



INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 89

TENSILE TESTING OF STEEL WIRE

1st EDITION

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BRIEF HISTORY

The ISO Recommendation R 89, *Tensile Testing of Steel Wire*, 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 third meeting of ISO/TC 17, held in London, in December 1953. 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 August 1954.

The draft proposal was considered with the comments received from the Member Bodies at the fourth meeting of the full Committee, held in Stockholm, in June 1955, and was adopted, with a number of small amendments, as a Draft ISO Recommendation.

On 31 January 1957, the Draft ISO Recommendation (No. 160) was submitted to all the ISO Member Bodies and, subject to a few modifications, was approved by the following Member Bodies:

*Australia	*Greece	Pakistan
Belgium	Hungary	Portugal
*Canada	*Ireland	Spain
Czechoslovakia	Italy	Sweden
Denmark	Japan	Union
Finland	Mexico	of South Africa
Germany	*New Zealand	

One Member Body opposed the approval of the Draft: France.

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 WIRE

1. SCOPE

This ISO Recommendation applies to products of constant cross-section and mainly characterized by this section, in particular its form and dimensions. The dimensions of the cross-section are always very small compared with the usual lengths produced and the ratio of the dimension defining the width to that defining the thickness is generally less than 4.

2. PRINCIPLE OF TEST

The test consists in subjecting a length of wire to tensile stress, generally to fracture, with a view to determining one or more of the mechanical properties enumerated hereafter.

3. DEFINITIONS

3.1 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.

3.2 Percentage permanent elongation. Variation of the gauge length of a test piece subjected to a prescribed stress (see clause 3.8) 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.

3.3 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 .

3.4 Percentage reduction of area (Z). Ratio of the maximum change in cross-sectional area, which has occurred during the test $S_o - S_u$, to the original cross-sectional area S_o , expressed as a percentage.