SRI LANKA STANDARD 532 :2004

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SPECIFICATION FOR
HOUSEHOLD RUBBER GLOVES
(FIRST REVISION)

SRI LANKA STANDARDS INSTITUTION

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SLS 532 : 2004

Gr. 6

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.

SRI LANKA STANDARD
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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 2004-01-23.

This specification was first published in 1981. In this revision, present technological improvements and trade practices in this field have been considered.

This specification covers rubber gloves made of natural or synthetic rubber latex or their blends. Gloves shall not contain any substance known to be toxic or otherwise harmful under normal conditions of use.

Guidelines for the determination of compliance of a lot with the requirements of this standard based on statistical sampling and inspections are given in Appendix **A.**

For the purpose of deciding whether a particular requirement of this specification 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 specification.

In the preparation of this specification, the assistance derived from the following publications is gratefully acknowledged :

ISO	4648 :1991	Determination of dimension of test pieces and products for test purpose
ASTM D	4679-01	Standard specification for rubber general purpose, Household or Beautician Gloves
BS EN	420 : 1994	General requirements for gloves
JIS T	2042 : 1994	Household rubber gloves

1 SCOPE

This specification prescribes the requirements, sampling and methods of test for household rubber gloves made of natural or synthetic rubber latex or their blends by dipping process.

2 REFERENCES

CS 102	Presentation of numerical values
SLS 297	Method of testing vulcanized rubber
	Part 2 : Tensile stress - strain properties.
	Part 5 : Accelerated ageing tests.
SLS 359	Surgical rubber gloves
SLS 428	Random sampling methods

3 REQUIREMENTS

3.1 General

3.1.1 Gloves shall be made from natural or synthetic latex or their blends by dipping process. The finish of the outer surface may be smooth or textured with or without a pattern on the finger and/or palm area.

3.1.2 Gloves shall have either a rolled, natural or cut edge.

3.1.3 Gloves shall be uniform in finish and free from discolouration, embedded foreign matter, blisters, air bubbles or any other physical defects except minor surface irregularities that can cause no hazard or significant degradation of quality and serviceability of gloves.

3.2 Dimensions

3.2.1 *Length*

The Length of the glove when measured from the tip of the middle finger to end of the glove on back of the glove (see figure 1) shall not be less than 280 mm for all sizes.

3.2.2 *Width*

The width of the glove when measured at a distance of 20 mm towards the index finger from the crotch (see figure 1) between the thumb and the index finger of the glove shall have dimensions in accordance with Table **1**.

TABLE 1 – Sizes and palm width of gloves

Designation	Size					Tolerance
	6	7	8	9	10	
Palm width of the glove, mm	90	100	105	115	125	± 5

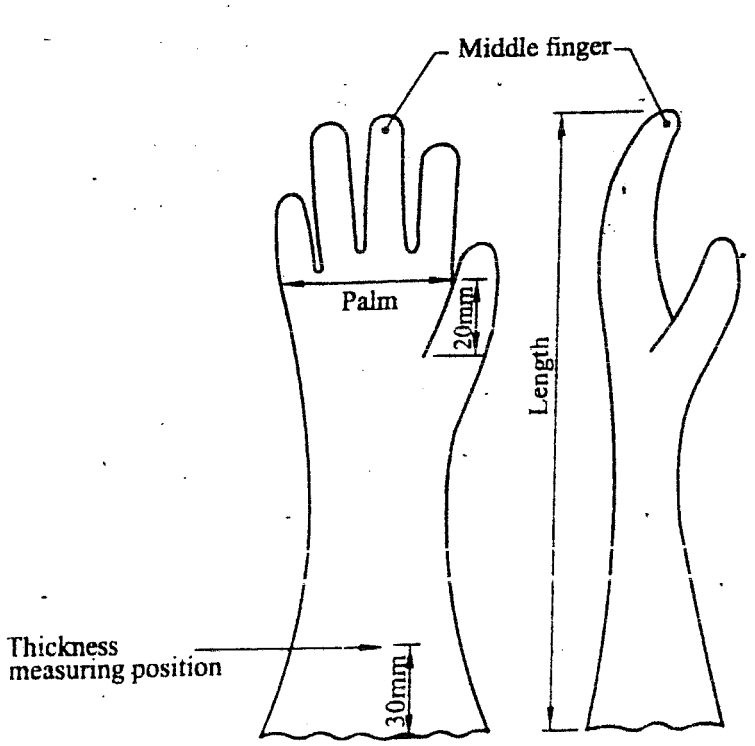

Figure 1

3.2.3 Thickness

The thickness of the single wall when measured at a point 30 mm away from the edge as shown in figure 1 shall be not less than 0.30 mm when measured in accordance with Appendix **B**.

