INTERNATIONAL STANDARD 3469

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

Road vehicles — Windscreen washer systems for passenger cars — Test methods

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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 3469 was drawn up by Technical Committee ISO/TC 22, *Road vehicles,* and circulated to the Member Bodies in May 1974.

It has been approved by the Member Bodies of the following countries :

Austria	Hungary	South Africa, Rep. of
Belgium	Iran	Sweden
Brazil	Italy	Switzerland
Bulgaria	Japan	Thailand
Czechoslovakia	Netherlands	Turkey
France	Poland	Yugoslavia
Germany	Romania	

The Member Bodies of the following countries expressed disapproval of the document on technical grounds :

United Kingdom
U.S.A.

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Road vehicles — Windscreen washer systems for passenger cars — Test methods

MODIFICATION TO FOREWORD *(Inside front cover)*

The ISO Member Body for the United Kingdom has now withdrawn its disapproval of this International Standard. The United Kingdom should therefore be included in the list of countries whose Member Bodies have approved the document.

2.6 low temperature windscreen washer solution : A 50 % solution of methanol, or alternatively isopropyl alcohol, and water of not more than 205 g/1 000 kg hardness for use in low temperature tests.

2.7 nozzle : An ajustable angle device for directing the windscreen washer solution on to the windscreen.

2.8 target area : The area designated by the manufacturer on the windscreen glazing surface to which the windscreen washer solution is directed by the nozzle.

2.9 function of a windscreen washer system : The ability

c) Apply, by pouring (or any other method which provides an equivalent uniform coating), a freshly shaken quantity of the test mixture uniformly to the entire glazing surface, without coating the windscreen wiper blades.

NOTES

1 If the test mixture does not adhere uniformly to the entire windscreen glazing surface, the glazing surface is not sufficiently clean.

2 For each test specified in this procedure, a new set of wiper blades may be fitted. The equipment used either in the vehicle or in the test fixtures shall be in a new condition.

3.1.3 *Static test*

After the mixture has completely dried on the windscreen glazing surface at temperatures between + 10 °C and + 40 °C, the windscreen washer system, using water or low temperature windscreen washer solution as the windscreen washer solution, shall meet the requirements specified.

3.2 System strength

3.2.1 *Test equipment*

This shall consist of :

a) Test fixture

As specified in 3.1.1 a) or as an alternative a structure may be used to mount the windscreen washer system parts in proper vehicle attitude, with hoses coiled to reduce the overall size of the fixture for convenient utilization of small laboratory environmental chambers.

b) Temperature-measuring device

A thermometer or equivalent.

3.2.2 *Procedure*

This test shall be conducted after the test specified in 3.1 has been completed. The test shall be conducted in the following manner, using the pump operating force as specified in table 1.

a) Fill and fully prime the windscreen washer system with water. At an ambient temperature of 20 ± 2 °C all nozzles shall be plugged and the control shall be actuated six times within a period of 1 min for at least 3 s each time.

b) Fill and fully prime the windscreen washer system with water and freeze for a minimum of 4 h at a temperature of −18 ± 3 °C. Following this period and in the same temperature environment, actuate the control six times within a period of 1 min, as specified in 3.2.2 a).

c) Gradually increase the ambient temperature to 20 ± 2 °C until the ice is completely thawed. Test the functioning of the system as specified in 3.2.2 a).

TABLE 1 — **Pump operating force**

Type of pump	**Force** (applied for a minimum of 3 s)
Hand operated	110 to 135 N
Foot operated	400 to 445 N
Power operated	Maximum specified by the vehicle manufacturer

3.3 Temperature performance, and exposure test procedures

3.3.1 *Test equipment*

This shall consist of :

a) Test fixture

As specified in 3.2.1 a).

b) Environmental chamber(s) capable of maintaining the test temperature.

3.3.2 *Procedures*

These tests shall be conducted after the test specified in 3.2 has been completed.

Fill and prime the windscreen washer system with windscreen washer solution and perform the following tests :

a) LOW TEMPERATURE EXPOSURE

Using water as the windscreen washer solution, reduce the ambient temperature to −18 ± 3 °C and maintain for sufficient time to ensure that the total mass of the water in the reservoir is frozen, including the core which freezes last. Following this period, gradually increase the ambient temperature to 20 ± 2 °C until the ice is completely thawed. Repeat this freeze-thaw cycle six times. After the last cycle, test the functioning of the system as specified in 3.2.2 a).

b) HIGH TEMPERATURE EXPOSURE

Using water as the windscreen washer solution, increase the ambient temperature to 80 ± 3 °C and maintain for a minimum of 8 h. Following this period, reduce the ambient temperature to 20 ± 2 °C until the temperature of the system stabilizes. Test the functioning of the system as specified in 3.2.2 a).

c) OPERATING RANGE

Using a low temperature windscreen washer solution, reduce the ambient temperature to −18 ± 3 °C until the windscreen washer system has stabilized at this temperature. Following this period and in the same environment, test the functioning of the windscreen washer system, using the force specified in table 1. Repeat with an ambient temperature of 80 ± 3 °C using water as the windscreen washer solution and again test the functioning of the windscreen washer system as specified in 3.2.2 a).

ANNEX

SPECIFICATION FOR TEST DUST

A.1 The test dust shall be in accordance with table 2.

TABLE 2 – **Analysis of test dust**

Constituent	Mass %
SiO_2	67 to 69
Fe_2O_3	3 to 5
Al_2O_3	15 to 17
CaO	2 to 4
MgO	0,5 to 1,5
Total alkalis	3 to 5
Ignition loss	2 to 3

A.2 Particle size distribution of coarse grade dust shall be in accordance with table 3.

TABLE 3 – **Particle size distribution**

Particle size μm	Particle size distribution %
0 to 5	12 ± 2
5 to 10	12 ± 3
10 to 20	14 ± 3
20 to 40	23 ± 3
40 to 80	30 ± 3
80 to 200	9 ± 3