

SRI LANKA STANDARD 1304 : Part 3 : 2007
ISO 126 : 2005

METHODS OF
TESTING OF NATURAL RUBBER LATICES
PART : 3 DETERMINATION OF DRY RUBBER CONTENT

SRI LANKA STANDARDS INSTITUTION

- Blank Page -

**METHODS OF
TESTING OF NATURAL RUBBER LATICES
PART : 3 DETERMINATION OF DRY RUBBER CONTENT**

**SLS 1304 : Part 3 : 2007
ISO 126 : 2005
(Superseding SLS 325 : Section 3 : 2001)**

Gr. B

**SRI LANKA STANDARDS INSTITUTION
17, Victoria Place
Elvitigala Mawatha
Colombo - 08
SRI LANKA.**

Sri Lanka Standards are subject to periodical revision in order to accommodate the progress made by industry. Suggestions for improvement will be recorded and brought to the notice of the Committees to which the revisions are entrusted.

This standard does not purport to include all the necessary provisions of a contract.

© SLSI 2007

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the SLSI.

SRI LANKA STANDARD
METHODS OF TESTING OF NATURAL RUBBER LATICES
PART : 3 DETERMINATION OF DRY RUBBER CONTENT

NATIONAL FOREWORD

This Sri Lanka Standard was approved by the Sectoral Committee on Chemical and Polymer Technology and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 2007-02-02.

This standard is identical with **ISO 123 : 2001** Rubber Latex – Sampling published by the International Organization for Standardization and supersedes **SLS 325 : Section 1 : 2001**.

The text of the International Standard has been accepted as suitable for publication without deviation, as a Sri Lanka Standard. However, certain terminology and conventions are not identical with those used in Sri Lanka Standards.

Attention is therefore drawn to the following :

TERMINOLOGY AND CONVENTIONS :

In this revision the test of the International Standard has been accepted as a suitable for publication, without deviation, as a Sri Lanka Standard. However, certain terminology and conventions are not identical with those used in Sri Lanka Standards, attention is therefore drawn to the following :

- a) Wherever the words “International Standard” appear referring to a particular standard, they should be interpreted as “Sri Lanka Standard”
- b) The comma has been used throughout as a decimal marker. In Sri Lanka Standards it is the current practice to use the full point at the base as the decimal marker.
- c) Wherever page numbers are quoted, they are ISO/IEC page numbers.

Cross References

International Standard	Corresponding Sri Lanka Standard
ISO 124 Latex, Rubber Determination of total solids content	SLS 1304: Part 2 Methods of testing natural rubber latices – Determination of total solids content.
ISO 706 Rubber latex determination of coagulum content (sieve residue)	SLS1304: Part 6 Methods of testing natural rubber latices – Determination of coagulum content.
ISO 3310 Test sieves Technical requirements and testing – part 1- Test sieves of metal wire cloth	No corresponding Sri Lanka Standard.
ISO 15528 Paints, varnishes and raw materials for paints and varnishes – sampling	SLS 523 Methods of sampling paints

...../

INTERNATIONAL STANDARD

ISO 126

Fifth edition
2005-04-01

Natural rubber latex concentrate — Determination of dry rubber content

*Latex de caoutchouc naturel concentré — Détermination de la teneur
en caoutchouc sec*



Reference number
ISO 126:2005(E)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO 2005

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 126 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 fifth edition cancels and replaces the fourth edition (ISO 126:1995), which has been technically revised and a statement of the precision of the method added.

Natural rubber latex concentrate — Determination of dry rubber content

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 dry rubber content of 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, vulcanized latex or artificial dispersions of rubber and it is not applicable to synthetic rubber latices.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including amendments) applies.

ISO 123, *Rubber latex — Sampling*

ISO 124, *Latex, rubber — Determination of total solids content*

ISO/TR 9272, *Rubber and rubber products — Determination of precision for test method standards*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

natural rubber latex concentrate

natural rubber latex containing ammonia and/or other preservatives and which has been subjected to some process of concentration

4 Principle

A test portion of latex concentrate is diluted to 20 % (by mass) total solids content and acidified with acetic acid. The coagulated rubber is then formed into a sheet and dried at $70\text{ °C} \pm 5\text{ °C}$.

5 Reagents

During the analysis, use only reagents of recognized analytical quality and only distilled water or water of equivalent purity.

