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# International Standard



# 7309

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

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## Road vehicles — Hydraulic braking systems — ISO reference petroleum base fluid

*Véhicules routiers — Freins hydrauliques — Liquide ISO de référence à base pétrolière*

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**Descriptors** : road vehicles, braking systems, hydraulic brakes, brake fluids, specifications, chemical composition.

## 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 7309 was prepared by Technical Committee ISO/TC 22, *Road vehicles*.

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# Road vehicles — Hydraulic braking systems — ISO reference petroleum base fluid

## 1 Scope and field of application

This International Standard specifies the composition and required characteristics of a reference fluid<sup>1)</sup> used for the testing of hydraulic braking systems and components mounted on road vehicles.

## 2 References

ISO 2592, *Petroleum products — Determination of flash and fire points — Cleveland open cup method.*

ISO 3016, *Petroleum oils — Determination of pour point.*

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

ISO 3405, *Petroleum products — Determination of distillation characteristics.*

ISO 6618, *Petroleum products and lubricants — Neutralization number — Colour indicator titration method.*<sup>2)</sup>

## 3 Composition

The composition of the ISO reference petroleum base fluid<sup>1)</sup> is given in table 1.

Table 1

Item	Constituent	Composition % (m/m)
1	Pentamers of hydrogenated propylene	80 ± 1,2
2	Poly(alkyl methacrylate)	17 ± 1
3	1,4-di-( <i>t</i> -butyloxy) benzene	0,5 ± 0,05
4	Tril(isopropylphenyl) phosphate	1 ± 0,1
5	Anthraquinone green colouring	(20 ± 2) × 10 <sup>-4</sup>
6	Perylene yellow-green colouring	(40 ± 4) × 10 <sup>-4</sup>

## 4 Physical and chemical characteristics required

The required characteristics of the ISO reference petroleum base fluid are given in table 2.

Table 2

Characteristic	Unit	Method of determination	Value
Kinematic viscosity at 100 °C	mm <sup>2</sup> /s	ISO 3104	> 6
Kinematic viscosity at 40 °C	mm <sup>2</sup> /s	ISO 3104	18 < $\nu$ < 21
Kinematic viscosity at -40 °C	mm <sup>2</sup> /s	ISO 3104	< 2 000
Pour point	°C	ISO 3016	< - 50
Flash point (Cleveland open cup)	°C	ISO 2592	> 105
Initial boiling point	°C	ISO 3405	> 240
Neutralization number $I_A$	mg KOH/g	ISO 6618*	< 0,2
Phosphorus	ppm	X-ray fluorescence	800 ± 80

\* A potentiometric method will form the subject of ISO 6619.

1) A list of suppliers of the reference fluid or its constituents is available from the ISO/TC 22 Secretariat or the ISO Central Secretariat.

2) At present at the stage of draft.

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