SRI LANKA STANDARD 254 : 1989

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CODE OF PRACTICE FOR

RETREADING PNEUMATIC TYRES

(FIRST REVISION)

SRI LANKA STANDARDS INSTITUTION

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SLS 254 : 1989

Gr.11

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SRI LANKA STANDARD

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(FIRST REVISION)

FOREWORD

This Sri Lanka Standard was authorized for adoption and publication by the Council of the Sri Lanka Standards Institution on 1989-07-25, after the draft, finalized by the Drafting Committee on Retreading Pneumatic Tyres, had been approved by the Chemicals Divisional Committee.

This specification, first issued in 1973, had been drawn up in the interests of motoring safety, to which end it provides a nationally recognized standard for retreading tyres. Its application is intended to provide useful guidelines for retreaders and users and to protect users against inferior material and workmanship.

In this revision retreading of radial-ply pneumatic rubber tyres has also been covered. The definitions and the requirements for the tread rubber compound and repair materials have been updated. Inspection criteria, repair of injuries, reconditioning procedures and requirements for completed tyres have been revised to keep abreast of progress made by the industry.

All standard values given in this standard are in SI units.

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 figures to be retained in the rounded off value shall be the same as that of the specified value in this specification.

In the preparation of this standard, assistance obtained from the publications of the International Organization for Standardization, the Standards Association of Australia, British Standards Institution, and the Standards and Industrial Research Institute of Malaysia is gratefully acknowledged.

1 SCOPE

1.1 This standard specifies the minimum requirements for retreading and relugging of pneumatic Radial-ply and Cross-ply (Diagonal-ply) rubber tyres for passenger cars, buses, trucks, commercial vehicles, tractors, earthmoving and other off-the-road vehicles.

1.2 It specifies certain material requirements, the examination, limits of damage, preparation and repairs permitted to the tyre casing before processing, and inspection after curing. Except where otherwise stated, these requirements apply to both tubed tyres and tubeless tyres.

2 REFERENCES

CS 102 Presentation of numerical values.
SLS 297 Methods of testing vulcanized rubber
Part 1 : Determination of relative density and density
Part 2 : Determination of tensile stress - strain properties
Part 4 : Determination of hardness
SLS 484 Methods of test for raw natural rubber.
Part 2 : Determination of ash.

