SRI LANKA STANDARD 1293 : 2010

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SPECIFICATION FOR MEN'S SANDALS

(First Revision)

SRI LANKA STANDARDS INSTITUTION

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SLS 1293 : 2010

Gr.5

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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
SPECIFICATION FOR MEN'S SANDALS
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FOREWORD

This standard was approved by the Sectoral Committee on Textiles, Clothing and Leather and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 2010-02-16.

This specification prescribes requirements for men's sandals made from leather, polymeric material, polyester, polyamide (nylon) and polyurethane (PU) or polyvinyl chloride (PVC) coated fabric or combination of above mentioned material. It does not cover sandals made from ethylene vinyl acetate (EVA) co-polymer and blends of EVA. This specification also prescribes in detail the requirements of material component that go into production.

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 **SLS 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 valuable assistance derived from the following publication is gratefully acknowledged:

IS 6721 : 1972 Indian Standard -Specification for PVC sandal

1 SCOPE

This specification prescribes the requirements, methods of sampling and test for men's sandals. This standard does not cover sandals made from ethylene vinyl acetate (EVA) co-polymer and blends of EVA.

2 REFERENCES

ISO 2589 Leather-Physical and mechanical tests- Determination of thickness

ISO 4648 Rubber, vulcanized or thermoplastic-Determination of dimensions of test pieces and products for test purposes

ISO 4649 Rubber, vulcanized or thermoplastic – Determination of abrasion resistance using a rotating cylindrical drum device

ISO 7619 Rubber, vulcanized or thermoplastic-Determination of indentation hardness Part 1 : Duro meter method (Shore hardness)

SLS 102 Rules for rounding off numerical values
SLS 297 Methods of testing vulcanized rubber
Part 1 : Determination of relative density
SLS 374 Standard atmospheric conditions for conditioning and testing
SLS 428 Random sampling methods
SLS 492 Footwear sizes-Mondopoint system
SLS 1176 Leather military boots
SLS 1363 Methods of test for Personal protective footwear

3 DEFINITIONS

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

3.1 ageing : The phenomenon that results in change in characteristics of material with time under stated conditions, which may be natural or accelerated.

3.2 covered insole : Non removable layer folded with sponge or solid material inside which comes in contact with the foot.

3.3 insole : Non removable or removable layer (sponge or solid) which comes in contact with the foot.

3.4 outer sole : : Outer layer of the sole assembly that comes in contact with ground while walking with or without the heel.

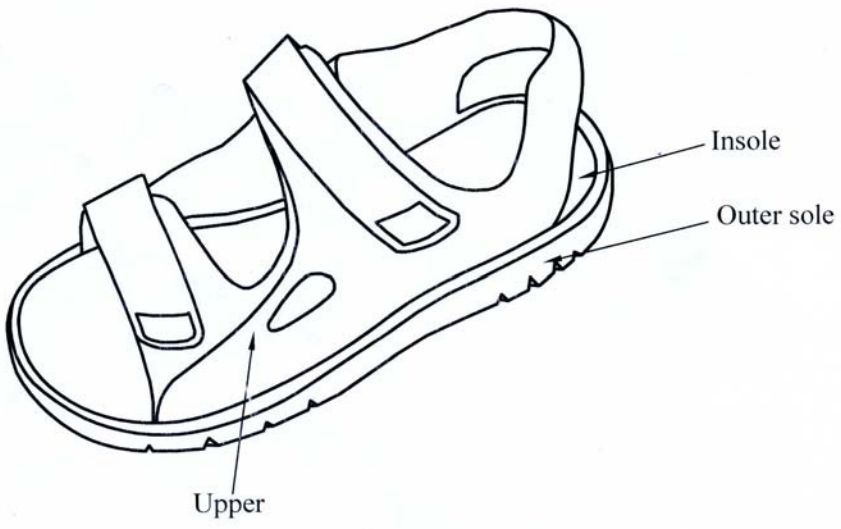

FIGURE 1 : Parts of a sandal

4 REQUIREMENTS

4.1 Upper materials

4.1.1 General requirements

Men's sandals shall be made from leather, polymeric material, polyamide, polyester, PU- coated or PVC- coated woven fabric or any other textile material as agreed between the purchaser and the supplier. It shall be flexible and shall not have an unpleasant odour and not be injurious to the foot and health.The colour and finish of the material shall be as agreed between the purchaser and supplier.

4.1.2 Requirements for upper leather material

Thickness of upper leather material shall be not less than 1.2 mm for single layer and 1 mm for each layer of the multiple assembly, when tested by the method prescribed in **ISO 2589.**

4.1.3 Requirements for PU- coated or PVC- coated woven fabric

The thickness of PU- coated or PVC- coated woven fabric component shall be not less than 1.4 mm, when tested by the method prescribed in **ISO 4648**. These materials shall not degrade during usage.

