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SPECIFICATION FOR
BICYCLE RIMS

BUREAU OF CEYLON STANDARDS

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SLS 444 : 1978

Gr. 4

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SRI LANKA STANDARD

SPECIFICATION FOR BICYCLE RIMS

FOREWORD

This Sri Lanka Standard Specification has been prepared by the Drafting Committee of the Bureau on Bicycles and Bicycle Components. It was approved by the Mechanical Engineering Divisional Committee of the Bureau of Ceylon Standards and was authorised for adoption and publication by the Council of the Bureau on 1978-09-20.

This standard is one of the series of Sri Lanka Standards on bicycles and bicycle components. The other standards in the series are:

CS 127 Bicycle tubes.

SLS 224 Bicycle tyres.

SLS 237 Bicycle cotter pins, washers and nuts.

SLS 373 Bicycle brake shoe assemblies.

SLS ....* Bicycle bottom bracket components.

SLS ....* Bicycle hub assemblies.

SLS ....* Bicycles.

**SLS ... Under preparation.*

The rims covered in this standard are intended for fitting in the popular sizes of bicycles produced in the country. It is intended to include straight side (Endric type) rims for sports model bicycles with caliper brakes later.

All values in this standard are expressed in the International System (SI) of units, which is the refined metric system of units.

Equivalent metric values of the standard value in SI units, wherever relevant, is retained within parentheses in cases where it is practical to the industry and is to be regarded as the standard value, in measurement in that system of units.

This standard makes reference to the following Ceylon Standards:

CS 91 Method for tensile testing of steel sheet and strip.

CS 93 Method for simple bend testing of steel sheet and strip.

CS 102 Presentation of numerical values.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the results of a test or observation shall be rounded off in accordance with CS 102. The number of figures to be retained in the rounded off values shall be the same as that of the specified value in this standard.

The assistance gained from the publications of the Indian Standards Institution and the Japanese Standards Association in the preparation of this standard is gratefully acknowledged.

1 SCOPE

This standard covers the requirements for bicycle rims of two sizes suitable for tyres of sizes 26 x 1 3/8 and 28 x 1½.

2 REQUIREMENTS

2.1 Material

Rims shall be manufactured from cold-rolled steel strips having the following physical properties.

2.1.1 When tested in accordance with CS 91, shall give results not less than those given below.

Ultimate tensile stress, Min 300 MPa* (32 kgf/mm^2)

Yield stress, Min 180 MPa* (18 kgf/mm^2)
Elongation, Min 25 per cent on 50 mm.

2.1.2 The steel strip shall be capable of being flattened on itself without any signs of fracture when tested in accordance with CS 93.

2.2 Shape and dimensions

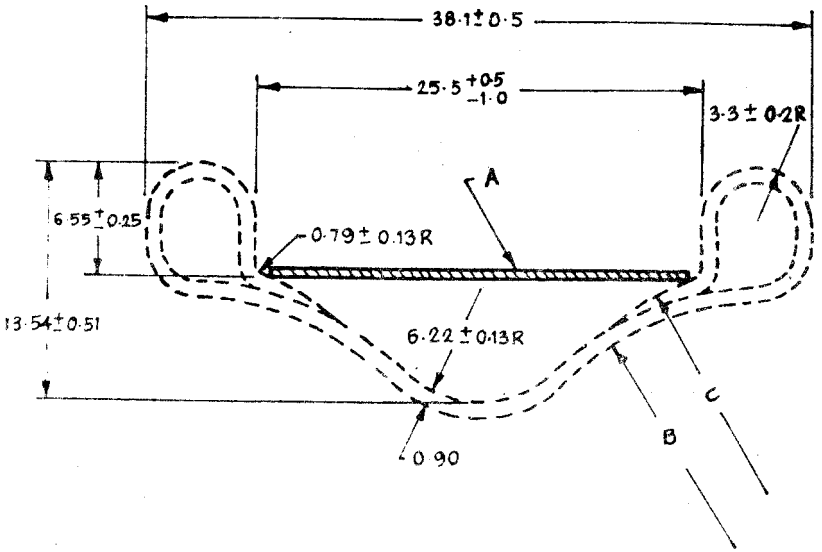
2.2.1 The profile of rims shall be as indicated in Fig. 1.

