ISO 35 Natural Rubber Latex Concentrate —Determination of Mechanical Stability

Description

4 Principle
A test portion of the latex concentrate is diluted to by mass 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 for dilution of the latex. Deionized water may be used for the detection of the end-point.
5.1 Ammonia solution containing by mass of ammonia (NH3), for use with latex concentrate having an alkalinity of at least (with respect to the latex concentrate).
5.2 Ammonia solution containing by mass of ammonia (NH3), for use with latex concentrate having an alkalinity of less than (with respect to the latex concentrate).

6 Apparatus
Standard laboratory apparatus, plus the following:
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: A flat-bottomed, cylindrical container at least high, with an internal diameter of 58 mm ± 1 mm 2,5 mm. The inner surface shall be smooth. A poly(methyl methylacrylate) or glass container is suitable.

6.1.2 Stirring apparatus, consisting of a vertical stainless-steel shaft of sufficient length to reach the bottom of the latex container (6.1.1) and tapering to approximately in diameter at its lower end, where an
exactly centred, 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 be capable of maintaining a stirring rate 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.

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

6.2 Large Petri dish, with a diameter not less than and depth not less than . The size of the Petri dish will permit several tests to be carried out in the same dish.
6.3 Pointed rods: Thin rods, of glass or an inert material such as stainless steel, which have been drawn out or machined to a point. The precise dimensions are not important since the function of the

rod is to pick up a small droplet of latex.

6.4 Means of heating: Use either
— a water bath, capable of maintaining a temperature of ;
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 through the tube.
6.5 Wire cloth, of stainless steel, complying with the requirements of ISO 3310-1, with an average aperture
width of.

7 Sampling
Carry out sampling in accordance with one of the methods specified in ISO 123.
NOTE Mechanical stability may be adversely affected by the duration and temperature of storage of the sample.

8 Procedure
8.1 General
Carry out the determination in duplicate within 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 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 by volume), the mechanical stability of the latex will be reduced. This effect may be pronounced at carbon dioxide concentrations as low as by volume. High concentrations of carbon dioxide in the atmosphere may be caused by the proximity of any apparatus which generates carbon dioxide, such as certain types of gas or oil heater.
8.2 Dilution and stirring
Dilute of latex concentrate, in a glass beaker, to by mass with the appropriate ammonia solution (5.1 or 5.2). Without delay, warm the diluted latex with gentle stirring to to (i.e. slightly above the intended test temperature) by one of the means of heating (6.4). Immediately filter the diluted and warmed latex through the wire cloth (6.5) and weigh of the filtered latex into the container (6.1.1).
Check the temperature of the latex is . Place the container in the holder (6.1.3) and stir the latex, ensuring that the rotational frequency of the stirrer is throughout the test, until the
end-point is passed.

8.3 Determination of end-point
The arrival of the end-point is preceded by a marked decrease in the depth of the vortex around the stirring shaft, accompanied by loss of turbulence and a change in the sound of the stirring action.
Two methods are permitted for the determination of the end-point. Inexperienced operators should have the method of determining the end-point demonstrated to them.
a) Palm-of-the-hand method: Determine the end-point by removing a drop of the latex with a clean glass rod at intervals of and gently spreading the sample on the palm of the hand. Take the end-point as the first appearance 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 .

b) Dispersibility-in-water method: Take a large Petri dish (6.2) and introduce to of water. It

will facilitate observation of the end-point if the Petri dish is standing on a dark surface such as black paper.
Using a pointed rod (6.3), pick up a small drop of latex and immediately touch the surface of the water with it. If the latex has not started to flocculate, it will disperse within a few seconds to give a milky cloud. If flocculation has commenced, the droplet will generally remain on the surface of the water without
dispersing. If it should start to disperse, then particles of flocculum will be readily apparent to the naked eye.

9 Expression of results
Express the mechanical stability time of the latex concentrate as the number of seconds between the start of stirring and the end-point.
Calculate the mean of the two determinations. If the results of the duplicate determinations do not agree to within of their mean value, the test shall be repeated.

Latex Mechanical Stability Tester According to ISO 35

- Resolution 1 r/min
- stirring speed 2000-24000 rpm
- Container Flat Bottom Glass barrel, Height : >100 mm, Inner diameter: 58 mm, Outer diameter: 63 mm
- Stirring rod 6.3mm
- Temperature 10-40C
- Power 1500W

Category

1. Equipment for Standards
2. Standards