
**Diesel engines — NO_x reduction agent
AUS 32 —**

**Part 1:
Quality requirements**

Moteurs diesel — Agent AUS 32 de réduction des NO_x —

Partie 1: Exigences de qualité



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Contents

| | Page |
|---|------|
| Foreword | iv |
| Introduction | v |
| 1 Scope | 1 |
| 2 Normative references | 1 |
| 3 Terms and definitions | 1 |
| 4 Designation | 2 |
| 5 Requirements and testing | 2 |
| 6 Handling, transportation and storage | 2 |
| 7 Marking | 2 |
| Annex A (informative) Chemical characteristics | 4 |
| Annex B (informative) Precision of test methods | 5 |
| Bibliography | 6 |

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 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 22, *Road vehicles*, Subcommittee SC 34, *Propulsion, powertrain and powertrain fluids*.

This second edition cancels and replaces the first edition (ISO 22241-1:2006), which has been technically revised. The main changes compared to the previous edition are as follows:

- the test method for measuring urea content by refractive index was revised;
- an alternate test method for measuring trace amounts of phosphorous by ICP-OES was added (a referee method is indicated); and
- the refractive index, nD20, limit values were revised.

A list of all parts in the ISO 22241 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

In order to protect the environment, keeping the air quality as clean as possible, exhaust emissions regulations around the world have been strengthened considerably. In motor vehicles with diesel engines, particulate matters (PM) and nitrogen oxide (NO_x) emissions are the main concern, and efforts have been focused on the development of technology which can reduce them effectively with minimum fuel economy penalty. Selective catalytic reduction (SCR) converters using urea solution as the reduction agent are considered to be a key technology for reducing NO_x 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 22241 series provides the specifications for quality characteristics, for handling, transportation and storage and for the refilling interface as well as the test methods, needed by the manufacturers of motor vehicles and their engines, by converter manufacturers, by producers and distributors of the urea solution and by fleet operators.

The urea solution (AUS 32) as specified in this document is commercially available and may exist under various trade names¹⁾.

1) Trade names of products AdBlue®, ARLA 32®, DEF, etc. are examples of suitable products available commercially. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the products named.

Diesel engines — NO_x reduction agent AUS 32 —

Part 1: Quality requirements

1 Scope

This document specifies the quality characteristics of the NO_x reduction agent AUS 32 (aqueous urea solution) which is needed to operate selective catalytic reduction (SCR) converter systems in motor vehicles with diesel engines. SCR converter systems are particularly suitable for selectively reducing the nitrogen oxide (NO_x) emissions of diesel engines.

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 22241-2:2019, *Diesel engines — NO_x reduction agent AUS 32 — Part 2: Test methods*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

AUS 32

aqueous urea solution

DEF

diesel exhaust fluid

solution of *technically pure urea* (3.2) and *pure water* (3.3), having a urea content of 32,5 % (mass fraction), used as a NO_x reduction agent in SCR converter systems

Note 1 to entry: The quality characteristics are defined in [Clause 5](#).

3.2

technically pure urea

industrially produced grade of urea (CAS Number 57-13-6) with traces of biuret, ammonia and water only, free of aldehydes or other substances such as anticaking agent, and free of contaminants such as sulphur and its compounds, chloride, nitrate or other compounds

Note 1 to entry: For the contaminants mentioned above, which are not a result of the urea production process, limit values and analytical methods are not considered, as this definition excludes urea grades usually used in agriculture, which can contain such chemical compounds.

3.3

pure water

water very low in inorganic, organic or colloidal contaminants, produced, for example, by single distillation, by deionization, by ultra-filtration or by reverse osmosis