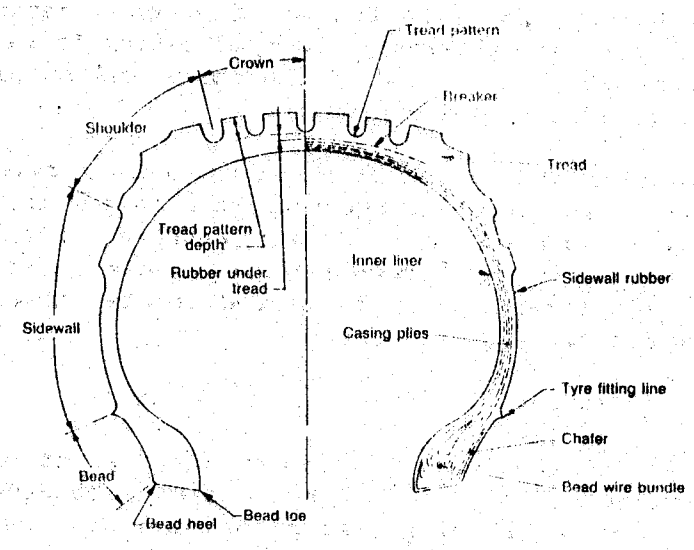

Fig. 1. TYPICAL SECTION OF CROSS PLY TYRE

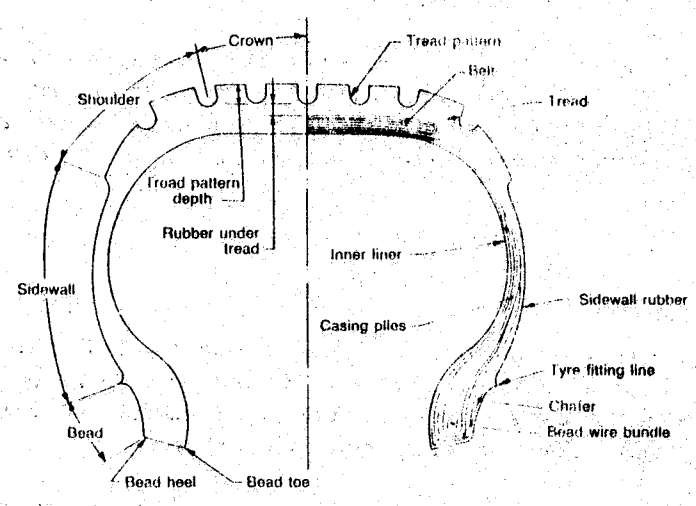

Fig. 2 TYPICAL SECTION OF RADIAL-PLY TYRE

3 DEFINITIONS

For the purpose of this specification the following definitions shall apply. (See also Figures 1 and 2)

3.1 **buffing** : The preparation of the tyre surface prior to the application of unvulcanized material.

3.2 **bead** : Annular structure of rubber, with or without fabric, and with high-tensile steel wires built into the tyre casing to maintain a tight fit on the rim.

3.3 **bead heel** : That part of the bead which fills the angle formed by the junction of the rim flange and rim lodge.

3.4 **bead toe** : The innermost part of the bead opposite the heel.

3.5 **breaker** : Strip or cord material (textile or steel wire) embodied circumferentially within a pneumatic tyre immediately above the casing and of about the same width as the tread.

3.6 **cure** : The process of vulcanization of rubber by applying heat, pressure and time.

3.7 **chafer** : Rubberized textile material in the bead area to protect the carcass against rim chafing.

3.8 **cords** : the separate strands forming the casing plies, breakers or belts in the tyre.

3.9 **cross-ply tyre** : A tyre in which the cords in tyre carcass are laid at alternate angles which are substantially less than 90 degrees to the centreline of the tread.

3.10 **crown** : The portion of the tread between the shoulders of a tyre.

3.11 **diehart process** : A process by which worn tyres are buffed, and extruded rubber strip is applied and cured in an autoclave, followed by design cutting.

3.12 **inner liner** : A layer of rubber, from bead-toe to bead-toe, on the inside of the casing.

3.13 **ply** : A layer of rubber coated, substantially parallel cords forming part of the tyre carcass.

3.14 **ply rating** : A term used to identify a given tyre with its maximum recommended load when used in a specific type of service. It is an index of tyre strength, and does not necessarily represent the number of cord plies in a tyre.

3.15 **ply separation** : The parting of rubber compound between adjacent plies.

3.16 **retreading (full treading)** : A process of reconditioning a worn tyre by top-capping, recapping or remoulding.

3.17 **recapping (toe-capping)** : A process in which rubber is removed from the worn tread and over the shoulders and new rubber is applied.

3.18 **remoulding** : A process in which rubber is removed as necessary and new rubber, extending from bead area to bead area is applied.

3.19 **relugging**: A process by which worn tyres are rasped or buffed, preformed lugs are applied and the tyre cured in an autoclave.

3.20 **radial-ply tyre** : A tyre in which the ply cord, which extend from bead to bead, are laid at substantially 90 degrees to the centreline of the tread, the carcass being stabilized by a circumferential belt comprising two or more layers of substantially inextensible cord material.

3.21 **shoulder** : The upper sidewall areas of the tyre casing immediately adjacent to the tread area. Usually composed of ribbing or fluting projecting radially from the tread area.

3.22 **sidewall** : The portion of a tyre between the shoulder and the bead.

3.23 **sidewall rubber** : A layer of rubber to protect the outside of the tyre carcass from damage.

3.24 **skiving** : The removal of damaged material by means of a bevelled cut.

3.25 **top-capping** : A process in which the worn tread rubber only is renewed.

3.26 **tread** : Outermost band of patterened rubber to provide the resistance to road wear, to protect the tyre casing and to provide road grip.

3.27 **tread pattern depth (skid-depth)** : The depth of the design of tread grove.

3.28 **tread rubber and camelback**

3.28.1 *tread rubber* : Unvulcanized rubber compound used for retreading tyres.

3.28.2 *camelback* : Shaped strip of unvulcanized tread rubber.

