
International Standard



7631

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Road vehicles — Elastomeric cups and seals for cylinders for hydraulic braking systems using a petroleum base hydraulic brake fluid (service temperature 120 °C max.)

Véhicules routiers — Coupelles et joints en caoutchouc pour cylindres de dispositifs de freinage hydrauliques utilisant un liquide de frein à base pétrolière (température maximale d'utilisation 120 °C)

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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 7631 was prepared by Technical Committee ISO/TC 22, *Road vehicles*.

Road vehicles — Elastomeric cups and seals for cylinders for hydraulic braking systems using a petroleum base hydraulic brake fluid (service temperature 120 °C max.)

1 Scope

This International Standard specifies performance tests of brake cups and seals for hydraulic braking systems for road vehicles used with a petroleum base hydraulic brake fluid; it does not include requirements relating to chemical composition, tensile strength and elongation of the rubber compound; disc brake seals and O-rings for hydraulic drum brake wheel cylinders are not covered by this International Standard.

2 Field of application

This International Standard applies to moulded seals (cups or double-lipped type gland seals), 60 mm in diameter and under, compounded from high temperature-resistant rubber, for use in hydraulic cylinders employing a petroleum base brake fluid conforming to the requirements of ISO 7308.

3 References

ISO 48, *Vulcanized rubbers — Determination of hardness (Hardness between 30 and 85 IRHD)*.

ISO 7308, *Road vehicles — Petroleum base hydraulic brake fluid for hydraulic braking device with stored energy*.¹⁾

ISO 7309, *Road vehicles — Hydraulic braking systems — ISO reference petroleum base fluid*.

ASTM D 91, *Test for precipitation number of lubricating oils*.

ASTM E 145, *Specifications for gravity convection and forced ventilation ovens*.

NOTE — The ASTM reference will be replaced by ISO references when the latter become available.

4 Definitions

For the purpose of this International Standard, the following definitions apply.

4.1 sloughing : The release of carbon black on the surface of the rubber.

4.2 scoring : The formation of grooves in the rubber parallel to the direction of travel of the piston or seal.

4.3 souffing : Visible erosion of the outer surface of the rubber.

5 General requirements

5.1 Workmanship and finish

Seals shall be free from blisters, pin-holes, cracks, protruberances, embedded foreign material or other physical defects which can be detected by thorough inspection, and shall conform to the dimensions specified on the drawings.

5.2 Marking and identifying

5.2.1 Marking

The identification mark of the manufacturer and other details as specified on drawings shall be moulded into each seal. Each seal in conformity with this International Standard may also have the following mark : ISO 7631.

5.2.2 Identifying

5.2.2.1 Each seal shall bear a green-coloured identification specifying that it refers to a category of seals for use with a petroleum base brake fluid.

1) At present at the stage of draft.

5.2.2.2 The green-coloured identification can be ink or tinted elastomer.

5.2.2.3 The place and type of green identification shall be the subject of an agreement between buyer and supplier.

5.2.2.4 The green identification shall entail neither extra thickness nor alteration of material characteristics; it shall remain during all handling before bringing the seal into use.

5.3 Packaging

Seals shall be packaged to meet requirements specified by the purchaser.

5.4 Sampling

The minimum lot on which complete specification tests shall be conducted for quality control testing, or the frequency of any specific type test used to check production, shall be agreed upon by the manufacturer and the purchaser.

6 Test requirements

6.1 Resistance to fluid at elevated temperature

After being subjected to the test for resistance to compatibility fluid at elevated temperature as described in 7.1, the seals shall conform to the requirements specified in table 1.

Table 1 — Requirements for fluid resistance at elevated temperature (120 °C)

Characteristic	Permitted change
Volume	0 to + 15 %
Outside diameter, lip	0 to + 5,75 %
Outside diameter, base	0 to + 5,75 %
Hardness	-7 to + 8 IRHD

The seals shall show no excessive disintegration as evidenced by blisters or sloughing.

6.2 Precipitation

Not more than 0,3 % sediment by volume shall be formed in the centrifuge tube after the seals have been tested as specified in 7.2.

6.3 Wheel cylinder seals heat pressure stroking

Wheel cylinder seals, when tested by the procedure specified in 7.3, shall meet the following performance requirements.

6.3.1 Lip diameter change

The minimum lip diameter of wheel cylinder seals after the stroking test shall be greater than the wheel cylinder bore by the minimum dimensions specified in table 2.

Table 2 — Lip diameter change, wheel cylinder seals

Diameter mm	Excess over bore mm min.
≤ 25,4	0,51
> 25,4 and ≤ 38,1	0,64
> 38,1 and ≤ 60	0,76

6.3.2 Leakage

Constant dampness past the seals or fluid discoloration of the filter paper on two or more inspections shall be cause for rejection.

6.3.3 Corrosion

Pistons and cylinder bore shall not show corrosion as evidenced by pitting to an extent discernible to the naked eye; but staining or discoloration shall be permitted.

6.3.4 Change in hardness

Rubber seals shall not change in hardness by more than the values shown in table 1 when tested in accordance with the procedure in 7.7.

6.3.5 Condition of test seals

Wheel cylinder seals shall not show excessive deterioration such as scoring, scuffing, blistering, cracking, chipping (heel abrasion) or change from original shape.

6.4 Master cylinder seals heat pressure stroking

Master cylinder seals, when tested as specified in 7.4, shall meet the following performance requirements.

6.4.1 Lip diameter change

The minimum lip diameter of master cylinder seals after the stroking test shall be greater than the master cylinder bore by the minimum dimensions specified in table 3.

Table 3 — Lip diameter change, master cylinder seals

Diameter mm	Excess over bore mm min.
≤ 25,4	0,38
> 25,4 and ≤ 38,1	0,51
> 38,1 and ≤ 60	0,64

6.4.2 Leakage

As for wheel cylinder seals (see 6.3.2).

6.4.3 Corrosion

As for wheel cylinder seals (see 6.3.3).