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# International Standard



# 642

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

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## Steel — Hardenability test by end quenching (Jominy test)

*Acier — Essai de trempabilité par trempe en bout (essai Jominy)*

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**FOREWORD**

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 642 was developed by Technical Committee ISO/TC 17, *Steel*, and was circulated to the member bodies in June 1978.

It has been approved by the member bodies of the following countries :

Australia	Germany, F.R.	Norway
Austria	Hungary	Poland
Belgium	India	Romania
Brazil	Iran	South Africa, Rep. of
Bulgaria	Ireland	Spain
Canada	Italy	Sweden
Chile	Japan	Switzerland
Czechoslovakia	Korea, Dem.P.Rep. of	Turkey
Denmark	Korea, Rep. of	United Kingdom
Egypt, Arab Rep. of	Mexico	USA
Finland	Netherlands	USSR
France	New Zealand	Yugoslavia

No member body expressed disapproval of the document.

This International Standard cancels and replaces ISO Recommendation R 642-1967, of which it constitutes a technical revision.

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Steel — Hardenability test by end quenching (Jominy test)

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the method for determining the hardenability of steel by the end quench, or Jominy, test.

2 REFERENCES

ISO/R 80, *Rockwell hardness test (B and C scales) for steel*.

ISO/R 81, *Vickers hardness test for steel (load 5 to 100 kgf)*.

3 PRINCIPLE

The test consists in :

- a) heating a cylindrical test piece to a specified temperature in the austenitic range for a specified period of time;
- b) quenching it by spraying water on one of its ends;
- c) measuring the hardness either between two selected points or at certain given points, on longitudinal flats made on the test piece, in order to determine the hardenability of the steel by variations of this hardness.

4 SYMBOLS AND DESIGNATIONS

Symbol	Designation	Value
<i>L</i>	Total length of test piece	100 ± 0,5 mm
<i>D</i>	Diameter of test piece	25 <sup>+ 0,5</sup> <sub>0</sub> mm
<i>t</i>	Time during which test piece is maintained at heating temperature	30 ± 5 min
<i>t<sub>m</sub></i>	Maximum time lag between removal of test piece from furnace and start of quenching	5 s
<i>T</i>	Temperature of cooling water	5 to 30 °C
<i>a</i>	Internal diameter of vertical water supply pipe	12,5 ± 0,5 mm
<i>h</i>	Height of water jet without test piece in position	65 ± 10 mm
<i>l</i>	Distance from end of water supply pipe to lower end of test piece	12,5 ± 0,5 mm
<i>e</i>	Depth of flats for measurement of hardness	0,4 to 0,5 mm
<i>d</i>	Distance, in millimetres, from quenched end to points where hardness is measured	
J... <i>d</i>	Jominy hardenability index at distance <i>d</i> , in Rockwell HRC-mm	
J HV... <i>d</i>	Jominy hardenability index at distance <i>d</i> , in Vickers HV 30-mm	