INTERNATIONAL STANDARD

ISO 18611-2

First edition
2014-10-01

Ships and marine technology — Marine NOx reduction agent AUS 40 —

Part 2: Test methods

Navires et technologie marine — Agents réducteurs NOx marins AUS 40 —

Partie 2: Méthodes d'essai

Reference number
ISO 18611-2:2014(E)

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Published in Switzerland

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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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 8, *Ships and marine technology*, Subcommittee SC 2, *Marine environment protection*.

ISO 18611 consists of the following parts, under the general title *Ships and marine technology — Marine NOx reduction agent AUS 40*:

— *Part 1: Quality requirements*

— *Part 2: Test methods*

— *Part 3: Handling, transportation and storage*

Introduction

In order to protect the environment and to enhance air quality, exhaust emissions regulations around the world are continuously strengthened. For ships with large combustion engines, particulate matter (PM), nitrogen oxide (NOx) emissions, and sulfur dioxide emissions are the main concern, and efforts have been focused on the development of technology that can reduce them effectively with minimum fuel economy penalty. Selective catalytic reduction (SCR) converters using a urea solution as the reducing agent is considered to be a key technology for reducing NOx emissions. The quality of the urea solution used for that technology needs to be specified to ensure reliable and stable operation of the SCR converter systems. The ISO 18611 series provides the specifications for quality characteristics, for handling, transportation, and storage, as well as the test methods needed by manufacturers of SCR converters, by engine producers, by producers, distributors of the urea solution, and by fleet operators/ship owners.

Efficient expanding of the use of urea SCR technology requires a consolidated framework that can be followed by producers, end users, OEMs, and catalyst suppliers.

Ships and marine technology — Marine NOx reduction agent AUS 40 —

Part 2: Test methods

1 Scope

This part of ISO 18611 specifies test methods required for the determination of the quality characteristics of the NOx reduction agent AUS 40 (aqueous urea solution) specified in ISO 18611-1. In the remaining parts of ISO 18611, the term "NOx reduction agent AUS 40" will be abbreviated to "AUS 40".

This International Standard is covering quality requirements and guidelines for AUS 40 for marine applications, irrespective of manufacturing method or technique.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3675, *Crude petroleum and liquid petroleum products — Laboratory determination of density — Hydrometer method*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 4259, *Petroleum products — Determination and application of precision data in relation to methods of test*

ISO 5661, *Petroleum products — Hydrocarbon liquids — Determination of refractive index*

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

ISO 12185, *Crude petroleum and petroleum products — Determination of density — Oscillating U-tube method*

3 Specifications

Compliance with the limits specified in ISO 18611-1, Table 1 shall be determined by the test methods specified in Annexes B through J of this part of ISO 18611. Determination of the density shall be conducted in accordance with ISO 3675 or ISO 12185.

NOTE For the purposes of this International Standard, the terms "%(*m/m*)" and "%(V/V)" are used to represent the mass fraction and the volume fraction of a material respectively.

4 Sampling

Samples shall be taken in accordance with Annex A.