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# ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION



# ISO RECOMMENDATION
# R 84

## IZOD IMPACT TEST FOR STEEL

1st EDITION

February 1959



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 84, *Izod Impact Test for Steel*, 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 first meeting of ISO/TC 17, held in London, in June 1950, the Secretariat submitted a first draft proposal for the Izod impact test, based on a British standard. The Technical Committee instructed its Working Group No. 1, *Methods of Mechanical Testing for Steel*, to examine this draft proposal and to prepare a new version of it, taking into account certain observations put forward by Member Bodies.

In April 1952, the Working Group submitted a second draft proposal, which was discussed at the second plenary meeting of ISO/TC 17, held in New York, in June 1952, and which was passed back to the Working Group so that it might include therein data on tolerances.

The third draft proposal, submitted by the Working Group in November 1953, was studied by the Technical Committee during its third plenary meeting, held in London, in December 1953, along with the comments of the Member Bodies. The ISO/TC 17 Secretariat was then assigned to draw up a fourth draft proposal incorporating the changes voted during the meeting, and this was circulated in April 1954.

The comments of the Member Bodies on this fourth draft proposal were discussed at the fourth plenary meeting, held in Stockholm, in June 1955, and the Technical Committee decided to adopt it, subject to a few amendments, as a Draft ISO Recommendation.

On 31 October 1956, this Draft ISO Recommendation (No. 135) was distributed to all the ISO Member Bodies and was approved, subject to a few modifications of details, by the following Member Bodies:

| | | |
|---|---|---|
| *Belgium | India | Spain |
| *Canada | Ireland | Sweden |
| Czechoslovakia | Italy | Turkey |
| Denmark | Netherlands | *Union of |
| Finland | Pakistan | South Africa |
| *Greece | *Poland | Yugoslavia |
| Hungary | Portugal | |

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.

ISO Recommendation R 84 February 1959

# IZOD IMPACT TEST FOR STEEL

## 1. PRINCIPLE OF TEST

The test consists in breaking by one blow from a swinging hammer, under conditions defined hereafter, a notched test piece, gripped vertically, with the bottom of the notch in the same plane as the upper face of the grips. The blow is struck on the same face as the notch at a fixed position. The energy absorbed is determined and from this the impact value is deduced.

## 2. TEST PIECES

**2.1** The test piece is of square or round section, unless otherwise specified.

**2.2** The test piece conforms to the dimensions given in the following figures:

| | | | |
|---|---|---|---|
| (*a*) Square test pieces: | single-notch, | Figure 1 | page 6 |
| | two-notch | Figure 2 | |
| | three-notch | Figure 3 | |
| (*b*) Round test pieces: | single-notch | Figure 5 | page 8 |
| | two-notch | Figure 6 | |
| | three-notch | Figure 7 | |

**2.3** In each case, the plane of symmetry of the notch is perpendicular to the longitudinal axis of the test piece. The surface of the test piece should be smooth and free from grooves running parallel to the plane of symmetry of the notch.

**2.4** The notch is of V-form having an included angle of 45°. The notch may be made by any machining method. The notch should be carefully prepared so that no grooves appear at the base of the notch.