5.1 Acetic acid, 20 g/dm³ aqueous solution, for use with latex concentrate preserved with ammonia.

5.2 Acetic acid, 50 g/dm³ solution in aqueous propan-2-ol, prepared by adding 50 g of glacial acetic acid to 500 cm³ of propan-2-ol and then diluting the resultant solution to 1 dm³ with water. For use with latex concentrate preserved with potassium hydroxide.

5.3 Ethanol, 95 % (by volume).

6 Apparatus

Standard laboratory apparatus plus the following:

6.1 Dish, preferably made of glass or porcelain, approximately 100 mm in diameter and 50 mm deep.

NOTE Dishes made of aluminium are unsuitable for use with latex concentrate containing potassium hydroxide.

6.2 Balance, capable of weighing to an accuracy of 1 mg.

6.3 Circulating-air oven, capable of maintaining a temperature of 70 °C ± 5 °C.

7 Sampling

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

8 Procedure

8.1 If the total solids is not known, determine it in accordance with ISO 124.

8.2 Carry out the procedure in duplicate.

8.3 Weigh by difference from a conical flask fitted with a stopper, to the nearest 1 mg, 10 g ± 1 g of latex concentrate into the dish (6.1). Pour sufficient water down the inside edge of the dish to reduce the solids content of the latex concentrate to (20 ± 1) % (by mass). Carefully rotate the dish on a smooth surface to dilute the latex and ensure homogeneity. Proceed in accordance with 8.4 or 8.5 as appropriate, depending on whether the latex concentrate is preserved with ammonia or potassium hydroxide, respectively.

8.4 In the case of latex concentrate preserved with ammonia, add, over a period of 5 min, 35 cm³ ± 5 cm³ of 20 g/dm³ acetic acid solution (5.1), pouring it down the inside edge of the dish and slowly rotating the dish while the acid is being added.

Gently depress the coagulated sheet of rubber below the surface of the acid. Cover the dish with a watch glass and heat on a steam bath for 15 min to 30 min. If the serum remains milky, add 5 cm³ of 95 % (by volume) ethanol (5.3). Continue as described in 8.6.

8.5 In the case of latex concentrate preserved with potassium hydroxide, add 25 cm³ ± 5 cm³ of 50 g/dm³ acetic acid solution (5.2). Mix the acidified latex by means of a thin glass rod and wash any latex concentrate remaining on the rod into the dish with a little water.

Gently depress the coagulated sheet of rubber below the surface of the acid. Cover the dish with a watch glass and heat on a steam bath for 15 min to 30 min.

8.6 When the serum is clear, collect any small particles of coagulated rubber by rubbing with the main bulk. Soak the coagulated rubber in several changes of water until the water is no longer acidic to litmus.

Press the coagulated rubber to expel water and obtain a uniform sheet not exceeding 2 mm in thickness. A convenient method is to place the coagulated rubber carefully on a glass plate and with a glass stopper about 45 mm in diameter, or a small photographic roller, to press first around the circumference and then work towards the centre.

Rinse the sheet thoroughly in running water for at least 5 min in the case of latex concentrate preserved with ammonia, or at least 2 h in the case of latex concentrate preserved with potassium hydroxide. Allow the rinsed sheet to drip for a few minutes before transferring it to the drying oven (6.3).

8.7 Dry the sheet at a temperature of $70\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ until it has no white patches. If the sheet is dried on a watch glass, carefully turn it over two or three times during the first few hours of drying. Allow to cool in a desiccator for 30 min and weigh. Repeat the operation of drying, cooling and weighing until the loss in mass is less than 1 mg after heating for 30 min.

If the sheet becomes excessively sticky and it is suspected that significant oxidation is taking place at $70\text{ }^{\circ}\text{C}$, then use a lower drying temperature, for example $55\text{ }^{\circ}\text{C}$.

9 Expression of results

9.1 Calculate the dry rubber content (DRC) of the latex concentrate as a percentage by mass to the second decimal place from the equation:

$$\text{DRC} = \frac{m_1}{m_0} \times 100$$

where

m_0 is the mass, in grams, of the test portion;

m_1 is the mass, in grams, of the dry sheet.

9.2 The results of the duplicate determinations shall agree to within 0,1 % (by mass) of the mean value. If they do not, repeat the determination. Report the mean value.

10 Precision statement

10.1 The precision of this method was determined in accordance with ISO/TR 9272. Please refer to this document for terminology and explanations of statistical concepts. The precision results are given in Table 1. The precision parameters shall not be used for acceptance or rejection of any group of materials without documentation that the parameters are applicable to the particular group of materials and the specific test protocols of this test method. The precision is expressed on the basis of a 95 % confidence level for the values established for repeatability r and reproducibility R .

