SRI LANKA STANDARD 95 : 1970

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SPECIFICATION FOR

WELDED HARD DRAWN STEEL WIRE FABRIC FOR CONCRETE REINFORCEMENT

SRI LANKA STANDARDS INSTITUTION

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SLS 95 : 1970

Gr. 4

SRI LANKA STANDARDS INSTITUTION
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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 WELDED HARD DRAWN STEEL WIRE FABRIC FOR CONCRETE REINFORCEMENT

FOREWORD

This Sri Lanka Standard specification has been prepared by the Drafting Committee on steel. It was approved by the Civil Engineering Divisional Committee of the Sri Lanka Standards Institution and was authorised for adoption and publication by the Council of the Institution on 14th August, 1970.

This specification relates to the quality and preferred sizes of welded hard drawn steel wire fabric used for reinforcement of concrete.

The dimensions to be regarded as standard are given only in the metric system. The figures given within brackets are the rounded off equivalents in the 'inch-pound' system of the standard metric values.

1 SCOPE

This specification covers the requirements of welded hard drawn steel fabric for the reinforcement of concrete.

2 DEFINITIONS

2.1 **Mesh size** - Expressed by distance from centre to centre of the main wires and the distance centre to centre of the cross wires.

2.2 **Tensile Strength** - Maximum load divided by the original cross-sectional area of the test piece.

2.3 **Proof stress** - The stress at which a non-proportional elongation equal to a specified percentage of the original gauge length occurs.

3 TYPES

3.1 Welded hard drawn steel wire fabric shall be of the following two types :

(i) Rectangular mesh, and

(ii) Square mesh.

3.2 The fabric shall be designated for ordering purposes by the number of this standard and the reference number given in Column 1 Table 1. Alternatively a complete description of the fabric may be given. When denoting the size of sheet or roll of oblong mesh fabric, the first dimension shall be the length of the main wires.

Example :

Hard drawn steel wire fabric to SLS 95, reference number 6, 100 sheets 5m x 2m.

4 MANUFACTURE

The fabric shall be formed by spacing the main and the cross wires, which shall be fixed at their points of intersection by electric welding, so as to be sufficiently stable to withstand normal handling in transport and during concreting, without displacement beyond the limits specified.

Butt joints in the wires of the fabric shall be electrically welded and joints shall be staggered.

The wire used shall comply with the requirements of clause 5.

5 REQUIREMENTS OF WIRE

5.1 **Process manufacture** - The wire shall be cold drawn from mild steel made by any process unless a special process is required and stated in the order. In the case of the oxygen processes, the nitrogen content of the steel shall not exceed 0.008 per cent.

The ladle analysis shall show that the steel contains not more than 0.050 per cent of sulphur and not more than 0.050 per cent of phosphorus.

5.2 **Freedom from defects** - The wire shall be cleanly drawn to the specified size shall be sound, free from splits, piping, surface flaws and other defects likely to impair its use for concrete reinforcement.

5.3 **Diameter of wire** - The wire shall be of the following nominal diameters :

Diameter of wire (in mm)	2.8, 3.15, 4.0, 4.5, 5.0, 5.6, 6.0, 6.3, 7.1, 7.5, 8.0, 9.0, 10.0 .

5.4 **Tolerance on diameter** - The tolerance on the nominal diameter shall be $^{+2}_{-1}$ percent.

For purpose of determining whether the actual diameter of the wire is within the specified tolerances, the diameter shall be determined with a micrometer by taking two measurements at right angles to each other at three places along a length of not less than 250 mm (9.8 in) and the average of these six measurements shall be taken as the diameter of the wire.

6 REQUIREMENTS OF FABRIC

6.1 **Dimensions and masses** - The preferred mesh sizes, masses and sizes of wire are given in Table 1.

6.2 **Calculation of mass** - The nominal mass of fabric shall be determined on the basis that steel weighs 78.5 kg/m^2 of nominal cross sectional area per metre run (3.4 lb/in^2 per foot run).

The actual mass of the fabric shall be determined by weighing a sheet or sheets of any convenient size, and if possible at least one square metre, with the edges trimmed so that the longitudinal wires protrude by a distance equal to half the distance between the cross wires, and the cross wires protrude a distance equal to half the distance between the longitudinal wires.

6.3 Tolerances

6.3.1 *Tolerance on size of mesh* - The number of spaces between the external wires in a sheet or roll shall be determined by the nominal pitch. The centre distance between two adjacent wires shall not vary by more than 7½ per cent from the nominal pitch.

6.3.2 *Tolerance on size of sheet* - When fabric is required to be cut to specified dimensions, the tolerance shall be as follows :

(1) For dimensions 5m (16ft) and under; 25mm (1in) under or over the specified dimension.