**2.5 Square test pieces.** The notch is 2 mm deep with a root radius of 0.25 mm (Fig. 4, page 7).

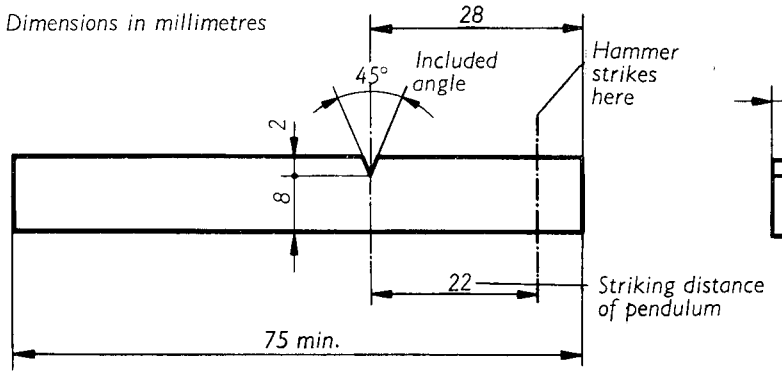


FIG. 1. —**Single-notch square test piece**

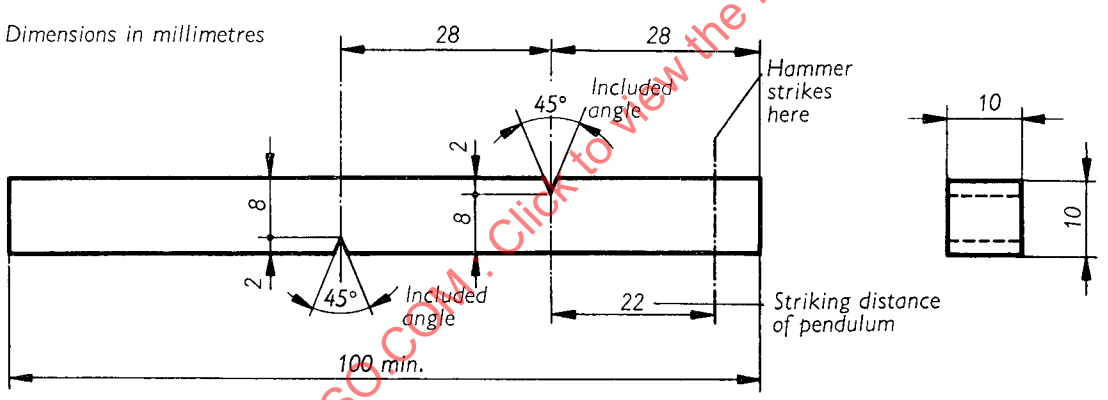


FIG. 2. — **Two-notch square test piece**

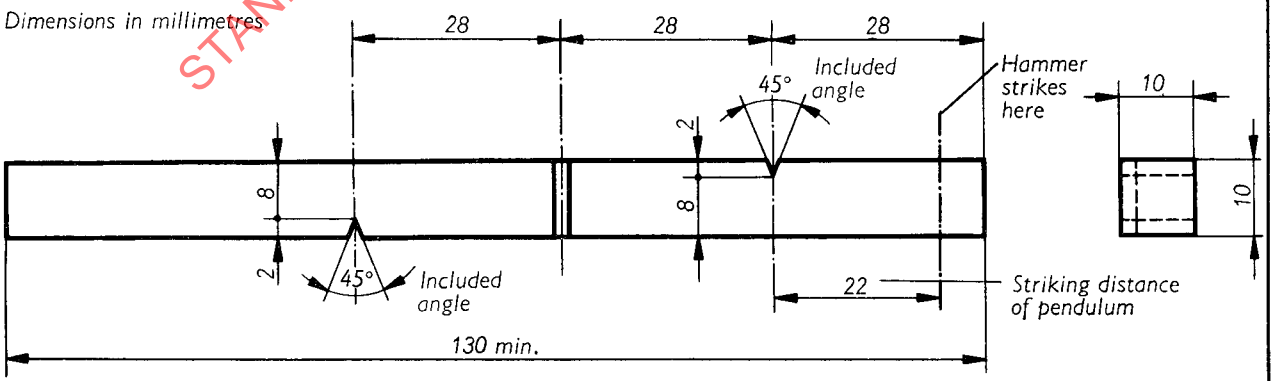


FIG. 3. — **Three-notch square test piece**

Dimensions in millimetres

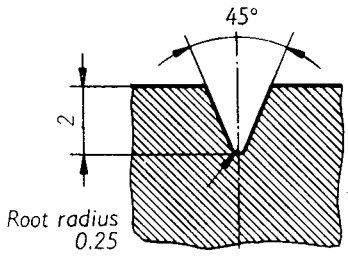


FIG. 4. — **Enlarged view of notch for square test piece**

**2.5.1** The following tolerances are permitted:

TABLE 1. — **Tolerances on specified dimensions**

| Designation | Nominal dimension | Machining tolerance | |
|---|---|---|---|
| | | Values | ISA Symbols |
| Minimum length: | | | |
| single-notch | 75 mm | | |
| two-notch | 100 mm | | |
| three-notch | 130 mm | | |
| Thickness | 10 mm | ± 0.11 mm | j 13 |
| Width | 10 mm | ± 0.11 mm | j 13 |
| Angle of notch | 45° | ± 2° | — |
| Depth below notch | 8 mm | ± 0.045 mm | j 11 |
| Distance of notch from end of test piece and from adjacent notch | 28 mm | ± 0.42 mm | j 15 |
| Angle between plane of symmetry of notch and the longitudinal axis of the test piece | 90° | ± 2° | — |

**2.6 Round test pieces.** The notch is 3.30 mm (0.13 in) deep at the position of its maximum depth in the specimen. It has a root radius of 0.25 mm (Fig. 8, page 9).

