

INTERNATIONAL STANDARD

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Liquid flow measurement in open channels — Flow measurements under ice conditions

*Mesure de débit des liquides dans les canaux découverts — Mesurage
de débit dans des conditions de glace*



Reference number
ISO 9196:1992(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 9196 was prepared by Technical Committee ISO/TC 113, *Measurement of liquid flow in open channels*, Subcommittee SC 7, *Special problems and methods of measurements*.

Liquid flow measurement in open channels — Flow measurements under ice conditions

1 Scope

This International Standard deals with water discharge measurements in rivers and channels under ice conditions and provides information additional to that published in previous International Standards.

This International Standard does not specify measuring instruments and equipment, which are dealt with in other International Standards.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 555-1:1973, *Liquid flow measurement in open channels — Dilution methods for measurement of steady flow — Part 1: Constant-rate injection method*.

ISO 555-2:1987, *Liquid flow measurement in open channels — Dilution methods for the measurement of steady flow — Part 2: Integration method*.

ISO 748:1979, *Liquid flow measurement in open channels — Velocity-area methods*.

ISO 772:1988, *Liquid flow measurement in open channels — Vocabulary and symbols*.

ISO 1100-2:1982, *Liquid flow measurement in open channels — Part 2: Determination of the stage-discharge relation*.

ISO 1438-1:1980, *Water flow measurement in open channels using weirs and Venturi flumes — Part 1: Thin-plate weirs*.

ISO 3846:1989, *Liquid flow measurement in open channels by weirs and flumes — Rectangular broad-crested weirs*.

ISO 3847:1977, *Liquid flow measurement in open channels by weirs and flumes — End-depth method for estimation of flow in rectangular channels with a free overfall*.

ISO 4359:1983, *Liquid flow measurement in open channels — Rectangular, trapezoidal and U-shaped flumes*.

ISO 4360:1984, *Liquid flow measurement in open channels by weirs and flumes — Triangular profile weirs*.

ISO 4877:1990, *Liquid flow measurement in open channels — Flat-V weirs*.

ISO 5168:1978, *Measurement of fluid flow — Estimation of uncertainty of a flow-rate measurement*.

WMO (World Meteorological Organisation) Technical Note No. 117 (WMO No. 280), *Use of weirs and flumes in stream gauging*.

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 772 apply.

4 Methods of water discharge measurement under ice conditions

Discharges of water can be measured under ice conditions using velocity-area methods, representative vertical methods, dilution gauging methods and by means of notches, weirs and flumes.