10.2 The results contained in Table 1 are average values and give an estimate of the precision of this test method as determined in an inter-laboratory test programme (ITP) conducted in 2001. Thirteen laboratories performed triplicate analyses on two samples, A and B, which were prepared from high-ammonia latex. Before the bulk was sub-sampled into 1-litre bottles labelled A and B, it was filtered and homogenized by thorough blending and stirring. Thus, essentially, samples A and B were the same and were treated as such in the statistical computations. Each participating laboratory was required to carry out the test using these two samples on the dates which had been given to the participants in the ITP.

10.3 A Type 1 precision was determined (the test samples used for the ITP were distributed in the prepared state, ready for testing).

10.4 Repeatability: The repeatability r (in measurement units) of this test method has been established as the appropriate value tabulated in Table 1. Two single test results, obtained in the same laboratory under normal test conditions, that differ by more than the tabulated value of r (for any given level) shall be considered to have come from different (non-identical) sample populations.

10.5 Reproducibility: The reproducibility R (in measurement units) of this test method has been established as the appropriate value tabulated in Table 1. Two single test results, obtained in two different laboratories under normal test conditions, that differ by more than the tabulated value of R (for any given level) shall be considered to have come from different (non-identical) sample populations.

10.6 Bias: In test method terminology, bias is the difference between an average test value and the reference (or true) test property value.

Reference values do not exist for this test method since the value (of the test property) is exclusively defined by the test method. Bias, therefore, cannot be determined for this particular test method.

Table 1 — Estimate of precision for DRC test method

Average	Within lab		Between labs	
	s_r	r	s_R	R
60,26	0,029	0,06	0,046	0,13
$r = 2,83 \times s_r$ where r is the repeatability (in measurement units) and s_r is the within-laboratory standard deviation. $R = 2,83 \times s_R$ where R is the reproducibility (in measurement units) and s_R is the between-laboratory standard deviation.				

11 Test report

The test report shall include the following particulars:

- a) a reference to this International Standard;
- b) all details necessary for the identification of the test sample;
- c) the mean value of the dry rubber content (DRC) of the latex concentrate, quoted to the nearest 0,01 % (by mass);
- d) the drying temperature, if other than $70 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$;
- 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 operation regarded as optional.

SRI LANKA STANDARDS INSTITUTION

The Sri Lanka Standards Institution (SLSI) is the National Standards Organization of Sri Lanka established under the Sri Lanka Standards Institution Act No. 6 of 1984 which repealed and replaced the Bureau of Ceylon Standards Act No. 38 of 1964. The Institution functions under the Ministry of Science & Technology.

The principal objects of the Institution as set out in the Act are to prepare standards and promote their adoption, to provide facilities for examination and testing of products, to operate a Certification Marks Scheme, to certify the quality of products meant for local consumption or exports and to promote standardization and quality control by educational, consultancy and research activity.

The Institution is financed by Government grants, and by the income from the sale of its publications and other services offered for Industry and Business Sector. Financial and administrative control is vested in a Council appointed in accordance with the provisions of the Act.

The development and formulation of National Standards is carried out by Technical Experts and representatives of other interest groups, assisted by the permanent officers of the Institution. These Technical Committees are appointed under the purview of the Sectoral Committees which in turn are appointed by the Council. The Sectoral Committees give the final Technical approval for the Draft National Standards prior to the approval by the Council of the SLSI.

All members of the Technical and Sectoral Committees render their services in an honorary capacity. In this process the Institution endeavours to ensure adequate representation of all view points.

In the International field the Institution represents Sri Lanka in the International Organization for Standardization (ISO), and participates in such fields of standardization as are of special interest to Sri Lanka.

SLS CERTIFICATION MARK

The Sri Lanka Standards Institution is the owner of the registered certification mark shown below. Beneath the mark, the number of the Sri Lanka Standard relevant to the product is indicated. This mark may be used only by those who have obtained permits under the SLS certification marks scheme. The presence of this mark on or in relation to a product conveys the assurance that they have been produced to comply with the requirements of the relevant Sri Lanka Standard under a well designed system of quality control inspection and testing operated by the manufacturer and supervised by the SLSI which includes surveillance inspection of the factory, testing of both factory and market samples.

Further particulars of the terms and conditions of the permit may be obtained from the Sri Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.

