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Ceylon Standard Specification for Reverse Bend Testing of Steel Sheet and Strip

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BUREAU OF CEYLON STANDARDS

CEYLON STANDARD SPECIFICATION FOR REVERSE BEND TESTING OF STEEL SHEET AND STRIP

C. S. 94: 1970

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Ceylon 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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CEYLON STANDARD METHOD FOR REVERSE BEND TESTING OF STEEL SHEET AND STRIP

FOREWORD

This Ceylon Standard has been prepared by the Drafting Committee on Steel. It was approved by the Civil Engineering Divisional Committee of the Bureau of Ceylou Standards and was authorised for adoption and publication by the Council of the Bureau on 14th August, 1970.

This is one of a series of Ceylon Standards on methods of bend test for steel products. Other Standards in the series are as follows:-

C.S. 13 ··· Method of bend test for steel product other than sheet, strip, wire and tube.

C.S. 93 ··· Method for simple bend testing of steel sheet and strip.

C.S. ··· Method for reverse bend testing of steel wire.**

This Standard is based on ISO/R 68' - 1959.*

1. SCOPE

This standard prescribes the method of conducting the reverse bend test on steel sheet and strip less than 3mm (0·12 in) thick.

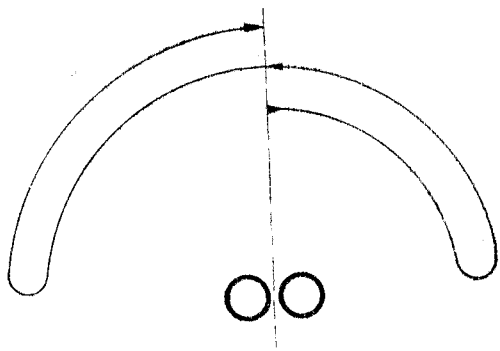
2. PRINCIPLE OF TEST

2·1 The test consists of repeated bending through 90°, in opposite directions, of a rectangular test piece held at one end, each bend being over a support having a specified radius.

2·2 One "reverse bend" consists of bending the test piece through an angle of 90° and then returning it to its original position (See Fig. 1).

* International Organization for Standardisation, Recommendation R-88-1959 Reverse bend testing of steel and strip, less than 3mm thick.

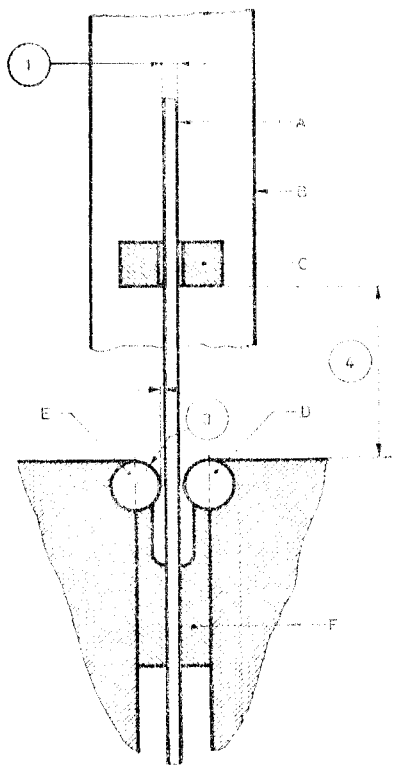
** Under preparation.



Figl 1 Method of counting reverse bend

3. SYMBOLS AND DESIGNATIONS

Number	Symbol	Designation
1	a	Thickness of test piece
2	b	Width of test piece
3	R	Radius of curvature of blocks
4	h	Distance from top of blocks to bottom face of guide
5	Nb	Number of bends



A. Test piece
B. Operating Handle
C. Guide
D. Block A
E. Block B
F. Grips

Fig. 2 Reverse bend testing of sheet and strip.

4. TEST PIECE

4·1 The thickness of the test piece shall be that of the sheet from which the sample is taken, the skins remaining intact.

4·2 The width of the test piece is 20mm ± °5mm (13/16 in ± °3/16 in).

4·2·1 Strip material of a smaller width may be tested with the full width as supplied.

4·3 The test piece shall be prepared so that the edges are free from burrs and cracks. Cold-worked zones may be removed by machining or filing.

5. METHOD OF TEST

5·1 The common method of carrying out the test includes the following operations:

5·1·1 Hold one end of the test piece between two blocks A and B, each of which is rounded to the specified radius, as shown in Fig. 2.

5·1·2 Bend the protruding portion of the test piece through 90 over block A and then bring it back to its original position.

5·1·3 Then bend the test piece in the reverse direction over block B and again return it to its original position.

5·2 This procedure is repeated to complete the specified number of reverse bends or till the test piece fails (see Clause 7·1·2).

This description of the method of procedure does not imply that the test piece is to be stopped entirely after each bend.

5·3 Bending is at a rate such that the heating does not affect the result of the test, but in any case the rate shall not exceed one bend per second.

6. TESTING MACHINE

6·1 The axes of the blocks should be parallel. A plane determined by the axes of the blocks should be perpendicular to the direction of the axis of the test piece. The clearance between the test piece and each block should be measured and should not be greater than 0·1mm.

6·1·1 The radius of curvature R of the block should be one of the following:

1, 2·5, 5·0, 7·5, 10 mm (0·04, 0·1, 0·2, 0·3, 0·4 in).

6·1·2 The dimension h should be 25mm to 50mm (1 to 2in).

7. TEST REQUIREMENTS

7·1 The interpretation of the result of the test is a matter for the material specification.

7·1·1 The following shall apply, unless otherwise stated in that specification.

7·1·2 The test is stopped when a crack or cracks extend more than approximately half way through the thickness of the test piece; the test piece is than considered to have failed.

7·1·3 The test report shall state that the test piece has withstood the specified number of reverse bends or it shall state the number of reverse bends after which the test piece failed.

7·2 The test is carried out at ambient temperature unless otherwise specified.

BUREAU OF CEYLON STANDARDS

The Bureau of Ceylon Standards (BCS) is the national standards organisation of Ceylon and was established by the Hon. Minister of Industries & Fisheries, as provided for by the Bureau of Ceylon Standards Act, No. 38 of 1964.

The principal objects of the Bureau as set out in the Act are to promote standards in industry and commerce, prepare national standard specifications and codes of practice and operate a Standardisation Marks Scheme and provide testing facilities, as the need arises.

The Bureau is financed by Government grants and the sale of its publications. Financial and administrative control is vested in a Council appointed in accordance with the provisions of the Act.

The detailed preparation of standard specifications are done by Drafting Committees composed of experts in each particular field assisted by permanent officers of the Bureau. These Committees are appointed by Divisional Committees, which 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 Bureau endeavours to ensure adequate representation of all view points.

In the international field the Bureau represents Ceylon in the International Organisation for Standardisation (ISO) and will participate in such fields of standardisation as are of special interest to Ceylon.

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