2.2.2 The dimensions of rims shall be as specified in Table 1.read with Fig. 1.

2.2.2.1 *Measurement of circumference*

The circumference of the rim is measured along the bead seat shown in Fig. 1, by the means of a steel measuring tape specially made to the dimensions given in Table 1

1 MPa = 10^6 Pa(pascal)



A - Bead seat measuring tape
B - 16.5 R Nominal
C - 13 R Nominal

(All dimensions in millimetres)

FIG. 1 Typical profile of bicycle rims

TABLE 1 Dimensions of rims and the measuring tape
(2.2.2 and 2.2.2.1 and Fig. 1)

Nominal size of tyre fittings to rim	Circumference at bead seat mm	Tolerance on circumference mm	Steel measuring tape		
			Length(L) mm	Width mm	Thickness mm
26 x 1.375	1850	+ 0.50 - 0.75	1850)	22.2	0.30
28 x 1.5	1994	+ 0.50 - 0.75	1994)		

from spring steel, with tolerances incorporated as shown in Fig. 2.

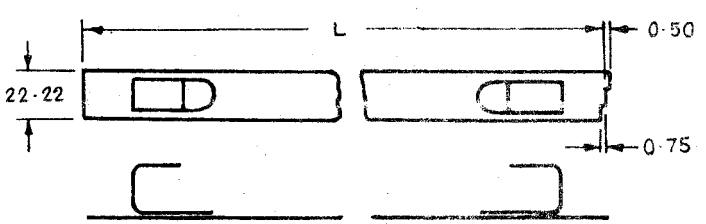
2.3 Manufacture

2.3.1 The holes for spokes and valve shall be accurately punched or drilled in accordance with the dimensions given in Fig. 3 and shall have uniform pitch. The valve hole shall be pierced centrally on the nose of rim approximately opposite to the joint of the rim and shall be at the centre of two spoke holes. The holes shall be clean, circular and free from burrs. The welded joint shall be suitably finished.

2.3.2 The rims intended for the front and rear wheels shall be provided with 32 and 40 spoke-holes respectively. The spoke-holes shall be equally spaced and shall be alternately on either side of the central line of the rim so that the lines passing through the centres of holes are at a distance of $1.0 \pm \begin{matrix} 0.0 \\ 0.2 \end{matrix}$ mm from the centre line of the rim.

2.4 Finish

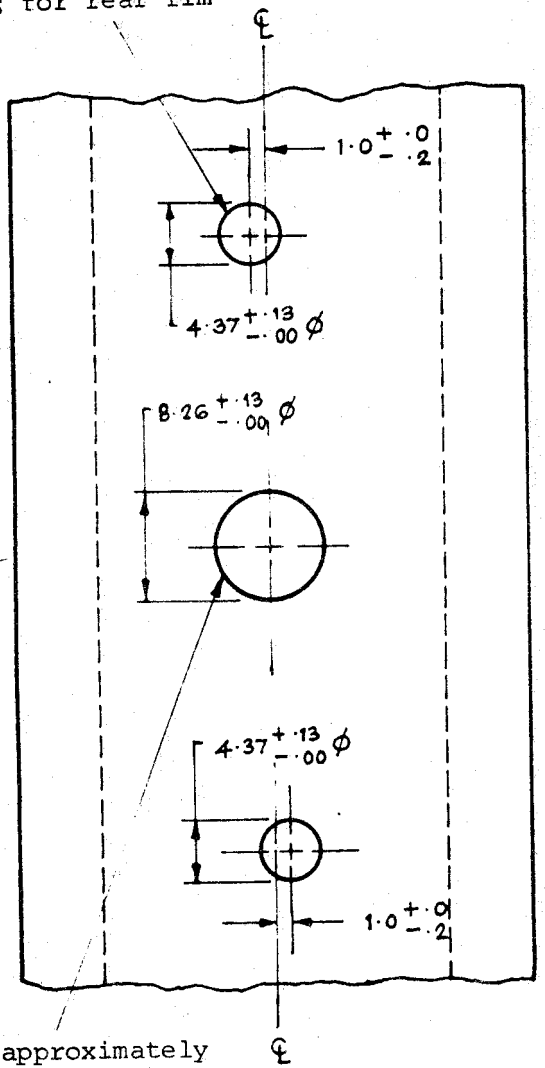
The rims shall be nickel-plated and chromium-plated and the minimum thickness of plating on the significant surfaces (see Fig. 4) shall conform to the following limits.



