INTERNATIONAL STANDARD

ISO 4925

Second edition
2005-02-01

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

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

Reference number
ISO 4925:2005(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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

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.

ISO 4925 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 2, *Braking systems and equipment*.

This second edition cancels and replaces the first edition (ISO 4925:1978), which has been technically revised.

Introduction

The specifications for fluids given in this International Standard incorporate a range of performance standards in use throughout the world at the time of publication. The classes include fluids technically equivalent to those designated DOT 3, DOT 4 and DOT 5.1.

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-base brake fluids for hydraulic systems

1 Scope

This International Standard gives the specifications — requirements and test methods — for non-petroleum-base 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 referenced documents are indispensable for the application 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 37:1994, *Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties*

ISO 48:1994, *Rubber, vulcanized or thermoplastic — Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

ISO 812:1991, *Rubber, vulcanized — Determination of low-temperature brittleness*

ISO 815:1991, *Rubber, vulcanized or thermoplastic — Determination of compression set at ambient, elevated or low temperatures*

ISO 3104:1994, *Petroleum products — Transparent and opaque liquids — Determination of kinematic viscosity and calculation of dynamic viscosity*

ISO 4926:1978, *Road vehicle — Hydraulic brake 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 664, *Standard test method for acid number of petroleum products by potentiometric titration*

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

ASTM D 865, *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 1123, *Standard test method for water in engine coolant concentrate by the Fisher reagent method*

ASTM D 1209, *Standard test method for colour of clear liquids (platinum-cobalt scale)*

ASTM D 1364, *Standard test method for water in volatile solvents (Karl Fischer reagent titration method)*

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

ASTM D 1613, *Standard test method for acidity in volatile solvents and chemical intermediates used in paint, varnish, lacquer and related products*

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

SAE J 1703, *Motor vehicle brake fluid*

3 Materials

On visual inspection, the fluid shall be clear and free of suspended matter, dirt and sediment. The quality of the materials used shall be such that the resulting product conforms to the requirements of this International Standard and that uniformity of performance is ensured. Fluids may be dyed, provided no confusion is possible between them and other types of fluids.

4 Specifications

The product shall meet the requirements for the appropriate class in accordance with Table 1, using the test methods according to Clause 5.

NOTE It is intended that a stroking test be added to a future revision of this International Standard.

Table 1 — Brake fluid specifications — Tests and requirements

Test method (subclause)	Test description		Unit	Requirement(s)			
				Class 3	Class 4	Class 5-1	Class 6
5.1	Viscosity						
		at − 40 °C	mm^2/s	⩽ 1 500		⩽ 900	⩽ 750
		at 100 °C	mm^2/s	⩾ 1,5			
5.2	Equilibrium reflux boiling point (ERBP)		°C	⩾ 205	⩾ 230	⩾ 260	⩾ 250
5.2.6		Wet ERBP	°C	⩾ 140	⩾ 155	⩾ 180	⩾ 165
5.3	pH		—	7 to 11,5			
5.4	Fluid stability						
5.4.1		High-temperature stability	°C	± 5 °C			
5.4.2		Chemical stability	°C	± 5 °C			