3.29 **tread wear indicator** : A feature incorporated into the tread of a tyre which gives a visual indication when the tread has worn down to a predetermined minimum tread pattern depth.

3.30 **tyre casing (carcass)** : Rubber bonded cord structure of a tyre to contain the inflation pressure.

3.31 **tyre fitting lines** : Circular moulded lines on the outside of the upper bead area to facilitate concentricity when fitting.

3.32 **undertread** : The rubber between the base of the tread design and the carcass (or breaker or belt if included).

4 MATERIALS

4.1 Tread rubber compound and repair materials

4.1.1 *General requirements*

Tread rubber and other repair materials shall be of such a quality that will provide good resistance to tread wear under normal operating conditions. The tread rubber used shall be of a grade and quality level which is considered as a manufacturer's highest quality, exclusive of premium grades designed for high abrasion resistance, Physical properties of tread rubber when tested shall comply with Tables 1 and 2.

4.1.2 *Labelling*

Each pack of camelback shall be labelled with the following particulars:

4.1.2.1 Manufacturer's name or registered trade name.

4.1.2.2 Size.

4.1.2.3 Date of manufacture.

4.1.3 *Age limits and storage conditions*

Tread rubber for all types of pneumatic tyres, repair materials, and unvulcanized accessories shall be stored in a dry place, and shall be protected from direct exposure to sunlight. It is advisable to store them at low temperatures. (see Notes 1 to 3).

NOTE 1

At a temperature of 27 °C, tread rubber and repair materials are expected to remain in a satisfactory condition for a minimum period of six months after date of receipt from the manufacturer. It is considered that colder storage conditions extend the shelflife of the product; warmer storage conditions tend to shroten the shelflife. Tread rubber and repair materials exposed to temperature of 35 °C to 43 °C may be expected to have their shelflife reduced by 50 per cent or more. Tread rubber and rapair materials will not tolerate temperature of over 43 °C for more than a short time without danger of vulcanization.

NOTE 2

Tread rubber repair materials and all vulcanized accessories are made to perform under existing field conditions, and at the same time to be satisfactory in conditions of shelf ageing. These materials are shipped to widely varied climates and are subjected to varying types of storage. Thus the hazard of deterioration is always present.

NOTE 3

The storage period and conditions specified reflect general experience of the industry. Violation of the requirements of this specification may be reflected as an appreciable shortening of the shelflife of the material, and does not mean that such material is unusable or subject to failure because of age.

TABLE 1 - Physical properties of tread rubber based on 100 per cent natural rubber (passenger car tyres)

Sl. No. (1)	Characteristic (2)	Before ageing (3)	Allowable change after ageing in air for 3 days at 100°C (4)	Method of test (5)
i)	Tensile strength, MPa,min	22.5	± 20 per cent	SLS 297: Part 2
ii)	Elongation at break, per cent, min	450	+ 0 per cent - 20 per cent	SLS 297: Part 2
iii)	Tensile stress at 300 per cent elongation MPa, min (modulus at 300 per cent min)	7.8	-	SLS 297: Part 2
iv)	Resilience per cent, max	48	-	Appendix A
v)	Hardness (IRHD)	55 to 65	+4 -0	SLS 297: Part 4
vi)	Relative density max	1.20	-	SLS 297: Part 1
vii)	Ash per cent max	7.0	-	SLS 484: Part 2
viii)	Acetone extract, per cent max.	15.0	-	Appendix B

TABLE 2 - Physical properties of tread rubber based on 100 per cent natural rubber (tyres other than passenger cars)
(Requirements in Column (4) apply to "on/off-the-road" vehicle tyres)

Sl. No.	Property	Before ageing		Allowable change after ageing in air for 3 days at 100°C	Method of test
(1)	(2)	(3)	(4)	(5)	(6)
i)	Tensile strength, MPa, min	22.5	22.5	±20 per cent	SLS 297: Part 2
ii)	Elongation at break, per cent, min	450	500	+0 per cent -20 per cent	SLS 297: Part 2
iii)	Tensile stress at 300 per cent elongation MPa, min (modulus at 300 per cent, min)	9.8	9.8	-	SLS 297: Part 4
iv)	Resilience, per cent, max	48	48	-	SLS 297: Part 1
v)	Hardness (IRHD)	60 to 70	58 to 80	+4 -0	SLS 297: Part 2
vi)	Relative density, max	1.20	1.25	-	SLS 297: Part 2
vii)	Ash per cent, max	7.0	Not specified	-	SLS 484: Part 2
viii)	Acetone extract, per cent, max	15.0	15.0	-	Appendix B