3.3 Performance

3.3.1 Gloves shall show no signs of leaks when tested in accordance with Appendix **C**.

3.3.2 ***Tensile strength and elongation at break***

3.3.2 (a) ***Before ageing***

The tensile strength and elongation at break of the material of the glove when tested in accordance with **SLS 297 : Part 2** shall comply with the requirements given in Table **2**.

3.3.2 (b) ***After ageing***

Accelerated ageing shall be performed in accordance with **SLS 297 : Part 5** at a temperature of $70 \pm 2\ ^{o}C$ for 168 hours. After accelerated ageing tensile strength and elongation at break when tested in accordance with **SLS 297 : Part 2** shall comply with the requirements given in Table **2** .

TABLE 2 - Tensile strength and elongation at break

Sl. No. (1)	Characteristic (2)	Requirement (3)
i)	Tensile strength before ageing, MPa, min.	15
ii)	Elongation at break before ageing, per cent, min.	400
iii)	Tensile strength after accelerated ageing, MPa, min.	11.75
iv)	Elongation at break after accelerated ageing, per cent min .	300

3.3.3 ***Reaction of aqueous extract***

The aqueous extract from the rubber shall not be acidic to methyl orange or alkaline to phenolphthalein when tested in accordance with Appendix **D.**

4 PACKAGING AND MARKING

4.1 PACKAGING

The gloves shall be packed in pairs or in any other manner in polythene bags or other suitable material as agreed between the manufacturer and the purchaser.

4.2 MARKING

The following particulars or any other information as agreed between the supplier and the purchaser shall be legibly and indelibly marked :

4.2.1 *On the glove*

Size of the glove

4.2.2 *On the pack*

a) Name of the product ;
b) Size of the glove;
c) Name and address of manufacturer /supplier and country of origin;
d) Month & year of manufacture;
e) Batch or code number;
f) Brand name or registered trade mark ; and
g) Type of polymer.

5 HANDLING AND STORAGE

5.1 Rubber gloves shall be stored away from sunlight, at a temperature below 40 ^{o}C.

5.2 Natural rubber gloves shall not be allowed to come into contact with oil-based antiseptics phenols and their derivatives, petroleum based products or other materials harmful to rubber.

6 METHOD OF TEST

6.1 Conditioning of test pieces

The test specimens shall be conditioned to a moisture equilibrium in an atmosphere of 65 ± 2 per cent relative humidity and at a temperature of 27 ±2 ^{o}C, for 16 hrs and if possible tested in that atmosphere or soon after removal from the atmosphere.

7.1 Preparation of test specimens of gloves

For tensile strength and elongation at break, all the tests shall be carried out on the material obtained from a non patterned area of the glove. Four dumb-bell test pieces conforming with Type 1 of **SLS 297** Part **2** shall be used for each test. The dumb-bell shall be cut in such a way that the test length is parallel to the length of the glove. For accelerated ageing test, a representative sample of gloves as such or a suitable test piece shall be taken

APPENDIX A
COMPLIANCE OF A LOT

The sampling scheme given in this Appendix should be applied where compliance of a lot to the requirements of this standard is to be assessed based on statistical sampling and inspection.

Where compliance with this standard is to be assessed based on manufacturer's, control systems coupled with type testing and check tests or any other procedure, an appropriate scheme of sampling and inspection shall be adopted.

A.1 LOT

In any consignment, all packages of household rubber gloves belonging to one batch of supply or manufacture, shall constitute a lot.

A.2 SCALE OF SAMPLING

A.2.1 The samples shall be tested from each lot for ascertaining its conformity to the requirements of this specification.

