
INTERNATIONAL STANDARD



4926

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**Road vehicles — Hydraulic brake systems — Non-petroleum
base reference fluids**

Véhicules routiers — Freins hydrauliques — Liquides de référence à base non pétrolière

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

International Standard ISO 4926 was developed by Technical Committee ISO/TC 22, Road vehicles, and was circulated to the member bodies in June 1978.

It has been approved by the member bodies of the following countries :

Australia	Hungary	Philippines
Austria	Iran	South Africa, Rep. of
Belgium	Italy	Spain
Brazil	Japan	Sweden
Chile	Korea, Rep. of	Switzerland
Czechoslovakia	Mexico	United Kingdom
France	Netherlands	U.S.A.
Germany	New Zealand	Yugoslavia

No member body expressed disapproval of the document.

Road vehicles — Hydraulic brake systems — Non-petroleum base reference fluids

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the composition and some characteristics of two reference fluids used for the testing of hydraulic braking systems and components mounted on road vehicles.

2 ISO COMPATIBILITY FLUID — COMPOSITION

Item	Constituent	Composition mass %
1	Monoethyl ether of diethylene glycol	51,70
2	Monobutyl ether of diethylene glycol	2,26
3	Methyl ether of tripropylene glycol	5,12
4	Polyalkylene oxide triol, kinematic viscosity 200 ± 10 cSt ¹⁾ at 38 °C, relative density 20/20 °C 1,064	5,30
5	Ethylene glycol	2,47
6	Diethylene glycol	1,34
7	Propylene glycol	2,45
8	Methyl isobutyl carbinol	4,30
9	Polypropylene glycol, average molecular mass 2 025	2,30
10	Polypropylene glycol, average molecular mass 150	1,30
11	Propylene glycol monoricinoleate	3,30
12	Reacted castor oil — polypropylene glycol	1,90
13	2-Methyl, 2, 4 pentanediol	2,80
14	Monobutyl ether 1, 2 oxyethylene, 1, 2 oxypropylene glycols, relative density 20/20 °C 1,058, kinematic viscosity 440 ± 22 cSt ¹⁾ at 38 °C	3,16
15	Monobutyl ether 1, 2 oxyethylene, 1, 2 oxypropylene glycols, relative density 20/20 °C 1,038, kinematic viscosity $56,5 \pm 3$ cSt ¹⁾ at 38 °C	8,85
16	Borax-ethylene glycol condensate (25 % sodium tetraborate, anhydrous)	0,25
17	Diphenylol propane	0,53
18	Sodium nitrate	0,01
19	Sodium tetraborate	0,10
20	Potassium tetraborate	0,18
21	Tricresyl phosphate	0,10
22	Amino imidazoline salt 33 % solution	0,01
23	Potassium castor oil soap (neutral-anhydrous)	0,18
24	N-phenylmorpholine	0,09

NOTE — Item 4 : Glycerine initiated triol using charges of 50 % ethylene oxide and 50 % propylene oxide.

Items 14 and 15 : Butanol initiated monoether using charges of 50 % ethylene oxide and 50 % propylene oxide.

1) 1 cSt = 1 mm²/s. A recommended submultiple of the SI unit (m²/s) for kinematic viscosity is the mm²/s. In practice the centistokes (cSt) is generally used.

3 ISO FLUID FOR STORAGE CORROSION TEST

3.1 Composition

Item	Constituent	Composition mass %
1	Castor oil	38,7 ± 1,0
2	Diethylene glycol monomethyl ether	31,4 ± 0,5
3	Ethylene glycol monobutyl ether	27,3 ± 0,5
4	Borax-glycol condensate	2,1 ± 0,2
5	Di- <i>t</i> -butyl- <i>p</i> -cresol	0,475 ± 0,050
6	<i>m</i> -Cresol	0,025 ± 0,005

NOTE — Items 2, 3, 5: The diethylene glycol monomethyl ether, ethylene glycol monobutyl ether, and di-*t*-butyl-*p*-cresol shall be technical grade.

Item 4: The borax-glycol condensate shall be 30 parts by mass of sodium borate decahydrate ($\text{Na}_2\text{B}_4\text{O}_{10} \cdot 10\text{H}_2\text{O}$) combined with 100 parts by mass of 1, 2 propylene glycol.

3.2 Physical and chemical requirements

Boiling point at 101,3 kPa	167 to 196 °C
pH value	9,9 to 10,7
Relative density 20/20 °C	0,962 0 to 0,968 0

4 AVAILABILITY

The two above fluids can be obtained from the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, Pa. 15096 U.S.A. or from the Laboratoire de recherches et de contrôle du caoutchouc, 12, rue Carvès, 92120-Montrouge, FRANCE.