4.2 Cushion stock

The cushion stock when used shall be made of materials compatible with both natural and synthetic rubbers and shall be suitable for filling in worn (low) spots under tread rubber, and for filling around the complete circumference of the tyre being retreaded to ensure proper undertread and give good bonding between the tyre casing and tread. This compound shall be softer than the tread rubber.

4.3 Tread repair stock

Tread repair stock shall be suitable for filling in repairs to tyres in the tread region, and shall have substantially the same resistance to wear as tread rubber.

4.4 Cement

The cement shall be capable of being vulcanized and shall be suitable for use in retreading and repairing tyres.

5 PRELIMINARY INSPECTION OF TYRE

5.1 Method of inspection

Each tyre shall be carefully inspected. The tyre shall be placed on a mechanical spreader (see Note) which distorts the natural contour of the tyre sufficiently to expose any evidence of ply separation, impact breaks or any other defects, without damaging the bead. Adequate lighting shall be provided to examine the carcass.

NOTE

Use of a spreader is not necessary in the case of tractor tyres or earth moving vehicle tyres.

5.2 Inspection criteria

5.2.1 Tyres accepted for retreading shall not contain any of the following defects or injuries.

5.2.1.1 Ply separation

5.2.1.2 Tread separation other than that which can be removed in the buffing operation.

5.2.1.3 Bead damage, other than chafer

5.2.1.4 Casing break-up (flex break)

5.2.1.5 Damage through the chafer. In the case of truck tyres damage not exceeding two plies and less than 75 mm in length.

5.2.1.6 Loose band ply cords or evidence of being run flat.

5.2.1.7 Damage in excess of surface weather checking.

5.2.1.8 Passenger tyres having radial cracks into cord.

5.2.1.9 Truck tyres with more than three radial cracks, which extend more than 25 per cent into the cord body and are over 25 mm in length.

5.2.1.10 Tyres having circumferential cracks into cord.

5.2.1.11 Tyres that have been oil-or solvent-soaked, resulting in softened rubber to the plies or any other chemical attack.

5.2.1.12 Car tyres having wear extending into one of the body plies.

5.2.1.13 Generally weakened condition due to age, moisture and exposure.

5.2.1.14 Broken, damaged or exposed bead wires.

5.2.1.15 Burnt beads extending into cord.

5.2.1.16 Injury to the cord plies in the bead area.

5.2.1.17 Any other condition that could result in premature failure.

5.2.2 Injuries other than those described in 5.2.1 shall be permitted within the limits laid down in Tables 3 and 4. The extent of injury shall be measured at the widest point of skived hole. There shall be no limit to the extent of the surface repairs.

TABLE 3 - Casing damage limits for Passenger car tyres, (Cross-ply, and Radial-ply).

Sl. No.	Type of damage	Maximum permitted number of reinforced repairs*	Maximum permitted size at base of damage after preparation (longest dimension), mm		
			Crown	shoulders	sidewall
(1)	(2)	(3)	(4)	(5)	(6)
i)	Cross-ply and bias-belted tyres:				
	Ply damage through 50 per cent or less of the carcass	2	25	6	-
	Ply damage through more than 50 per cent of the carcass	1 combined total in any one tyre shall not exceed 2	20	6	-
	Ply damage in the side wall region	None	-	-	Nil
ii)	Radial-ply tyres:				
	Ply damage	2 (total)	15	Nil	Nil

* *The maximum permitted number of reinforced repairs includes any satisfactory previous repairs existing in the casing.*

