

Revised
ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 86

TENSILE TESTING OF STEEL SHEET AND STRIP
LESS THAN 3 mm AND NOT LESS THAN 0.5 mm THICK

1st EDITION
February 1959

COPYRIGHT RESERVED

The copyright of ISO Recommendations and ISO Standards belongs to ISO Member Bodies. Reproduction of these documents, in any country, may be authorized therefore only by the national standards organization of that country, being a member of ISO.

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

Printed in Switzerland

Also issued in French and Russian. Copies to be obtained through the national standards organizations

BRIEF HISTORY

The ISO Recommendation R 86, *Tensile Testing of Steel Sheet and Strip Less than 3 mm and Not Less than 0.5 mm Thick*, was drawn up by Technical Committee ISO/TC 17, *Steel*, the Secretariat of which is held by the British Standards Institution (B.S.I.).

The drawing up of an ISO Recommendation concerning this test was decided on at the second meeting of ISO/TC 17, held in New York, in June 1952. The Technical Committee instructed its Working Group No. 1, *Methods of Mechanical Testing for Steel*, to prepare a draft proposal which was circulated to the members of the Technical Committee in March 1954.

The comments of the Member Bodies were considered by the Working Group which submitted, in August 1954, a revised draft proposal to the members of ISO/TC 17. The revised draft proposal was discussed at the fourth plenary meeting of the Technical Committee, held in Stockholm, in June 1955, along with the comments of the Member Bodies, and was adopted, with a number of small amendments, as a Draft ISO Recommendation.

On 31 January 1957, the Draft ISO Recommendation (No. 151) was submitted to all the ISO Member Bodies and, subject to a few modifications, was approved by the following Member Bodies:

*Bulgaria	*Ireland	Romania
*Canada	Italy	Spain
Denmark	Mexico	Sweden
Finland	*New Zealand	Union of
France	Norway	South Africa
Germany	Pakistan	United Kingdom
*Greece	Poland	U.S.S.R.
Hungary	Portugal	

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 February 1959, to accept it as an ISO RECOMMENDATION.

• These Member Bodies stated that they had no objection to the Draft being approved.

TENSILE TESTING OF STEEL SHEET AND STRIP

LESS THAN 3 mm AND NOT LESS THAN 0.5 mm THICK

1. PRINCIPLE OF TEST

The test consists in subjecting a test piece to tensile stress, generally to fracture, with a view to determining one or more of the mechanical properties enumerated hereafter. The test is carried out at ambient temperature, unless otherwise specified.

2. DEFINITIONS

2.1 Gauge length. At any moment during the test, the prescribed part of the test piece on which elongation is measured. In particular, a distinction should be made between the following:

- (a) *the original gauge length (L_o).* Gauge length before the test piece is strained, and
- (b) *the final gauge length (L_u).* Gauge length after the test piece has been fractured and the fractured parts have been carefully fitted together so that they lie in a straight line.

2.2 Percentage permanent elongation. Variation of the gauge length of a test piece subjected to a prescribed stress (see Clause 2.7) and, after removal of same, expressed as a percentage of the original gauge length. The symbol of this elongation is supplemented by an index indicating the prescribed stress.

2.3 Percentage elongation after fracture (A). Permanent elongation of the gauge length after fracture $L_u - L_o$, expressed as a percentage of the original gauge length L_o .

2.4 Maximum load (F_m). The highest load which the test piece withstands during the test.

2.5 Final load (F_u). Load imposed on the test piece at the moment of fracture.

2.6 Load at yield point (F_e). Load at which the elongation of the test piece first increases without increase of load or with decrease of load.

2.7 Stress (actually "nominal stress"). At any moment during the test, load divided by the original cross-sectional area of the test piece.

2.8 Tensile strength (R_m). Maximum load divided by the original cross-sectional area of the test piece, i.e. stress corresponding to the maximum load.

2.9 Yield stress (R_e). Stress at yield point. If, in testing, a drop in the load is observed, the stress corresponding to the highest load is known as the "upper yield point" and the stress corresponding to the lowest load subsequently observed is known as the "lower yield point".