

SRI LANKA STANDARD 1245 : 2003
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**METROLAC CHART FOR NATURAL
RUBBER LATEX**

SRI LANKA STANDARDS INSTITUTION

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SLS 1245 : 2003

Gr. 3

**SRI LANKA STANDARDS INSTITUTION
No. 17, Victoria Place,
Elvitigala Mawatha,
Colombo 08
Sri Lanka**

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SRI LANKA STANDARD
METROLAC CHART FOR NATURAL RUBBER LATEX

FOREWORD

This 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 2003-03-24.

The metrolac/latexometer is a special type of hydrometer, which is used to measure the density of natural rubber latex and is graduated in grammes per litre. The assumption underlying the use of the metrolac is that the relationship between the density and the dry rubber content (DRC) of field latex is consistent, irrespective of the source and dilution of the original latex. The determination of the dry rubber content of latex by the metrolac is important in calculating the amount of rubber present in latex for standardization and the addition of chemicals such as sodium bisulphite, bleaching agent and coagulating acid. The relationship between the density of latex and its DRC may be calculated from a knowledge of the density of rubber and of serum. The values for the density of serum and of rubber are not necessarily constant from one batch of latex to another.

In the preparation of the metrolac chart data pertaining to seasonal variations, age of the tree, clonal population and types of soil have been taken into consideration since these factors may contribute significantly to the metrolac reading.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or an analysis, shall be rounded off in accordance with **CS 102**. The number of significant places retained in the rounded off value shall be the same as that of the specified value in this standard.

1 SCOPE

This standard prescribes the Ready Reckoner Chart (Metrolac chart) readings for latex from which the dry rubber content could be estimated. The formulation of values have been done only for the dilution (1: 2 latex to water). This also prescribes the laboratory method of test for the determination of dry rubber content in latex.

2 REFERENCES

- ISO 126 Latex, rubber, natural concentrate – Determination of dry rubber content
- CS 102 Presentation of numerical values

3 DEFINITIONS

For the purpose of this standard the following definitions shall apply :

3.1 dry rubber content (DRC) : The percentage by mass of dried rubber obtained from acid coagulation of a latex sample.

3.2 natural rubber latex : Natural rubber latex free of foreign matter from *Hevea brasiliensis* containing ammonia and / or other preservatives.

4 METHOD OF TEST

4.1 The method prescribed in **Appendix A** shall be used in the field.

4.2 In case of dispute, the method prescribed in **ISO 126** shall be used as the reference method.

NOTES

Calibration of the Metrolac instrument shall be as follows:

1. Latexometer shall be tested using fresh field latex. Three points are taken ie. 7.5% DRC, 10% DRC and 15% DRC by approximately diluting latex with water. These readings are compared with the readings of the standard laboratory method (ISO 126). In order the latexometer to be acceptable, the difference between its reading and the standard laboratory method reading shall be within $\pm 3\%$.

2. The metrolac shall not be used in warm latex or latex exposed to sunlight for a long period or precoagulated latex since for each degree ($^{\circ}\text{C}$) rise in latex temperature, the metrolac estimation rises by $1\frac{1}{2}$ per cent.

3. Any additive other than those recommended shall not be used. It is important that the correct dosage is used.

4. Adulterated latex shall not be used.

READY-RECKONER CHART (METROLAC CHART)**(Dilution : 1 part of latex to 2 parts of water)****The dry weights are given in kilogrammes and the volume in litres**