TABLE 4 - Tyres other than Passenger cars

Sl. No.	Area in which the injury is located	Maximum dimension of injury at base of skive for which spot repair is permitted	Maximum extent of injury at base of skive for which reinforcement and section repairs are permitted	
		All tyres other than passenger	Truck tyres	Tractor and other off-the road tyres*
(1)	(2)	(3)	(4)	(5)
i)	Crown	Nominal cross-section of the tyre	Length 1/3 nominal cross-section of the tyre and the width 1/6. Not closer together than 1/3 of circumference of the tyre	1/2 nominal cross-section of the tyre
ii)	Shoulder	Nominal cross-section of the tyre	Not permitted	1/2 nominal cross-section of the tyre
iii)	Sidewall	Nominal cross-section of the tyre	1/4 nominal cross-section of the tyre. Not closer together than 1/3 of circumference of the tyre	1/2 nominal cross-section of the tyre
iv)	Bead	Nominal cross-section of the tyre	Not permitted	Not permitted

* *This limit for tractor and other off-the-road tyres may exceed at the discretion of the reconditioner.*

6 PREPARATION FOR RECONDITIONING

6.1 Moisture

All tyres for reconditioning shall be thoroughly dry and all cords free from moisture.

6.2 Repair of injuries

Repairs shall be carried out in accordance with the provisions of 5. Nail holes shall be thoroughly cleaned and inspected for extent of casing injury. If the injury dimensions are below the specified values for nail hole repairs, nail holes shall be repaired in the conventional manner by filling with a plug and treating to provide a sound tyre body for processing. If the extent of injury is higher, section repairs and reinforcement repairs shall be carried out with a reinforcing material.

6.3 Venting

Each tyre for reconditioning shall be satisfactorily vented to allow for the escape of air trapped in the cords.

6.4 Before applying the tread rubber the following work shall be done.

6.4.1 All reinforced repair cavities shall be filled with the correct rubber compound or compounds.

6.4.2 All internal lining damage and punctures, however small shall be sealed internally.

6.4.3 All exposed cords shall be covered with the correct rubber compound.

6.4.4 Low spots and minor repairs shall be built up with the correct rubber compound.

6.4.5 Rubber splits through raidal-ply casings in the crown and shoulder regions of tyres that have their breakers removed for subsequent replacement need not have a reinforced repair.

7 RECONDITIONING

7.1 Buffing

7.1.1 The tyre shall be uniformly buffed using a matrix template or other satisfactory system of measurement to ensure proper matching of buffed crown contour with matrix tread contour and overall diameter. The buffed surface shall be of a smooth texture, and free from moisture, loose cords and foreign materials which would adversely affect adhesion properties between casing and tread rubber. The buffed surface shall not be "burnt" or sticky after buffing.

7.1.2 An efficient system shall be in operation to identify and ensure proper buffed contour. Casing shall be buffed to establish dimensions compatible with the matrix in which the tyre is to be cured. Dimension contour charts shall be available to, and shall be used by, the buffing operator.

7.1.3 After buffing, the tyre shall be inspected for any defects such as ply separation.

7.2 Cementing

7.2.1 The cementing process shall begin within 12 hours of the completion of the buffing operation to avcid loss of adhesion due to surface oxidation.

7.2.2 Tyres to be cemented shall be free from moisture and foreign material such as buffing dust, dirt, loose cords or other deleterious matter.

7.2.3 Extreme caution shall be taken in the use of air lines to blow dust from the surface of a tyre. Air lines connected to cement spray units or blow gun shall be effectively trapped to eliminate water and oil. The operator shall have an air flow of 30 linear metres per minute past his head while spraying cement.

7.2.4 The buffed surface shall not be handled after cementing.

7.3 Building

7.3.1 *Uncured tread retreading*

7.3.1.1 Full cap

The full cap shall be made with wing-type tread rubber, and shall extend over shoulders.

7.3.1.2 Top cap

The top cap shall extend across the tread area only, thus conforming with the tread known commercially as "top cap".

7.3.1.3 Breaker or cord body

If the breaker or cord body is exposed on any portion of the buffed area, it shall be covered with a suitable protective stock, before applying the tread rubber.

7.3.1.4 Splicing

Tread rubber shall be skived or butted at one end. The tread rubber shall then be applied to the tyre and shall be centred over the entire circumference. After the backing is removed, the surface shall not be handled or touched. The other end of the tread rubber shall then be skived or butted to match the end previously skived or butted.