(All dimensions in millimetres)

FIG. 2 Steel measuring tape

32 holes for front rim
40 holes for rear rim



Valve hole approximately opposite to the joint of the rim

(All dimensions in millimetres)

FIG. 3 Holes for spokes and valve (Developed view)

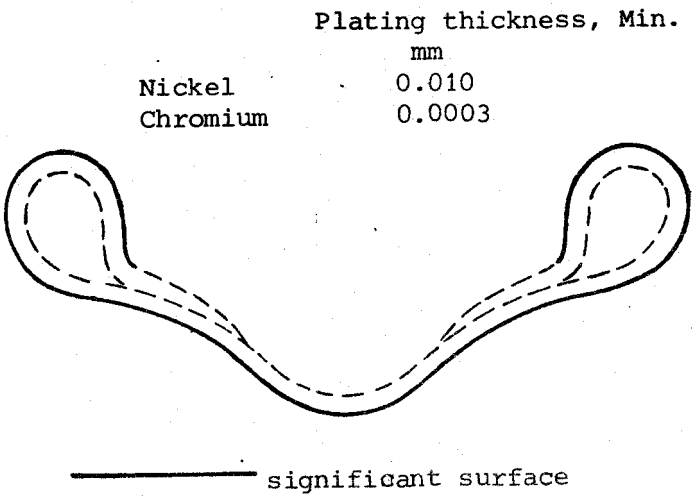


FIG. 4 Section of rim showing significant surface of plating

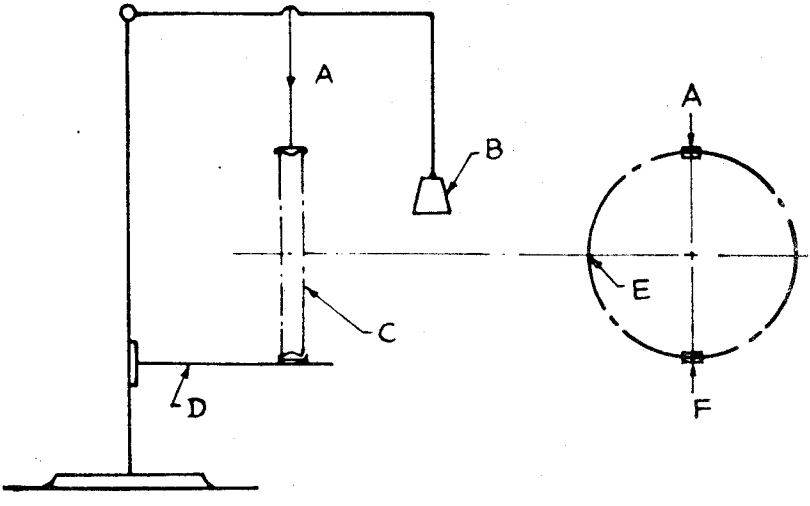
2.5 Compression test

2.5.1 *Testing machine*

The test shall be conducted on a suitable device which is capable of loading the rim in the manner schematically indicated in Fig. 5.

