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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION
R 202

FLATTENING TEST ON STEEL TUBES

1st EDITION
June 1961

ISO 8492

For each individual country the only valid standard is the national standard of that country.

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BRIEF HISTORY

The ISO Recommendation R 202, *Flattening Test on Steel Tubes*, was drawn up by Technical Committee ISO/TC 17, *Steel*, the Secretariat of which is held by the British Standards Institution (B.S.I.).

At the fourth meeting of the Technical Committee ISO/TC 17, in Stockholm, in June 1955, a draft proposal for a flattening test on steel tubes was first submitted. It was, however, suggested at that meeting that the draft should be submitted to the Technical Committee ISO/TC 5 "Pipes and Fittings" for comment, and that these comments, together with those of the Members of Technical Committee ISO/TC 17, should be considered by Working Group No. 1, with a view to establishing a revised draft proposal.

At the fifth meeting of the Technical Committee, held in London, in March 1957, it was pointed out that this test, together with four others for steel tubes, was still under consideration by Working Group No. 1.

At the sixth plenary meeting, in Harrogate, in June 1958, a new draft proposal was placed before Technical Committee ISO/TC 17 for consideration and, with one or two minor editorial amendments, was accepted as suitable for circulation to the members of Technical Committee for postal approval.

As a result of that circulation, certain other minor amendments were made, and a revised draft was sent to the General Secretariat as a Draft ISO Recommendation.

On 24 July 1959, the Draft ISO Recommendation (No. 291) was distributed to all the ISO Member Bodies and was approved by the following Member Bodies:

Australia	Germany	Norway
Austria	Greece	Poland
Belgium	Hungary	Portugal
Bulgaria	India	Romania
Burma	Israel	Spain
Chile	Italy	Sweden
Czechoslovakia	Japan	Switzerland
Denmark	Mexico	United Kingdom
Finland	Netherlands	U.S.S.R.
France	New Zealand	

No Member Body opposed the approval of the Draft.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in June 1961, to accept it as an ISO RECOMMENDATION.

ISO Recommendation R 202 June 1961

FLATTENING TEST ON STEEL TUBES

1. SCOPE

This ISO Recommendation applies to steel tubes having an external diameter not greater than 400 mm and a thickness not greater than 15 per cent of the external diameter. However, individual specifications for the material may specify the maximum diameter and thickness of tube to which this test is to be applied in particular circumstances.

2. PRINCIPLE OF TEST

The test consists in flattening the end of a tube or a test piece cut from a tube in a direction perpendicular to the longitudinal axis of the tube.

When the test is carried out so that, after the test, the internal surfaces are in contact over at least half of the internal length of the flattened test piece, the test is called "close-flattened".

In other cases, the test is carried out until the distance between platens, measured under load in the direction of flattening, reaches a value fixed by the relevant material specification.

3. SYMBOLS AND DESIGNATIONS

Number	Symbol	Designation
1	D	External diameter of test piece
2	a	Thickness of wall of test piece
3	d	Internal diameter of test piece
4	L	Length of test piece
5	z	Distance between platens measured under load

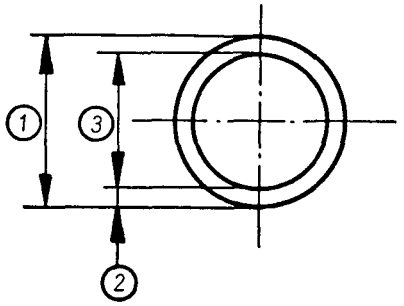

FIG. 1. – **Test piece**

FIG. 2. – **Distance between platens measured under load**

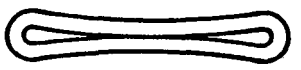

FIG. 3. – **Close-flattened**

4. TEST PIECE

4.1 The test piece consists of a length of tube with the ends perpendicular to the axis. The length is equal to 1½ times the nominal internal diameter of the tube, but not less than 10 mm (0.4 in) nor more than 100 mm (4.0 in).

The test may be made on the end of the tube without the test piece being removed. In this case, unless otherwise required in the specification for the product, the length submitted to the test is the length *L* defined above.

4.2 The cut ends of the test piece may be rounded by filing. However, a test on a test piece, the edges of which have not been rounded, will be acceptable provided the test is satisfactory.

5. PROCEDURE

5.1 The test piece is placed between two plain, parallel and rigid platens extending over the whole length *L*. In the case of welded tubes, care should be taken to ensure that the weld is in the position required by the relevant material specification. The test piece is flattened by moving the platens in a direction perpendicular to the longitudinal axis of the tube.

5.2 The width of the platens should always be greater than the width of the tube after flattening.

5.3 In cases of dispute, the rate of movement of the platens should not exceed 25 mm/min.

6. TEST REQUIREMENTS

6.1 The temperature of the test piece should be equal to the ambient temperature (but in no case less than 10 °C), unless otherwise specified.

6.2 The interpretation of the visual appearance of the test piece after testing is a matter for the material specification.

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