(2) For dimensions over 5m (16ft); ½ percent under or over the specified dimensions.

TABLE 1

DIMENSIONS AND PROPERTIES OF WELDED HARD DRAWN STEEL WIRE FABRIC

Reference No.	Mesh size		Nominal Diameter of wire		Cross-Sectional area per metre width		Nominal mass per square metre
	Main	Cross	Main	Cross	Main	Cross	
			RECTANGULAR MESH				
	mm	mm	mm	mm	mm^2	mm^2	kg/m^2
1	75	300	3.15	2.8	101.3	18.5	0.94
2	75	300	4.0	2.8	163.4	18.5	1.43
3	75	300	5.0	3.15	255.3	23.4	2.19
4	75	300	5.6	3.15	320.3	23.4	2.7
5	75	300	6.0	3.6	367.8	30.5	3.13
6	75	400	6.3	4.0	405.5	25.1	8.38
7	75	400	7.5	4.5	574.6	31.8	4.76
8	75	400	7.5	5.6	574.6	49.3	4.9
9	75	400	8.0	5.6	653.8	49.3	5.52
10	75	400	9.0	5.6	827.3	49.3	6.88
11	75	400	9.0	6.0	827.3	56.6	6.94
12	75	400	10.0	6.0	1021.4	56.6	8.46
			SQUARE MESH				
13	150	150	3.15	3.15	46.7	46.7	0.73
14	150	150	5.6	5.6	147.8	147.8	2.32
15	150	150	6.0	6.0	169.7	169.7	2.66
16	150	150	6.3	6.3	187.1	187.1	2.94
17	150	150	7.1	7.1	237.7	237.7	3.73
18	150	150	7.5	7.5	265.2	265.2	4.16
19	150	150	8.0	8.0	301.7	301.7	4.74

6.3.3 *Tolerance on mass of fabric* - The tolerances on the mass of the fabric shall be $\pm$ 6 per cent.

6.4 **Tensile test requirements** - The tensile strength, proof stress and elongation of the wire when determined as specified in Clause 7.2 shall be as follows :

		daN/mm^2	kgf/mm^2	lbf/in^2
(1)	Tensile strength	57	58.14	82 672
(2)	Proof stress (0.2 per cent)	48	48.95	69 618
(3)	Elongation over a gauge length of 11.3 $\sqrt{S_o}$*		6.9 per cent	

S^{o*} - Area of cross section of the gauge.

6.5 **Bend test requirement** - The wire shall stand one complete cycle of reverse bend without showing any signs of fracture when reverse bend test is carried out in accordance with the method prescribed in Clause 7.3

7 TESTS

7.1 **Selection of test pieces** - Test pieces of sufficient length for two tensile tests and two bend tests shall be cut from every 6000 m^2 (64583 ft^2) of finished fabric.

Test pieces for the tensile and bend tests shall be cut from the main and cross wires of the finished fabric. The tensile test pieces shall contain one or more cross welds in its length. The bend test pieces shall be cut from the main and cross wires between welds.

7.2 **Tensile test** - The tensile test shall be carried out in accordance with the requirements of SLS 76 Method of tensile test for steel wire.

7.3 **Bend test** - The bend test shall be carried out in accordance with the requirements of SLS ..... Reverse bend testing of steel wire.** The radius of bend shall not be greater than the diameter of the wire.

7.4 **Retests** - Should any of the test pieces first selected fail any of the tests, two additional test pieces shall be taken in respect of each test which has failed. Should both additional test samples pass the test or tests, the material represented shall be deemed to comply with the requirements of this Sri Lanka Standard. Should either of them fail, the material represented shall be deemed not to comply.

8 MARKING

When the material is delivered in bundles or rolls the manufacturer shall fasten securely to every bundle or roll a durable tag bearing a suitable identification mark.

9 DEFECTS REVEALED AFTER DELIVERY

Should any material after delivery be found not to be in accordance with this specification, such material shall be deemed not to comply with this Sri Lanka Standard not withstanding any previous acceptance provided it has not been improperly treated.

10 CERTIFICATE OF COMPLIANCE

If requested, the manufacturer or merchant as the case may be, shall supply the purchaser with a certificate that the welded wire mesh supplied conforms in all respects to the requirements of this specification.

** - *Under preparation.*

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 from other services. Financial and administrative control is vested in a Council appointed in accordance with the provisions of the Act.

The detailed preparation of standard specifications is done by Drafting Committees composed of experts in each particular field assisted by permanent officers of the Institution. These Committees are appointed by the Divisional Committees, which in turn are appointed by the Council. All members of the Drafting and Divisional Committees render their services in an honorary capacity. In preparing the standard specifications, the Institution endeavours to ensure adequate representation of all view points.

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