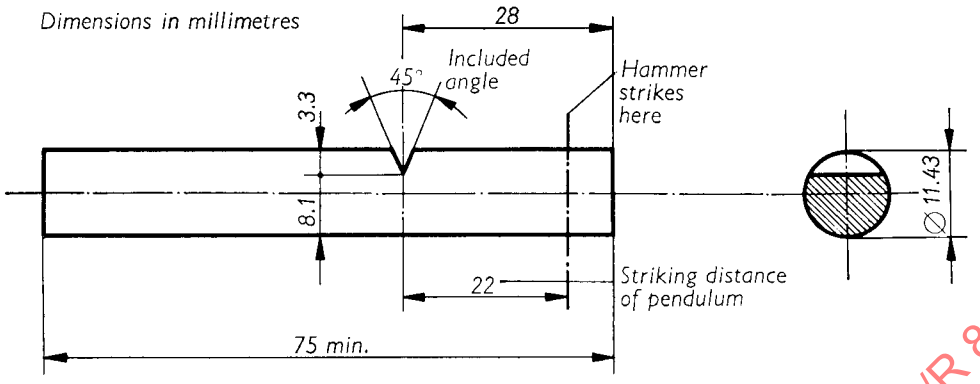


FIG. 5. — **Single-notch round test piece**

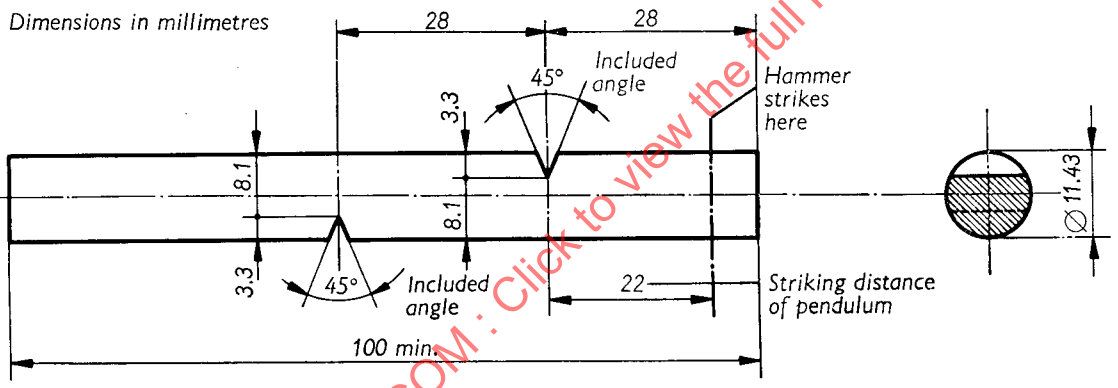


FIG. 6. — **Two-notch round test piece**

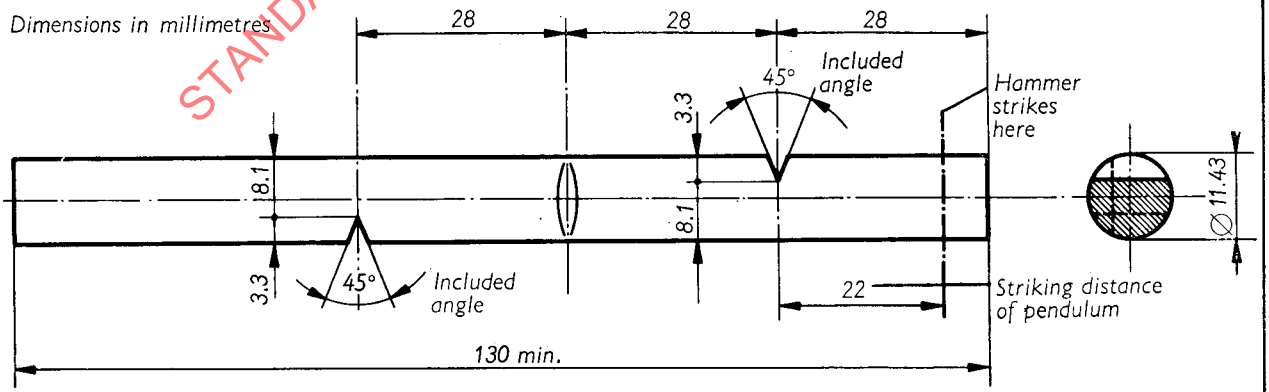


FIG. 7. — **Three-notch round test piece**

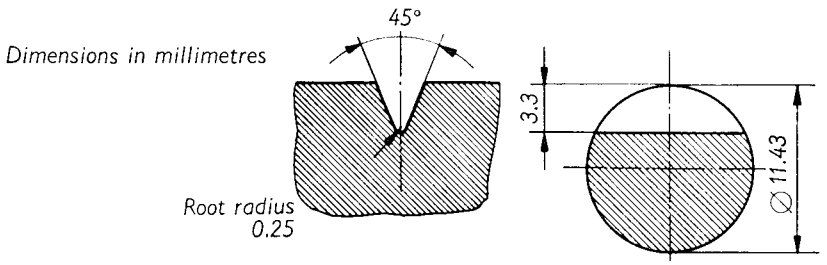


FIG. 8. — **Enlarged view of notch for round test pieces**

**2.6.1** The following tolerances are permitted:

TABLE 2. — **Tolerances on specified dimensions**

| Designation | Nominal dimension | Machining tolerance | |
|---|---|---|---|
| | | Values | ISA Symbols |
| Minimum length: | | | |
| single-notch | 76.2 mm (3 in) | | |
| two-notch | 104.1 mm (4.1 in) | | |
| three-notch | 132.1 mm (5.2 in) | | |
| Diameter | 11.43 mm (0.45 in) | ± 0.14 mm (± 0.005 in) | j 13 |
| Angle of notch | 45° | ± 2° | — |
| Depth below notch | 8.128 mm (0.32 in) | ± 0.045 mm (± 0.002 in) | j 11 |
| Distance of notch from end of test piece and from adjacent notch | 27.94 mm (1.1 in) | ± 0.42 mm (± 0.018 in) | j 15 |
| Angle between plane of symmetry of notch and longitudinal axis of test piece | 90° | ± 2° | — |