

INTERNATIONAL
STANDARD
ISO 9439

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Second edition
1999-03-01

Water quality — Evaluation of ultimate aerobic biodegradability of organic compounds in aqueous medium — Carbon dioxide evolution test

Qualité de l'eau — Évaluation de la biodégradabilité aérobie ultime en milieu aqueux des composés organiques — Essai de dégagement de dioxyde de carbone



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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 9439 has been prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 5, *Biological methods*.

This second edition cancels and replaces the first edition (ISO 9439:1990), which has been technically revised.

Annexes A to D of this International Standard are for information only.

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Introduction

The conditions described in this International Standard do not always correspond to the optimal conditions for allowing the maximum degree of biodegradation to occur. With this test system, the microbially derived carbon dioxide (CO₂) is measured in the traps through which gas exhausted from the test vessels is passed. Some of the CO₂ remains in the medium in the vessels as dissolved inorganic carbon (DIC), the concentration of which may increase as biodegradation proceeds. As the organic carbon approaches complete removal, the concentration of DIC gradually falls and tends to reach zero by the end of incubation. It is thus necessary to acidify the medium at the end of the test to measure the biogenically formed CO₂ completely. The measurement of CO₂ in the external traps may differ from the true production of CO₂ and the kinetic rate may also be lower than a rate based on DOC removal measurement. The consequence may be that the biodegradation curves based on the trapped CO₂ may not fully represent the true microbial kinetic rate. For alternative biodegradation methods, see ISO 15462 and in particular ISO 14593, which is based on CO₂ production as well but does not have this defect.