7.3.1.5 Stitching

Stitching or rolling of tread rubber shall then be carried out, starting at the centre and working to the edges in order to eliminate air pockets. Wrinkles at edges of retread (on wing dies) shall be thoroughly stitched. Edges of top cap tread rubber shall be tight. All air pockets shall be eliminated.

7.3.2 *Precured tread retreading*

7.3.2.1 Tread rubber shall be centred around the buffed circumference of the tyres with a tolerance of 3 mm.

7.3.2.2 Tread pattern interruption shall be minimised at the splice.

7.3.2.3 Cut ends shall have a buffed finish over the entire surface and free of contaminants.

7.3.2.4 Other procedures such as in the use of cushion gum, metal fasteners for holding together the tread cut ends shall be in accordance with the recommendation of the equipment manufacturer.

7.4 Curing

7.4.1 *Uncured tread retreading*

7.4.1.1 General

Curing shall be started as soon as practicable after the building operation has been completed. Curing temperatures, time and pressure shall be accurately controlled in accordance with the mould and rubber compound manufacturer's recommendations. A correlation between the curing characteristics of the tread rubber and the heating characteristics of the mould is necessary. Extra curing time shall be taken into consideration when using filling strips or cushion stock and rubber cured accordingly.

7.4.1.2 Cross-ply and radial-ply matrices

UNDER NO CIRCUMSTANCES SHALL A CROSS-PLY TYRE BE MOULDED IN A MATRIX CONSTRUCTED FOR CURING RADIAL-PLY TYRES. NOR IS IT PERMITTED TO APPLY GENERALLY ACCEPTED RADIAL TREAD PATTERENS TO CROSS-PLY CASINGS.

7.5 Venting of tubeless tyres

Tubeless tyres may be vented in the bead area about 20 mm above the heel of the bead, by means of a 2 mm drill provided with a device to limit penetration to not more than 6 mm or to the cords. Seven to ten vents should be drilled on each side of the tyre, care being taken to prevent cord damage.

8 REQUIREMENTS FOR THE COMPLETED TYRES

The tread rubber used shall be of such thickness as to provide the minimum amount of undertread and tread pattern depth as shown in Table 5.

TABLE 5 - Minimum requirements for the completed tyres

Sl. No. (1)	Tyre size (2)	Minimum under tread thickness mm (3)	Minimum tread pattern depth mm (4)
i)	Passenger car		
	1) Conventional designs, less than 140 mm cross-section	1.6	7.2
	2) Conventional designs 140 mm cross-section and larger	1.6	8.0
ii)	Light truck		
	1) All sizes upto but not including 508 mm	1.6	8.0
iii)	Heavy Truck 508 mm upwards		
	1) Upto and including 190 mm cross-section	2.4	11.2
	2) Larger than 190 mm cross-section	2.4	12.7
iv)	Tractor and other off-the-road vehicles	80 per cent of tread pattern depth of original tyre	
v)	Earth moving tyres	To be agreed between the reconditioner and purchaser	

10 FINAL INSPECTION AND PRESENTATION

10.1 General

After curing, the retreader shall make a final examination of the tyre, checking inide to ensure that injuries and loose cords have been properly treated and that the tyre is not buckled or separated. The outside of the tyre shall be checked to ensure adequate moulding and curing. The tread shall be straight and shall not be porous. Each tyre shall be trimmed, cleaned, or painted, or both.

10.2 Within one hour after curing, the tyre shall be examined and shall show neither tread separation nor ply separation.

At the same time, or later if desired, the cured tyre shall be examined to ensure that it is suitable for safe service.

11 SERVICE FAILURES

11.1 An accurate record of all claims for adjustment, with details, shall be maintained.

11.2 An accurate record of all adjustment granted against claims, with details, shall be maintained.

12 MARKING

Each tyre retreaded shall be permanently and legibly marked with the following information:

12.1 The retreader's name and/or trademark.

12.2 The nominal size of the tyre or the appropriate code mark (where applicable).

12.3 A code to indicate the number of times the tyre had been retreaded as requested by the customer.

12.4 Tubeless tyres

After retreading a tubeless tyre, all tubeless markings shall be removed with a fine buff and the tyre clearly identified with the words "TUBE REQUIRED".

