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Measurement of liquid flow in open channels — Tracer dilution methods for the measurement of steady flow

Part 3: Chemical tracers



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

This Standard was prepared by the Standards Australia Committee CE-024, Measurement Of Water Flow In Open Channels and Closed Conduits.

The objective of this document is to specify requirements for the use of chemical tracers in discharge measurements by the dilution method. Apparatus and methods of general application are set out in AS 3778.5.1:2022 and are not repeated here, with the exception of those relating specifically to chemical tracers.

This document is identical with, and has been reproduced from, ISO 9555-3:1992, *Measurement of liquid flow in open channels — Tracer dilution methods for the measurement of steady flow — Part 3: Chemical tracers*.

As this document has been reproduced from an International document, 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.

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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 9555-3 was prepared by Technical Committee ISO/TC 113, *Measurement of liquid flow in open channels*, Sub-Committee SC 4, *Dilution methods*.

ISO 9555 consists of the following parts, under the general title *Measurement of liquid flow in open channels — Tracer dilution methods for the measurement of steady flow*:

- *Part 1: General*
- *Part 2: Radioactive tracers*
- *Part 3: Chemical tracers*
- *Part 4: Fluorescent tracers*

[Annex A](#) forms an integral part of this part of ISO 9555.

Introduction

The former standard series ISO 555 was subdivided into parts on the basis of the method of field measurement, i.e. constant-rate injection method and integration (sudden injection) method. Since the choice of the type of tracer to be used in a field measurement will often depend on the expertise and the laboratory facilities available, this new series of standards ISO 9555 is divided into parts based on the type of tracer used. This revision has enabled the unnecessary repetition of text of the various parts to be avoided and will, it is hoped, prove to be a more convenient form of presentation for the user.

ISO 9555 deals with the measurement of steady flow in open channels by dilution methods using tracers. The methods described may also be applied to the measurement of slowly varying flow, but they may only be used when flow conditions ensure adequate mixing of the injected solution throughout the flow.

For the measurement of very large flows, tracer methods can be onerous in terms of tracer costs and measurement times. However, the use of tracers often reduces danger to personnel during flood periods.

ISO 9555-1 presents the general principles of the methods of constant-rate injection and integration (sudden injection). ISO 9555-2, ISO 9555-3 and ISO 9555-4 deal with the specific aspects of the use of radioactive, chemical and fluorescent tracers, respectively, as well as specific analytical procedures.

This approach has been adopted for the following reasons:

- to facilitate subsequent updating, additions or revisions which concern only ISO 9555-2, ISO 9555-3 or ISO 9555-4;
- to provide a more practical document for the user, who is often obliged to choose the tracer best suited to the available analytical equipment.