

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]

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Australian and New Zealand Environment and Conservation Council
Australian Chemical Specialties Manufacturers Association
Australian Conservation Foundation
Australian Federation of Consumer Organisations
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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.

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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 CO₂ 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.