AS 4351.7—1996
ISO 9887:1992

Australian Standard®

Biodegradability—Organic compounds in an aqueous medium

Part 7: Determination by semi-continuous activated sludge method (SCAS)

[ISO title: Water quality — Evaluation of the aerobic biodegradability of organic compounds in an aqueous medium — Semi-continuous activated sludge method (SCAS)]

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

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Biodegradability—Organic compounds in an aqueous medium

Part 7: Determination by semi-continuous activated sludge method (SCAS)

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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 9887:1992, *Water quality—Evaluation of the aerobic biodegradability of organic compounds in an aqueous medium—Semi-continuous activated sludge method (SCAS)*.

This is Part 7 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 'inherent' biodegradability of an organic compound. The procedure involves the measurement of the dissolved organic carbon of effluent from a semi-continuous activated sludge unit dosed with the test compound compared with effluent from a control unit. Determination of the difference in dissolved organic content between these two units is assumed to be due to the test compound. The percentage degradation/elimination calculated from this difference and the concentration of test sample added to the sewage 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 7: Determination by semi-continuous activated sludge method (SCAS)

1 SCOPE This Standard specifies a method for the evaluation of the 'inherent' biodegradability of organic compounds. The conditions described in this Standard are much more favourable for biodegradation than those methods for biodegradability described in AS 4351.2, AS 4351.3 and AS 4351.4.

The method applies to organic compounds which are—

(a) soluble at the concentration used under the test conditions;

(b) non-volatile, or which have a negligible vapour pressure under the test conditions;

(c) not lost by foaming from the test solution;

(d) not significantly adsorbable on glass and activated sludge; and

(e) not inhibitory to the test microorganisms at the concentration chosen for the test. Inhibitory effects can be determined by using a suitable test method (e.g. see ISO 8192). If the test compound is toxic, the test concentration has to be lower or a pre-exposed inoculum can be used.

NOTE: Additionally, or alternatively, the semi-continuous activated sludge (SCAS) units may be used to provide sludge exposed to the test compound in order to see whether the sludge becomes adapted, to be used as inocula in other biodegradation tests.

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
4351.2	Part 2: Determination by analysis of dissolved organic carbon (DOC)
4351.3	Part 3: Determination by oxygen demand in a closed respirometer
4351.4	Part 4: Determination by analysis of released carbon dioxide

ISO

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 Concentration of suspended solids (of an activated sludge)—the amount of solids obtained by filtration or centrifugation of a known volume of sludge under specified conditions and drying at 105°C to constant weight.