INTERNATIONAL STANDARD 1409

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Rubber latex — Determination of surface tension

Latex d'élastomère — Détermination de la tension superficielle

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (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 set up 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.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 45 has reviewed ISO Recommendation R 1409 and found it suitable for transformation. International Standard ISO 1409 therefore replaces ISO Recommendation R 1409-1970.

ISO Recommendation R 1409 was approved by the Member Bodies of the following countries :

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

No Member Body expressed disapproval of the Recommendation.

No Member Body disapproved the transformation of ISO/R 1409 into an International Standard.

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Rubber latex — Determination of surface tension

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies 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 REFERENCES

ISO 123, *Rubber latices — Sampling.*

ISO 124, *Rubber latex — Determination of total solids content.*[1]

3 APPARATUS

3.1 Leconte du Nouy tensiometer, with platinum ring of either 60 mm or 40 mm nominal circumference.

3.2 Glass dish of 50 ml capacity with internal diameter of at least 45 mm.

4 SAMPLING

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

5 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 millinewtons per metre.

If the total solids content of the latex is not known, determine it in accordance with ISO 124. 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[2] 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.

1) At present at the stage of draft (revision of ISO/R 124).

2) 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.