2.5.2 *Procedure*

The rim shall be held between two supports keeping the weld at right angles to the line joining the points of loading. The load shall be applied to give a vertical compression of 290 N (30 kgf) to the rim. The load shall be slowly increased in steps of approximately 100 N (10 kgf) till the compression of 690 N (70 kgf) is reached. The maximum load shall be kept for two minutes before it is released. The rim shall be taken up and examined for permanent set on the diameter with a suitable measuring device. The permanent set shall not exceed 2.5 mm.



A - Load
B - Weight
C - Rim
D - Base capable of vertical adjustment
E - Joint of rim
F - Support

FIG. 5 Schematic diagram of testing machine

3 MARKING

The rims shall bear the size, manufacturer's name, initials and/or the registered trade mark and the country of origin.

4 SAMPLING

4.1 lot: In any consignment all rims of one size, manufactured under similar processes of production shall be grouped together to constitute a lot. Front and rear rims shall be treated as separate lots.

4.2 Each lot shall be considered separately for ascertaining conformity of the lot to the relevant requirements of this standard. The number of rims to be selected for this purpose, shall depend on the size of the lot and shall be in accordance with Columns 1 and 2 of Table 2. The rims shall be selected at random from the lot, to ensure randomness of selection use shall be made of random number tables.

4.3 If the rims in the lot are packed in different packages a suitable number of packages (not less than 20 per cent of the total in the lot subject to a minimum of 2) shall be chosen at random. From each of the packages so chosen an approximately equal number of rims shall be picked up from different parts so as to obtain the required number of rims specified in Column 2 of Table 2.

4.4 Supply of raw material test pieces

4.4.1 Subject to the provision in 4.5.2, the manufacturer shall ensure the availability of minimum number of sample test pieces of the relevant raw materials used, along with the consignment of the finished product, for the purpose of inspection according to 4.5.2.

TABLE 2 Scale of sampling and criteria for conformity

Lot size (Total No. of rims) (1)	Sample size (No. of rims to be examined) (2)	Permissible No. of defective rims (3)
Up to 15	2	0
16 to 25	3	0
26 to 100	5	0
101 to 300	8	0
301 to 500	13	1
501 to 1000	20	1
Over 1000	32	2

One tensile test piece and one bend test piece of the material constituting the rims of the lot shall be provided, subject to the conditions given in 4.4.2 and 4.4.3.

4.4.2 Tensile test piece shall have a width of 12.5 mm and the gauge length shall be 50 mm. The bend test piece shall have a width not less than 40 mm. Length of test pieces shall be sufficient so as to carry out the test.

4.4.3 Test pieces shall be cut in such a manner that deformation is avoided as far as possible. If guillotinning or flame cutting is employed and adequate allowance shall be left for removal by machining.

4.5 **Number of tests and criteria for conformity**

4.5.1 All rims selected as in 4.2 and 4.3 shall be examined for shape and dimensions (2.2), manufacture

(2.3), finish (2.4) and compression test (2.5). Any rim which fails in any one of the above requirements shall be considered defective. The lot shall be considered as conforming to the requirements of the characteristics mentioned above, if the number of defective rims in the sample does not exceed the number given in Column 3 of Table 2.

4.5.2 The lot having been found conforming to 4.5.1 shall be tested for material (2.1.1 and 2.1.2). For this purpose test pieces made available according to 4.4 shall be subjected to the tensile test 2.1.1 and bend test 2.1.2. One tensile test and one bend test shall be carried out on separate test pieces supplied for the purpose. Any test piece failing in any one of the above requirements shall be declared a defective test piece. The lot shall be considered as conforming to the requirements mentioned above if no test piece is found to be defective.

In the case of adequate quality control of all raw materials to the satisfaction of the purchaser or the inspecting Officer has been maintained by the manufacturers and the quality was found to be satisfactory as evidence by suitable certificates accompanying the lot no test may be required with respect to raw material specifications laid down in this standard and no raw material test pieces need be supplied.

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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