

Transformed

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

**ISO RECOMMENDATION
R 1409**

**DETERMINATION OF SURFACE TENSION
OF RUBBER LATICES**

1st EDITION

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BRIEF HISTORY

The ISO Recommendation R 1409, *Determination of surface tension of rubber latices*, was drawn up by Technical Committee ISO/TC 45, *Rubber*, the Secretariat of which is held by the British Standards Institution (BSI).

Work on this question led to the adoption of Draft ISO Recommendation No. 1409, which was circulated to all the ISO Member Bodies for enquiry in March 1968. It was approved by the requisite majority of Member Bodies; however, in view of the amendments made in the Draft to overcome the objections raised by the Member Bodies from the United Kingdom and the U.S.A., the ISO/TC 45 Secretariat prepared a second Draft ISO Recommendation No. 1409. This second Draft was circulated to all the ISO Member Bodies for enquiry in April 1969. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Australia	Hungary	Spain
Austria	India	Sweden
Brazil	Iran	Switzerland
Canada	Israel	Turkey
Ceylon	Italy	U.A.R.
Chile	Netherlands	United Kingdom
Czechoslovakia	New Zealand	U.S.A.
France	Peru	U.S.S.R.
Germany	Poland	Yugoslavia
Greece	South Africa, Rep. of	

No Member Body opposed the approval of the second Draft.

This second Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided to accept it as an ISO RECOMMENDATION.

DETERMINATION OF SURFACE TENSION OF RUBBER LATICES

1. SCOPE

This ISO Recommendation describes a method for the determination of the surface tension of synthetic or natural rubber latices. The surface tension of the latex is determined at a total solids content of 40 % or less.

2. APPARATUS

- 2.1 *Leconte du Nouy tensiometer*, with platinum ring of either 60 mm or 40 mm nominal circumference.
- 2.2 *Glass dish* of 50 ml capacity with internal diameter of at least 45 mm.

3. PROCEDURE

Clean the dish carefully, since any contamination may produce variable results. Clean the tensiometer ring by washing in water and then heating in the oxidizing section of a Bunsen flame. Take extreme care to avoid distortion when handling the tensiometer ring.

Carefully calibrate the tensiometer scale against a standard weight in accordance with the manufacturer's instructions, so that the scale will read in mN/m. If necessary, dilute the latex to a total solids content of 40 ± 1 % with distilled water or water of equivalent purity. Strain approximately 25 ml of the latex, adjusted to a temperature* of 25 ± 2 °C, into the dish. Remove any skin or air bubbles on the surface of the latex by wiping with a piece of filter paper, and measure the surface tension immediately to avoid errors due to the formation of surface skin.

With the tensiometer protected from air currents, place the dish containing the latex beneath the ring on the adjustable platform of the instrument. Adjust the instrument so that the beam is in its balance position when the ring is dry and the scale reading is zero, then raise the platform until the latex makes contact with the ring. Immerse the ring beneath the surface of the latex. Slowly lower the platform by means of the platform adjusting screw and, simultaneously, increase the torsion of the wire, proportioning these two adjustments so that the beam remains exactly in its balance position. As the film adhering to the ring approaches the breaking point, proceed more slowly with the adjustments to make certain that the system is in its balance position when rupture occurs. Record the calibrated scale reading at which the ring detaches from the latex. Clean the ring as before and repeat the determination.

Discount the first reading and record the average of the next three readings, which should agree within 0.5 mN/m.

* The temperature coefficient of surface tension of SBR and NBR latices over the temperature range 20 to 30 °C is - 0.1 mN/m per °C. The corresponding coefficient for natural latices is + 0.1 mN/m per °C.