
**Road vehicles — Specification of non-
petroleum-based brake fluids for
hydraulic systems**

*Véhicules routiers — Spécifications pour liquides de frein à base non
pétrolière pour systèmes hydrauliques*



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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).

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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 22, *Road vehicles*, Subcommittee 33 *Chassis systems and components*.

This third edition cancels and replaces the second edition (ISO 4925:2005), which has been technically revised.

The main changes compared to the previous edition are as follows:

- a terms and definitions clause was added ([Clause 3](#));
- an additional class 7 is introduced and added to the already existing classes 3, 4, 5-1 and 6;
- the reserve alkalinity is added upon request out of the automotive industry;
- the intended introducing of a stroking test into a future revision of this document is replaced by the intended introduction of a wear and noise test currently under development in the SAE and ISO TF lubrication.

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

The specifications for fluids given in this document incorporate a range of performance standards in use throughout the world at the time of publication. To the already existing classes 3, 4, 5-1 and 6 an additional class 7 is added.

The major use of these fluids is in the hydraulic brake and clutch systems of road vehicles, but they can also be used in any suitable hydraulic system.

Road vehicles — Specification of non-petroleum-based brake fluids for hydraulic systems

1 Scope

This document provides the specifications, requirements and test methods, for non-petroleum-based fluids used in road-vehicle hydraulic brake and clutch systems that are designed for use with such fluids and equipped with seals, cups or double-lipped type gland seals made of styrene-butadiene rubber (SBR) and ethylene-propylene elastomer (EPDM).

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 37, *Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties*

ISO 48-2, *Rubber, vulcanized or thermoplastic — Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

ISO 812, *Rubber, vulcanized or thermoplastic — Determination of low-temperature brittleness*

ISO 815 (all parts), *Rubber, vulcanized or thermoplastic — Determination of compression set*

ISO 3104, *Petroleum products — Transparent and opaque liquids — Determination of kinematic viscosity and calculation of dynamic viscosity*

ISO 4926, *Road vehicle — Hydraulic braking systems — Non petroleum base reference fluids*

ASTM D 91, *Standard test method for precipitation number of lubricating oils*

ASTM E 298, *Standard test methods for assay of organic peroxides*

ASTM D 395, *Standard test methods for rubber property — Compression set*

ASTM D 412, *Standard test methods for vulcanized rubber and thermoplastic elastomers — Tension*

ASTM D 746, *Standard test method for brittleness temperature of plastics and elastomers by impact*

ASTM D 865, *Standard test method for rubber — Deterioration by heating in air (test tube enclosure)*

ASTM D 1120, *Standard test method for boiling point of engine coolants*

ASTM D 1121, *Standard test method for reserve alkalinity of engine coolants and antirusts*

ASTM D 1123, *Standard test methods for water in engine coolant concentrate by the Karl Fisher reagent method*

ASTM D 1415, *Standard test method for rubber property — International hardness*

ASTM D 3182, *Standard practice for rubber — Materials, equipment and procedures for mixing standard compounds and preparing standard vulcanized sheets*

ASTM D 3185:2006, *Standard test methods for rubber—Evaluation of SBR (Styrene-Butadiene Rubber) including mixtures with oil*