4.1.4 Trims

4.1.4.1 Metallic trims

Metallic trims shall be of an intrinsically corrosion resistant metal or shall have been treated so as to render them resistant to corrosion.

4.1.4.2 Plastic trims

Plastic trims shall be of adequate size, strength and properly fastened for their intended function and shall show no signs of cracks or pit marks.

4.1.4.3 Hook and loop

Hook and loop (Velcro) fastening system shall not disfunction during usage life cycle of sandal. Material quality shall be as agreed between the purchaser and the supplier.

4.1.4.4 Decorative layers and ornaments

Decorative layers and ornaments shall be securely fastened.

4.2 Bottom material

Bottom material made from leather, rubber, plastic, polymeric or any other material shall be used for soles and heels as agreed between the purchaser and the supplier.

4.2.1 Design

Design shall be as agreed between the purchaser and the supplier.

4.2.2 Requirements for bottom material

4.2.2.1 Rubber sole

The rubber used for soles and heels shall be compounded from natural or synthetic rubber or their blend. The material shall comply with the requirements given in Table **1.** The thickness of the sole shall be not less than 3 mm for the compact rubber and the thickness for expanded rubber shall be as agreed between the purchaser and the supplier.

TABLE 1 - Requirements for rubber sole

Sl No. (1)	Characteristic (2)	Requirement (3)	Method of Test (4)
i)	Relative density, max.	1.4	SLS 297 : Part 1
ii)	Hardness, Shore Type A, min.	55	ISO 7619-1
iii)	Abrasion resistance, mm^3, min.	300	ISO 4649 : 2002 Method A

4.2.2.2 Poly vinyl chloride (PVC) sole

The material shall comply with the requirements given in Table **2**. The thickness of PVC sole shall be not less than 6 mm.

TABLE 2 - Requirements for Poly Vinyl Chloride (PVC) sole

Sl No. (1)	Characteristic (2)	Requirement (3)	Method of Test (4)
i)	Relative density, max.	1.3	Appendix B
ii)	Hardness,		
	Compact sole, Shore Type A, min.	55	ISO 7619-1
	Expanded sole, Shore Type AO, min.	45	ISO 7619-1

4.2.2.3 Polyurethane (PU) sole

The material shall comply with the requirements given in Table **3**. The thickness of PU sole shall be not less than 5 mm.

TABLE 3 - Requirements for (polyurethane) PU sole

Sl No. (1)	Characteristic (2)	Requirement (3)	Method of Test (4)
i)	Hardness, Shore Type AO, min.	45	ISO 7619-1

4.2.2.4 Thermoplastic rubber sole

The material shall comply with the requirements given in Table **4**. The thickness of thermoplastic rubber sole shall be not less than 3 mm.

TABLE 4 - Requirements for thermoplastic rubber sole

Sl No. (1)	Characteristic (2)	Requirement (3)	Method of Test (4)
i)	Hardness, Shore Type A, min.	50	ISO 7619-1

4.3 Peeling strength

Peeling strength of bonded area shall be not less than 30 N/cm, when tested by the method prescribed in **SLS 1176.**

4.4 Whole sole flexing resistance

There shall be no cracking, deformation, visible insole/ covered insole damage or delamination before 200 000 flex cycles, when tested by the method prescribed in **SLS 1363.**

4.5 Sizing and marking

Sizing and marking of the sandals shall conform to **SLS 492.**

5 PACKAGING AND MARKING

5.1 Packaging

Packaging shall be as agreed between the purchaser and the supplier. Sandals shall be protected from damage during normal transportation, storage and handling.

5.2 Marking

5.2.1 Sandals

The sandals shall be legibly and indelibly marked on insole or tagged with the following information:

a) Size of the sandals;
b) Manufacturer's name or trade mark; and
c) Any other information required by the purchaser.

5.2.2 Packaging

Each package shall be legibly and indelibly marked with the following information:

a) Manufacturer's coding;
b) Size of the sandals;
c) Brand name and /or trade mark, if any;
d) Batch number; and
e) Any other information required by the purchaser.

6 METHODS OF TEST

6.1 Tests shall be carried out as prescribed in **ISO 2589, ISO 4648, ISO 4649, ISO 7619-1, SLS 297: Part 1, SLS 1176 , SLS 1363** and Appendix **B** of this specification.

6.2 The conditioning and testing atmosphere shall be the standard atmosphere for conditioning and testing as defined in **SLS 374**, i.e relative humidity of 65± 5 per cent and temperature of 27±2^{o} C.

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 should be adopted.

