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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 147, *Water quality,* Subcommittee SC 2, *Physical, chemical and biochemical methods*.

A list of all parts in the ISO 23697 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Total bound nitrogen (ST-TN_b) includes all inorganic forms, nitric nitrogen, nitrous nitrogen, ammoniacal nitrogen and all organic forms of nitrogen in a water sample. Nitrate in particular is one of the fundamental nutrients of algae which, in the presence of sufficient quantities of phosphates and other favourable conditions, determine the eutrophication of water. The main sources of nitrogen are both natural and anthropogenic. Of the anthropogenic sources, particular importance can be attributed to domestic wastewater and the use of fertilizers in agriculture. Reduction of nitrogen load is carried out in domestic and industrial wastewater treatment plants through special denitrification processes.

The presence of significant concentrations of nitrogenous substances in water can indicate pollution and pose a risk to health and environment.

Water quality — Determination of total bound nitrogen (ST-TN_b) in water using small-scale sealed tubes —

Part 1: Dimethylphenol colour reaction

WARNING — Persons using this document should be familiar with normal laboratory practice. This document does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices.

IMPORTANT — It is absolutely essential that tests conducted in accordance with this document be carried out by suitably qualified staff.

1 Scope

This document specifies a method for the determination of total bound nitrogen (ST-TN_b) in water of various origins: groundwater, surface water, and wastewater, in a measuring range of concentration generally between 0,5 mg/l and 220 mg/l of ST-TN_b using the small-scale sealed tube method. Different measuring ranges of small-scale sealed tube methods can be required.

The measuring ranges can vary depending on the type of small-scale sealed tube method of different manufacturers. It is up to the user to choose the small-scale sealed tube with the appropriate application range or to adapt samples with concentrations exceeding the measuring range of a test by preliminary dilution.

NOTE The results of a small-scale sealed tube are most precise in the middle of the application range of the test.

All small-scale sealed tube methods are based on a heated alkaline potassium persulfate oxidation in a heating block. Different digestion temperatures, 100 °C or 120 °C or 170 °C, and different digestion times are applicable. Dimethylphenol colour reactions are applied, depending on the typical operating procedure of the small-scale sealed tube used, see Clause 9.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 5667-1, *Water quality — Sampling — Part 1: Guidance on the design of sampling programmes and sampling techniques*

ISO 5667-3, *Water quality — Sampling — Part 3: Preservation and handling of water samples*

ISO 5667-10, *Water quality — Sampling — Part 10: Guidance on sampling of waste water*

ISO 8466-1, *Water quality — Calibration and evaluation of analytical methods — Part 1: Linear calibration function*

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*