VOLUME IN LITRES	METROLAC READINGS (M ₀)										
	50	60	70	80	90	100	110	120	130	140	150 & above
1	0.20	0.22	0.24	0.26	0.28	0.30	0.32	0.34	0.36	0.38	0.40
2	0.40	0.44	0.48	0.52	0.56	0.60	0.64	0.68	0.72	0.76	0.80
3	0.60	0.66	0.72	0.78	0.84	0.90	0.96	1.02	1.08	1.14	1.20
4	0.80	0.88	0.96	1.04	1.12	1.20	1.28	1.36	1.44	1.52	1.60
5	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	1.90	2.00
6	1.20	1.32	1.44	1.56	1.68	1.80	1.92	2.04	2.16	2.28	2.40
7	1.40	1.54	1.68	1.82	1.96	2.10	2.24	2.38	2.52	2.66	2.80
8	1.60	1.76	1.92	2.08	2.24	2.40	2.56	2.72	2.88	3.04	3.20
9	1.80	1.98	2.16	2.34	2.52	2.70	2.88	3.06	3.24	3.42	3.60
10	2.00	2.20	2.40	2.60	2.80	3.00	3.20	3.40	3.60	3.80	4.00
11	2.20	2.42	2.64	2.86	3.08	3.30	3.52	3.74	3.96	4.18	4.40
12	2.40	2.64	2.88	3.12	3.36	3.60	3.84	4.08	4.32	4.56	4.80
13	2.60	2.86	3.12	3.38	3.64	3.90	4.16	4.42	4.68	4.94	5.20
14	2.80	3.08	3.36	3.64	3.92	4.20	4.48	4.76	5.04	5.32	5.60
15	3.00	3.30	3.60	3.90	4.20	4.50	4.80	5.10	5.40	5.70	6.00
16	3.20	3.52	3.84	4.16	4.48	4.80	5.12	5.44	5.76	6.08	6.40
17	3.40	3.74	4.08	4.42	4.76	5.10	5.44	5.78	6.12	6.46	6.80
18	3.60	3.96	4.32	4.68	5.04	5.40	5.76	6.12	6.48	6.84	7.20
19	3.80	4.18	4.56	4.94	5.32	5.70	6.08	6.46	6.84	7.22	7.60
20	4.00	4.40	4.80	5.20	5.60	6.00	6.40	6.80	7.20	7.60	8.00
21	4.20	4.62	5.04	5.46	5.88	6.30	6.72	7.14	7.56	7.98	8.40
22	4.40	4.84	5.28	5.72	6.16	6.60	7.04	7.48	7.92	8.36	8.80
23	4.60	5.06	5.52	5.98	6.44	6.90	7.36	7.82	8.28	8.74	9.20
24	4.80	5.28	5.76	6.24	6.72	7.20	7.68	8.16	8.64	9.12	9.60
25	5.00	5.50	6.00	6.50	7.00	7.50	8.00	8.50	9.00	9.50	10.00
26	5.20	5.72	6.24	6.76	7.28	7.80	8.32	8.84	9.36	9.88	10.40
27	5.40	5.94	6.48	7.02	7.56	8.10	8.64	9.18	9.72	10.26	10.80
28	5.60	6.16	6.72	7.28	7.84	8.40	8.96	9.52	10.08	10.64	11.20
29	5.80	6.38	6.96	7.54	8.12	8.70	9.28	9.86	10.44	11.02	11.60
30	6.00	6.60	7.20	7.80	8.40	9.00	9.60	10.20	10.80	11.40	12.00
31	6.20	6.82	7.44	8.06	8.68	9.30	9.92	10.54	11.16	11.78	12.40
32	6.40	7.04	7.68	8.32	8.96	9.60	10.24	10.88	11.52	12.16	12.80

APPENDIX A

DETERMINATION OF DRY RUBBER CONTENT

A.1 PRINCIPLE

It is important that the metrolac instrument / latexometer is allowed to float freely without touching the walls of the vessel in which it is immersed, to enable accurate reading. The latexometer is graduated to give a direct reading of the dry rubber content in grammes per litre of the 1 : 2 diluted latex.

A.2 PROCEDURE

A.2.1 Fresh latex collected in the field is sieved through a 40 μ sieve to remove extraneous matter. A known volume is taken and diluted with water in the ratio 1: 2. The diluted latex is then poured into a cylindrical vessel and the latexometer is allowed to float freely in it. Once it settles the corresponding reading of the latexometer noted (M_0).

A.2.2 Then the total volume of the fresh latex is measured by using a dip stick and a weighing bucket.

A.3 CALCULATION

Total dry rubber content of latex in kilogrammes = $X \times V_1$

where ,

X is the value in kilogrammes per litre, corresponding to the metrolac reading (M_0) in the Ready - Reckoner Chart; and

V_1 is the volume of total fresh latex,in litres.

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SRI LANKA STANDARDS INSTITUTION

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