APPENDIX A
DETERMINATION OF REBOUND RESILIENCE

A.1 APPARATUS

A.1.1 *Pendulum (see Fig 3);* consisting of a rod of mass 350 $\pm$ 0.25 g, the striking end of which should be a hemisphere of 12.5 $\pm$ 0.25 mm diameter, suspended by four thin cords so that it maintains a horizontal position when describing an arc of a circle of 2000 $\pm$ 2 mm radius. When the pendulum is at its lowest position it should be horizontal and should just touch the centre of the surface of a standard test piece.

A.1.2 *Test piece holder;* ; Suitable for holding the test piece securely in a vertical position. The holder should not exert any lateral restraint on the circumference of the test piece, a minimum clearance of 1.5 mm between the circumference of the test piece and the inside surface of the holder being necessary. The test piece may be held in the holder by a suitable mechanical clamp acting on the edge of the front surface of the test piece.

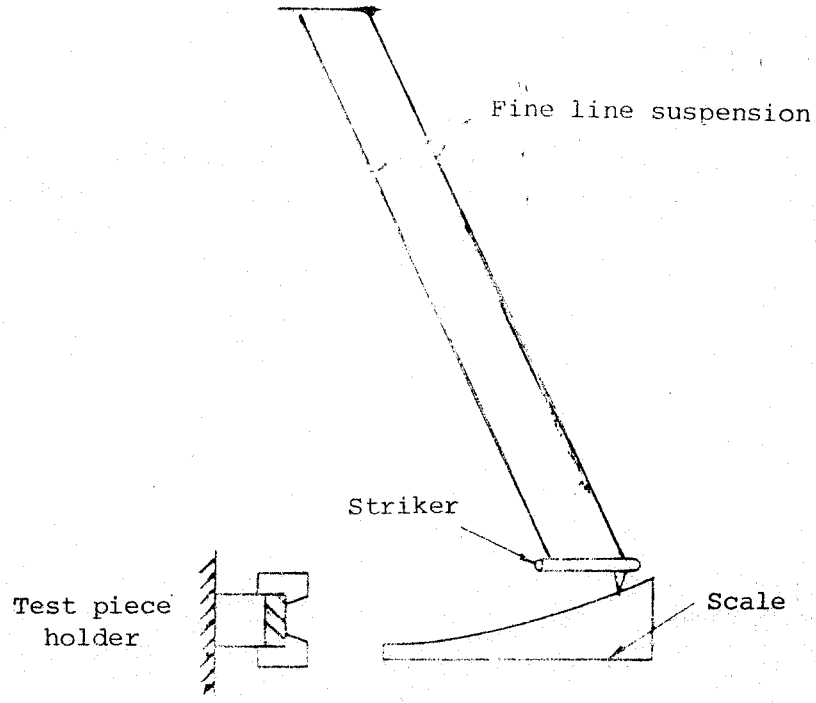

Fig. 3 - Lüpke pendulum

A.2 TEST PIECE

A.2.1 The test pieces shall be prepared either by moulding or by cutting. If fabric is attached to the sample it should be removed before testing. The test piece surface should be flat and smooth and if necessary prepared by buffing.

A.2.2 The standard test piece shall be a disk of thickness 12.5 $\pm$ 0.5 mm and diameter 29.0 $\pm$ 0.5 mm. Test pieces with a larger diameter may be used in a suitably sized holder.

A.2.3 The thickness of the test piece shall be measured to an accuracy of 0.05 mm.

A.2.4 Two test pieces shalld be tested.

A.2.5 The time lapse between vulcanization and testing shall be 24 hours.

A.2.6 If the test piece is buffed, the interval between buffing and testing shall not exceed 72 hours.

A.2.7 Samples and test pieces shall be protected from light as completely as possible during the interval between vulcanization and testing.

A.2.8 Prepared test pieces shall be conditioned immediately before testing for a minimum of 3 hours at the standard laboratory temperature, the same temperature being used throughout any one test or series of tests intended to be comparable.

A.2.9 Tests shall be carried out at the standard laboratory temperature.

