall not be longer than 30 min or less than 1 min. In the case of a latex which contains ammonia, the duration of stirring shall be limited, since loss of ammonia by evaporation during the test may cause additional destabilization.

The test does not necessarily indicate the stability of a synthetic rubber latex to high shear stress, for which a rubbing test may be more applicable.

2 References

ISO 123, *Ruber latex — Sampling.*

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

ISO 1652, *Rubber latex — Determination of viscosity.*

3 Principle

A test portion is stirred at high speed.

The amount of coagulum formed is regarded as an inverse measure of the mechanical stability of the latex.

4 Reagent

During the analysis, use only distilled water or water of equivalent purity.

Soap solution, 5 % (m/m) solution of potassium oleate of pH value 10, or, for use with a latex which is coagulated by potassium oleate solution, 5 % (m/m) solution of a synthetic anionic or non-ionic surfactant.

5 Apparatus

Ordinary laboratory apparatus and

5.1 Mechanical stability measuring apparatus[2], consisting of the following items:

5.1.1 Latex container, flat-bottomed, cylindrical, at least 100 mm high, with an internal diameter of 58 ± 2 mm and a wall thickness of about 2,5 mm. The inner surface shall be smooth, and a glass container is preferred.

5.1.2 Stirring apparatus, consisting of a vertical stainless steel shaft of sufficient length to reach to the bottom of the latex container (5.1.1) and tapering to approximately 6,3 mm diameter at its lower end, where is attached a horizontal, smooth, stainless steel disk 36,12 ± 0,03 mm in diameter and 1,57 ± 0,05 mm thick by means of a threaded stud at the exact centre of the disk. The apparatus shall maintain stirring at a rotational frequency of 14 000 ± 200 min^{-1} (233 ± 3 s^{-1})[3] throughout the test, at which frequency the shaft shall not run out of the true by more than 0,25 mm.

1) Dilution of the latex decreases its stability because the balance of free and absorbed soap is changed.

2) Suitable instruments are commercially available. Details may be obtained from the secretariat of ISO/TC 45 (BSI).

3) 1 s^{-1} = 1 Hz [= 1 revolution per second (r/s)].