A.2.2 Number of packages to be selected from a lot shall be in accordance with column (**1**) and column (**2**) of Table **3.**

A.2.3 If the packages are packed in cartons, 10 percent of the cartons subject to a minimum of two (02) cartons shall be selected and as far as possible an equal number of packages shall be selected from each carton so selected to form a sample as given in Column (**2**) of Table **3**.

TABLE 3 - Scale of sampling

Number of packages of gloves in a lot (pairs) (1)	Number of packages of gloves to be selected (pairs) (2)	Acceptance number (pairs) (3)	Sub sample size (pairs) (4)
Up to 500	10	0	3
501 to 3 200	13	1	3
3 201 to 10 000	20	1	5
10 001 to 35 000	32	2	8
35 001 and above	50	3	8

A.2.4 The cartons and packages shall be drawn at random. In order to ensure randomness of selection, tables of random numbers as given in **SLS 428** shall be used.

A.3 NUMBER OF TESTS

A.3.1 Each package selected as in **A.2.2** shall be inspected for packaging and marking requirements.

A.3.2 All the gloves selected as in **A.2.2** shall be inspected for marking requirements given in **4.2**.

A.3.3 All the gloves in each package selected as in **A.2.2** shall be examined for requirements given under **3.2**.

A.3.4 Three sub samples of size of each as given in column (**4**) of table **3** shall be selected from the package selected as in **A.2.2.**

A.3.4.1 Each glove in the first sub sample selected as in **A.3.4** shall be tested for the requirement given in **3.3.1**.

A.3.4.2 Each glove in the second sub sample selected as in **A.3.4** shall be tested for the requirement given in **3.3.2**.

A.3.4.3 Each glove in the third sub sample selected as in **A.3.4** shall be tested for the requirement given in **3.3.3**.

A.4 CRITERIA FOR CONFORMITY

A lot shall be declared as conforming to the requirements of this specification if the following conditions are satisfied.

A.4.1 Each package inspected as in **A.3.1** satisfies the relevant requirement.

A.4.2 Each glove inspected as in **A.3.2** satisfies the relevant requirements.

A.4.3 The number of packages (pairs) of gloves not conforming to the requirement given under **3.2** when tested as in **A.3.3** is less than or equal to the corresponding acceptance number specified in column (**3**) of table **3**.

A.4.4 Each glove tested as in **A.3.4.1** satisfies the relevant requirement.

A.4.5 Each glove tested as in **A.3.4.2,** satisfies the relevant requirements.

A.4.6 Each glove tested as in **A.3.4.3,** satisfies the relevant requirement.

APPENDIX B
DETERMINATION OF THE THICKNESS

B.1 APPARATUS

Thickness gauge, with flat solid base plate on which the test piece rests. It shall have a circular foot with a diameter of not more than 10 mm. The gauge shall be capable of measuring thickness with an accuracy of 0.01 mm. The circular foot shall exert a pressure of 22 ± 5 kPa.

B.2 PROCEDURE

Measure the thickness of a single wall of intact glove on smooth area of the cuff at 3 points, 30 ± 5 mm away from the edge of the glove. The median of the three values shall be reported as the thickness of the glove.

APPENDIX C
DETERMINATION OF LEAKS IN THE GLOVE

C.1 PROCEDURE

From each sample, take one glove and fit it at the cuff to an air –tight adapter and inflate the glove with air to a pressure of 30 kPa. Immerse the assembly in water for, 1 minute, then, while it is still immersed, examine the glove for leaks.

APPENDIX D
DETERMINATION OF REACTION OF AQUEOUS EXTRACT

D.1 PROCEDURE

Weigh 10 g of the sample. Cut the sample into small pieces of about 3-mm squares. Put it into a chemically resistant glass flask and add 300 ml distilled water. Fit the flask with a water cooled reflux condenser with a ground glass connection and heat the water to boiling point. Continue boiling for half an hour. Detach the flask from the condenser and cover immediately to prevent any possible contamination and cool the contents to room temperature.

Note the reaction of the aqueous extract separately with methyl orange and phenolphthalein.

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SRI LANKA STANDARDS INSTITUTION

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