AS 3778.4.2:2022
ISO 3846:2008

Australian STANDARD®

STANDARDS Australia

Measurement of water flow in open channels

Part 4.2: Measurement using flow gauging structures — Rectangular broad-crested weirs (ISO 3846:2008, IDT)

AS 3778.4.2:2022

This Australian Standard ® was prepared by CE-024, Measurement of Water Flow in Open Channels and Closed Conduits. It was approved on behalf of the Council of Standards Australia on 30 May 2022.

This Standard was published on 10 June 2022.

The following are represented on Committee CE-024:

Australian Bureau of Meteorology
Australian Hydrographers Association
Australian Industry Group
Department of Planning, Industry and Environment, NSW
Engineers Australia
Institute of Instrumentation, Control & Automation Australia
Irrigation Australia
Joint Accreditation System of Australia & New Zealand
National Measurement Institute
Water NSW

This Standard was issued in draft form for comment as DR AS 3778.4.2:2022.

Keeping Standards up-to-date

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:
www.standards.org.au

ISBN 978 1 76113 821 8

AS 3778.4.2:2022
ISO 3846:2008

Measurement of water flow in open channels

Part 4.2: Measurement using flow gauging structures — Rectangular broad-crested weirs (ISO 3846:2008, IDT)

Originated as AS 3778.4.2—1991.
Second edition 2022.

Preface

This Standard was prepared by the Standards Australia Committee CE-024, Measurement of water flow in open channels and closed conduits, to supersede AS 3778.4.2:1991, *Measurement of water flow in open channels, Part 4: Measurement using flow gauging structures, Method 4.2: Rectangular broad-crested weirs.*

The objective of this document is to specify requirements for the use of rectangular broad-crested weirs for the accurate measurement of flow of clear water in open channels under free flow conditions.

This document is identical with, and has been reproduced from, ISO 3846:2008, *Hydrometry — Open channel flow measurement using rectangular broad-crested weirs*.

As this document has been reproduced from an International document, the following apply:

(a) In the source text "this International Standard" should read "this document".

(b) A full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms "normative" and "informative" are used in Standards to define the application of the appendices or annexes to which they apply. A "normative" appendix or annex is an integral part of a Standard, whereas an "informative" appendix or annex is only for information and guidance.

Contents

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 3846 was prepared by Technical Committee ISO/TC 113, *Hydrometry*, Subcommittee SC 2, *Flow measurement structures*.

This third edition cancels and replaces the second edition (ISO 3846:1989), of which it constitutes a technical revision.

NOTES

Australian Standard®

Measurement of water flow in open channels

Part 4.2: Measurement using flow gauging structures — Rectangular broad-crested weirs (ISO 3846:2008, IDT)

1 Scope

This International Standard lays down requirements for the use of rectangular broad-crested weirs for the accurate measurement of flow of clear water in open channels under free flow conditions.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 772, *Hydrometry — Vocabulary and symbols*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 772 apply.

4 Symbols

A	m^2	area of approach channel
b	m	width of weir crest perpendicular to flow direction
C	—	discharge coefficient (gauged head)
f	—	drowned flow reduction factor
fC	—	combined coefficient of discharge
C_d	—	discharge coefficient (total head)
C_v	—	coefficient of velocity
E	m	encoder height from datum
e_b	m	random uncertainty in the width measurement
g	m/s^2	acceleration due to gravity
H	m	total head above crest level
h	m	gauged head above crest level (upstream head is inferred if no subscript is used)
L	m	length of weir in the direction of flow
n	—	number of measurements in a set
p	m	height of weir (difference between mean bed level and crest level)
Q	m^3/s	volumetric rate of flow
S	—	submergence ratio, h_2/h_1
S_1	—	modular limit
$\overline{v}_1$	m/s	mean velocity in the approach channel
U	%	expanded percentage uncertainty
$u^*(b)$	%	percentage uncertainty in b
$u^*(C)$	%	percentage uncertainty in C
$u^*(h_1)$	%	percentage uncertainty in h_1