A.1 LOT

In any consignment all pairs of men's sandals of the same style belonging to one batch of manufacture or supply shall constitute a lot.

A.2 SCALE OF SAMPLING

A.2.1 Samples shall be tested from each lot for ascertaining the conformity of the product to the requirements of this specification.

A.2.2 Number of pairs of sandals to be selected shall be as given in Column **2** of Table **5**. From the pairs of sandals so selected (as far as possible), equal number of sandals shall be selected to form a sub sample as given in Column **3**.

TABLE 5 - Scale of sampling

Number of pairs of sandals in the lot **(1)**	**Number of pairs of sandals to be selected** **(2)**	**Number of pairs sandals in sub sample** **(3)**
Up to 500	13	03
501 and 1200	20	05
1201 to 10 000	32	05

A.2.3 Pairs of sandals shall be drawn at random. In order to ensure randomness of selection random number tables 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 specified in **5**.

A.3.2 Each pair of sandals selected as in **A.2.2** shall be inspected for packaging and marking requirements specified in **5**.

A.3.3 A sub sample of size as given in Column **3** of Table **5** shall be drawn from the sample selected as in **A.2.2** and examined for the requirements given in **4.1.1**, **4.1.4** and **4.5**.

A.3.4 A sub-sample examined as in **A.3.3** shall be tested for thickness of upper material as given under **4.1.2** and **4.1.3.**

A.3.5 A sub sample of size as given in Column **3** of Table **5** shall be drawn from the sample selected as in **A.2.2** and tested for thickness of sole as given under **4.2.2.**

A.3.6 A sub-sample size as given in Column **3** of Table **5** shall be selected from the sandals tested as in **A.3.5** and tested for hardness as given under **4.2.2.**

A.3.7 A sub-sample tested as in **A.3.6** shall be selected from the pair of sandals tested for relative density as given under **4.2.2.**

A.3.8 A sub sample of size as given in Column **3** of Table **5** shall be drawn from the sample selected as in **A.2.2** and tested for abrasion resistance as given under **4.2.2.**

A.3.9 A sub sample of size as given in Column **3** of Table **5** shall be drawn from the sample selected as in **A.2.2** and one sample from each pair shall be tested for flexing resistance as given under **4.4.**

A.3.10 Each sandal remaining in the sample used in **A.3.9** shall be tested for tested for peeling strength as given under **4.3.**

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 packaging and marking requirements.

A.4.2 Each pair of sandals inspected as in **A.3.2** satisfies the packaging and marking requirements.

A.4.3 Each sandal examined as in **A.3.3** satisfies the relevant requirements.

A.4.4 Each sandal tested as in **A.3.4**, **A.3.5**, **A.3.6**, **A.3.7**, **A.3.8, A.3.9** and **A.3.10** satisfies the relevant requirements.

APPENDIX B
DETERMINATION OF RELATIVE DENSITY

B.1 SCOPE

Relative density is determined by the hydrostatic method without the help of a sinker.

NOTE : *The density of the material shall be taken to be numerically equal to its relative density and expressed in g/ml. The density of water at 27 ^{0} C is taken as 1.00* g/ml.

B.2 APPARATUS

B.2.1 Balance, weighing to 1 mg

B.2.2 Balance straddle, A pan straddle of convenient size to support the beaker and permit determination of the mass of the test piece in water.

B.2.3 Beaker, 250-ml capacity or smaller if necessary by the design of the balance.

B.2.4 Copper wire, approximately 0.1 mm in diameter.

B.3 TEST METHOD

B.3.1 Preparation and conditioning of test piece– The test piece shall have a surface, free from crevices as far as possible, weighing at 5 g. The test piece shall then be conditioned to a moisture equilibrium in an atmosphere of 65 ± 2 per cent relative humidity and temperature 27 ± 2^0 C for 24 hours prior to testing **(SLS 374).**

B.4 PROCEDURE

Suspend the test piece from the hook on one side of the balance using a suitable length of wire, so that the bottom of the test piece does not touch the bottom of the beaker and weigh. Counter balance the wire previously by a length of wire on the other pan. Repeat the weighing with the test piece completely immersed in the freshly boiled and cooled distilled water to a temperature of 27 ± 2^0 C, in a beaker. Allow sufficient time for the test piece to attain the temperature of the water. Make sure that there are no air bubbles on the surface of the specimen and the wire while immersed in water.

B. 5 CALCULATION

Calculate the relative density as follows :

$$\text{Re}lative\ \ density\ \ (27/27^{0}C)\ \ =\ \ \frac{M_1}{M_1 - M_2}$$

where,

M_1 = mass in grams, of test piece in air, and
M_2 = mass in grams, of test piece in water

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

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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.

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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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