AS 4351.3—1996
ISO 9408:1995

Australian Standard®

Biodegradability—Organic compounds in an aqueous medium

Part 3: Determination by oxygen demand in a closed respirometer

[ISO title: Water quality — Evaluation in an aqueous medium of the 'ultimate' aerobic biodegradability of organic compounds — Method by determining the oxygen demand in a closed respirometer]

This Australian Standard was prepared by Committee MS/56, Biodegradability of Materials. It was approved on behalf of the Council of Standards Australia on 28 August 1995 and published on 5 January 1996.

The following interests are represented on Committee MS/56:

Australian and New Zealand Environment and Conservation Council

Australian Chemical Specialties Manufacturers Association

Australian Conservation Foundation

Australian Federation of Consumer Organisations

Federal Bureau of Consumer Affairs

Friends of the Earth

Griffith University

National Association of Testing Authorities, Australia

Plastics and Chemicals Industry Association

The Royal Australian Chemical Institute

Review of Australian Standards. *To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.*

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

This Standard was issued in draft form for comment as DR 94143.

AS 4351.3—1996

Australian Standard®

Biodegradability—Organic compounds in an aqueous medium

Part 3: Determination by oxygen demand in a closed respirometer

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7337 0086 1

PREFACE

This Standard was prepared by the Standards Australia Committee MS/56 on Biodegradability of Materials. It is technically equivalent to ISO 9408:1991, *Water quality—Evaluation in an aqueous medium of the 'ultimate' aerobic biodegradability of organic compounds—Method by determining the oxygen demand in a closed respirometer*.

This is Part 3 in a series of Standards which give guidance and methods to determine the biodegradability of organic compounds in an aqueous medium with the objective of specifying a method for the determination of the 'ready' biodegradability of an organic compound by aerobic microorganisms using a test medium. Measurement of the percentage consumption of oxygen within a closed flask at regular intervals allows evaluation of the biodegradability of the test compound.

The term 'informative' has been used in this Standard to define the application of the appendix to which it applies. An 'informative' appendix is only for information and guidance.

CONTENTS

Page

First published as AS 4351.3— 1996.

STANDARDS AUSTRALIA

Australian Standard

Biodegradability—Organic compounds in an aqueous medium

Part 3: Determination by oxygen demand in a closed respirometer

1 SCOPE This Standard specifies a method, by determination of the oxygen demand in a closed respirometer, for the evaluation of the 'ready' biodegradability of organic compounds at a given concentration by aerobic microorganisms.

The conditions described in this Standard do not always correspond to the optimal conditions which allow the maximum degree of biodegradation to occur.

The method applies to organic compounds which—

(a) are soluble in the test conditions;

(b) are insoluble in the test conditions, in which case special measures may be necessary to achieve good dispersion of the compound;

(c) do not reach or react with the CO_2 absorbent;

(d) are volatile, provided that a suitable respirometer is used; and

(e) are not inhibitory to the test microorganisms at the concentration chosen for the test. The presence of inhibitory effects can be determined as specified in Clause 8.3, or by using any other method for determining the inhibitory effect of a compound on bacteria (e.g. ISO 8192).

WARNING AND SAFETY PRECAUTIONS: ACTIVATED SLUDGE AND SEWAGE MAY CONTAIN POTENTIALLY PATHOGENIC ORGANISMS. THEREFORE, APPROPRIATE PRECAUTIONS SHOULD BE TAKEN WHEN HANDLING THEM. TOXIC TEST COMPOUNDS AND THOSE WHOSE PROPERTIES ARE UNKNOWN SHOULD BE HANDLED WITH CARE.

2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS	
4351	Biodegradability—Organic compounds in an aqueous medium
4351.6	Part 6: Guidelines for the determination of biodegradability of poorly soluble organic compounds
ISO	
6060	Water quality—Determination of the chemical oxygen demand
8192	Water quality—Test for inhibition of oxygen consumption by activated sludge
8245	Water quality—Guidelines for the determination of total organic carbon (TOC)

3 DEFINITIONS For the purpose of this Standard, the definitions below apply.

3.1 Biochemical oxygen demand (BOD)—the mass concentration of dissolved oxygen consumed under specified conditions by the biological oxidation of organic or inorganic matter in water.