A.3 PROCEDURE

Subject the test piece to a number of impacts in rapid succession until a constant reading is maintained for three consecutive impacts.

A.4 EXPRESSION OF RESULTS

The result shall be expressed as percentage rebound resilience. Where a directly calibrated scale is not provided the results shall be calculated from the expression,

rebound resilience (per cent) = $2000\ (1 - \cos\theta)$

where θ is the angle of rebound

The results from the two pieces shall be averaged.

APPENDIX B
DETERMINATION OF ACETONE EXCTRACT

B.1 APPARATUS

The extraction apparatus shall be of the reflux type, with the condenser placed immediately above the cup which holds the rubber. The cup shall be situated in the vapour of the boiling solvent and shall be emptied by a siphon. The apparatus shall be of glass except in patterns where an extraction cup is suspended from the end of the condenser, in which case platinum wire shall be used for the suspension. The apparatus shall fit together without the use of cork, rubber or metal and in such a manner that loss of vapour during extraction does not exceed 20 per cent of the extracting liquid (see Fig. 4).

Extraction cup	Joint*		Receiver
	A	B	
ml			ml
20-30	B34	B34	150
50-60	B45	B34	250

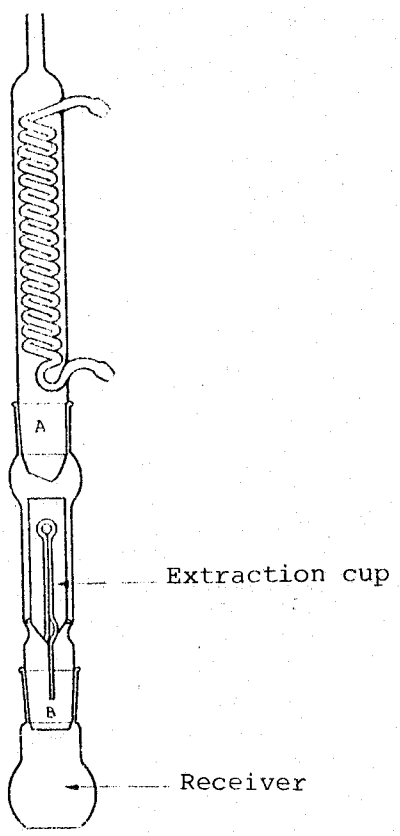

Fig. 4 - Acetone Extract

B.2 REAGENT

Acetone : The acetone used for this determination shall be substantially free from water and polymers of acetone, and shall be of recognized quality.

B.3 PREPARATION OF THE SAMPLE

B.3.1 Care shall be taken that any test portion is representative of the sample with respect to the property or constituent to be determined. Thus, if it is desired to deduce the composition of the original mix, any surface bloom shall be incorporated, but if the bulk composition is required, bloom shall be excluded.

B.3.2 The sample shall be sheeted to a thickness not exceeding 0.5 mm by passing between the cold, tightly-closed rolls of a laboratory mill. The type of mill used is inmaterial provided the sample does not become contaminated or unduly heated.

B.4 PROCEDURE

The sample shall be sheeted as described in Clause B.3 and shall be protected from light until the test is completed.

If the sample has been sheeted, wrap loosely a weighed test portion (2g or 4 g) in filter paper or de-sized linen, previously acetone extracted, so that no two portions of the surface of the sheet come into contact with eath other.

Weigh 2 g or 4 g of the sheets. Cut it into small pieces, and place it in the extraction cup. Pour into the extraction flask sufficient acetone to fill the extraction cup 2 or 3 times. Subject the test portion to at least 80 hot extraction during a continuous period of not less than 8 hours or more than 16 hours.

Distill the acetone from the soluble matter in a weighed vessel, preferably the extraction flask, and as soon as all the acetone has been removed, dry the extract at 70 ^{o}C to 75 ^{o}C for one hour ; cool in a dessicator and weigh.

Carry out a blank determination, using the same quantities of reagent and the same conditions of test, and apply a corresponding correction to the main result.

B.5 EXPRESSION OF RESULTS

The mass of the extract (corrected if necessary as described above) expressed as a percentage of the mass of the test portion, shall be taken as the "acetone extract".

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.*

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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.

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