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SRI LANKA STANDARD 392 : 1976

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METHOD FOR SIMPLE TORSION TESTING OF STEEL WIRE

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BUREAU OF CEYLON STANDARDS

METHOD FOR SIMPLE TORSION TESTING OF STEEL WIRE

S. L. S. 392 : 1976

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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.

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SRI LANKA STANDARD METHOD FOR SIMPLE TORSION TESTING OF STEEL WIRE

FOREWORD

This Sri Lanka Standard Specification was adopted from the ISO standard on Simple torsion testing of steel wire on the recommendations made by the Drafting Committee of the Bureau on Steel. It was approved by the Civil Engineering Divisional Committee of the Bureau of Ceylon Standards and was authorised for adoption and publication by the Council of the Bureau on 04-08-1976.

This standard was adopted from ISO 136 Steel — Simple torsion testing of Wire. All values given in this standard are in Metric Units with the appropriate inch equivalents in brackets.

1. SCOPE AND FIELD OF APPLICATION

This standard applies to the simple torsion testing of steel wire having a diameter or characteristic dimension equal to or greater than 0·4 mm (0·016 in.) The diameter or characteristic dimension is usually not greater than 10 mm (0·4 in).

This Standard is confined to the method of test only and, evaluation criteria are matters for material specifications.

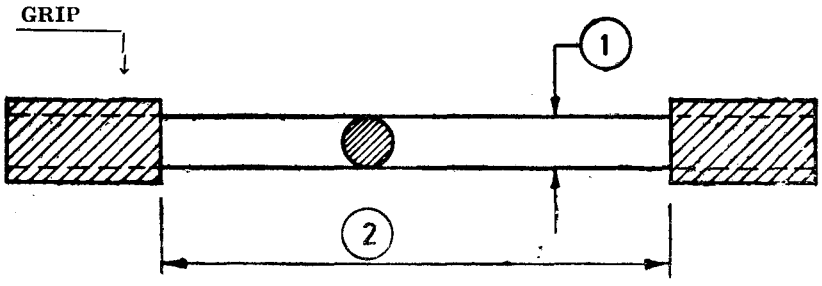
2. PRINCIPLE

Twisting a test piece round its own axis until the test piece breaks or until the specified number of twists have been made. The twisting is in one direction only during the test.

3. SYMBOLS AND DESIGNATIONS

Number	Symbol	Designation
1	d	Nominal diameter of round wire or characteristic dimension* for non-circular wires
2	L	Free length between grips
—	N_t	Number of turns

* The characteristic dimension for non-circular wires is usually given in the standard for the material and is the maximum dimension of the cross-section.



4. TESTING MACHINE

4.1 The grips of the testing machine are to be arranged in such a way that, during testing, they remain on the same axis and do not apply any bending to the test piece.

4.2 The machine is to be so constructed that change of length between the grips during the test is permitted.

4.3 One of the grips shall be capable of being rotated around the axis of the test piece while the other shall not be subject to any angular deflection, except for such deflection as may be necessary to measure the torque.

4.4 The distance between the grips shall be capable of adjustment for different test lengths.

4.5 The machine shall be so constructed that an appropriate tensile stress may be applied to the test piece.

5. TEST PIECE

5.1 The test piece, consisting of a piece of wire, shall be straight before being tested. If straightening is necessary, it shall be done by hand or, if this is not possible, by hammering on a level surface of wood, plastics material or copper using a hammer made of one of these materials.

5.2 The nominal free length between the grips of the machine shall be as in Table 1.

Table 1

Nominal Size d		Nominal free length between grips
mm	in	
$0{\cdot}4 \leqslant d < 1$	$0{\cdot}016 \leqslant d < 0{\cdot}040$	200d
$1 \leqslant d < 3{\cdot}6$	$0{\cdot}040 \leqslant d < 0{\cdot}142$	100d
$3{\cdot}6 \leqslant d < 5$	$0{\cdot}142 \leqslant d < 0{\cdot}200$	100d
$5 \leqslant d \leqslant 10$	$0{\cdot}200 \leqslant d < 0{\cdot}400$	50d

5.3 For wires of large size, in particular sizes over 5 mm, shorter lengths between grips may be used by special agreement. Where the recommended nominal free length is 100 d, the alternative shorter length shall be 50 d and where the recommended nominal free length is 50 d, the alternative shorter length shall be 30 d.

6. PROCEDURE

6.1 Place the test piece in the machine is such a way that its longitudinal axis coincides with the axis of the grips and it remains straight during the test. Unless otherwise specified, this may be ensured by applying to the test piece a constant tensile stress just sufficient to straighten it, but not exceeding 2% of the nominal tensile strength of the wire.

6.2 After placing the test piece in the machine, rotate one grip at a reasonably constant speed until the test piece breaks or until the specified number of turns is reached. Count only the number of complete turns of the rotating grip.

6.3 The speed of testing shall be sufficiently slow to prevent any rise in temperature likely to affect the result of the test. In any case it shall not exceed the following values given in Table 2.

Table 2

Nominal size d		Maximum number of turns per minute per 100 d	Equivalent turns per minute in preferred length (refer Coln. 3 of Table 1)
mm	in		
$0{\cdot}4 \leqslant d < 1$	$0{\cdot}016 \leqslant d < 0{\cdot}040$	90	180
$1 \leqslant d < 3{\cdot}6$	$0{\cdot}040 \leqslant d < 0{\cdot}142$	60	60
$3{\cdot}6 \leqslant d < 5$	$0{\cdot}142 \leqslant d < 0{\cdot}200$	30	30
$5 \leqslant d \leqslant 10$	$0{\cdot}200 \leqslant d \leqslant 0{\cdot}400$	30	15

Note — For nominal sizes above 100 mm, the speed of testing is to be reduced.

7. TEST REQUIREMENTS

7.1 Unless otherwise specified, the test is to be made at ambient temperature.

7.2 If the number of turns is satisfactory, the test piece is to be considered as having passed the test, irrespective of the position of failure. If the number of turns reached does not satisfy the requirements of the specification, and if the failure is within 2 d of the grips, the test is to be considered as invalid and is to be repeated.

7.3 If so required by the specification for the material, the surface of the test piece, including the fracture, shall be examined. The method of examination and the interpretation of the appearance of the test piece are matters for the material specification.

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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.

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