INTERNATIONAL STANDARD

ISO 6255

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Passenger cars — Rear-window washing and wiping systems — Test methods

Voitures particulières — Dispositifs de lave-glace et d'essuie-glace pour lunette arrière — Méthodes d'essai

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Foreword

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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.

International Standard ISO 6255 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 17, *Visibility*.

This second edition cancels and replaces the first edition (ISO 6255:1987), of wich it constitutes a technical revision.

Annex A forms an integral part of this International Standard. Annex B is for information only.

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Introduction

This International Standard is one of a series of three International Standards covering demisting (ISO 5897), defrosting (ISO 5898), and washing and wiping (ISO 6255) systems for the rear-window of passenger cars.

Tests on defrosting, washing, demisting and wiping systems for the windscreen of passenger cars are covered respectively in ISO 3468, ISO 3469, ISO 3470 and ISO 9619.

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Passenger cars — Rear-window washing and wiping systems — Test methods

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1 Scope

This International Standard specifies test methods for passenger car (as defined in ISO 3833) rear-window washing and wiping systems, when these are fitted, excluding convertible passenger cars with rear-windows made of plastic.

This International Standard does not specify reference areas or levels of performance, since at the time it was prepared there was sufficient data available.

NOTE — It may be possible to carry out tests of a similar nature on windscreen and rear-window simultaneously.

The test methods are intended to apply to types of power-driven vehicles which do not differ from one another in respect of the following essential features which affect washing and wiping performance:

a) shape, size and surface characteristics of the rear-window;

b) characteristics of each system designated by the vehicle manufacturer as contributing to the washing and wiping of the rear-window.

2 Normative reference

The following standard contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3833:1977, *Road vehicles — Types — Terms and definitions.*

3 Definitions

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

3.1 commercial additives: Products which are compatible with the washing and wiping systems, which may be added to lower the washer solution freezing point, and/or assist in cleansing, and/or increase the wetting capacity of the washer solution.

3.2 control: Means or device for starting and stopping the operation of the washing and wiping system(s).

NOTES

1 The actuation may be completely or partially automatic.

2 Operation of the two systems may be independent, semi-coordinated or fully coordinated.

3.3 functioning of a washing system: Ability of a washing system to direct washer solution onto the target area of the outer glazed surface without leakage or disconnection of a washer pipe when the system is operated in accordance with the vehicle manufacturer's instructions.

3.4 nozzle: Device for directing washer solution to the outer glazed surface.

3.5 pump: Device for transferring washer solution from the reservoir through the washing system to the outer glazed surface.

3.6 rear-window washing system: Device for storing washer solution and applying it to the rear-window outer glazed surface together with the necessary controls.

3.7 rear-window wiping system: Device for wiping the rear-window outer glazed surface together with the necessary accessoires and controls.

3.8 reservoir: Container capable of storing washer solution.

3.9 target area: Area indicated by the vehicle or system manufacturer to which the nozzle applies the washer solution in accordance with the requirements of this International Standard (see clauses 5 and 6).

3.10 test mixture: Mixture as specificed in 4.2.2.

3.11 washer solution: Fluid used in the washing system consisting of water with residue not exceeding 205 mg $CaCO_3$/l after evaporation, with appropriate commercial additives.

3.12 washed/wiped area: Area on the outer glazed surface from which the test mixture has been removed.

3.13 wiped area: Area of the outer glazed surface that is in contact with the wiper blade(s) operating on a wet window.

NOTE — The parking travel, if it exists, is disregarded.

3.14 wiper cycle: Movement of a wiper blade to cover its wiping arc and to return to its starting point.

NOTE — The parking travel, if it exists, is disregarded.

4 Verification of washing system

4.1 General requirements

For the purpose of the tests in this clause, the same washing system components shall be submitted to all of the tests. At the commencement of the tests, the equipment shall be in a condition equivalent to new.

If any part of the system is mounted in the engine compartment, that part (or the whole system at the vehicle manufacturer's discretion) may be tested at a temperature of 80 °C ± 3 °C.

4.2 Test equipment

4.2.1 Test fixture, consisting of a structure used to mount the rear glazed surface and the components of the washing system and wiping system in a manner representative of the vehicle installation.

Alternatively, test vehicle fitted with a washing system and a wiping system may be used.

NOTE — It is permissible to re-locate any components other than the nozzle position with respect to the target area for convenience of testing if this does not affect the functioning of the system in the vehicle.

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4.2.2 Test mixture, and the equipment necessary for its application.

The test mixture is composed, by volume, of the following:

92,5 % water (with a hardness of less than 205 mg/l after evaporation);

5 % aqueous saturated salt (sodium chloride) solution;

2,5 % dust constituted in accordance with tables 1 and 2.

Table 1 — Analysis of test dust

Constituent	Mass fraction %
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

Table 2 — Particle size distribution of the test dust

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

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4.3 Verification of strength of washing system

4.3.1 Climatic conditions

This procedure is intended to cover a representative range of climatic conditions.

4.3.2 Test equipment

4.3.2.1 Equipment as specified in 4.2.1.

4.3.2.2 Suitable **environmental chamber(s)** with temperature-measuring device(s) (thermometer or equivalent).

4.3.3 Test method for full exposure range strength

4.3.3.1 Fill and fully prime the washing system with water with residue not exceeding 205 mg $CaCO_3$/l after evaporation. Maintain at an ambient temperature of 20 °C ± 2 °C for a minimum of 4 h, plug all nozzles and try to operate the washing system six times within 1 min using the force specified in table 3.

NOTE — If instrumentation is available to ensure that the water and components are at the test temperature, a shorter soak time may be used.

Table 3 — Pump operating force

Operation of pump	Operating force
Hand	11 daN to 13,5 daN
Foot	40 daN to 44,5 daN
Power	Maximum power input level specified by the vehicle manufacturer

4.3.3.2 Fill and fully prime the washing system with water with residue not exceeding 205 mg $CaCO_3$/l after evaporation. Cool to a temperature of – 18 °C ± 3 °C and maintain for a minimum of 8 h. Then, at the same temperature, try to operate the washing system six times within 1 min using the force specified in table 3.

NOTE — If instrumentation is available to ensure that the components are at the test temperature and the water is frozen, a shorter soak time may be used.

4.3.3.3 Fill and fully prime the washing system with water with residue not exceeding 205 mg $CaCO_3$/l after evaporation. Increase the temperature to 60 °C ± 3 °C and maintain for 8 h. Then try to operate the washing system six times within 1 min using the force specified in table 3. At the completion of this test remove the plugs and operate the washing system.

NOTE — If instrumentation is available to ensure that the water and components are at the test temperature, a shorter soak time may be used.

4.4 Procedures to verify functioning of washing system at low and high ambient temperatures

4.4.1 Test equipment

Equipment as specified in 4.3.2.

4.4.2 Test method for full exposure range functioning

These tests shall be carried out after completion of the test specified in 4.3 and as follows.

4.4.2.1 Test preparation

Before each test, fill and fully prime the washing system with water with residue not exceeding 205 mg $CaCO_3$/l after evaporation, and carry out the tests specified in 4.4.2.2 and 4.4.2.3.

4.4.2.2 Low-temperature exposure

Lower the ambient temperature to – 18 °C ± 3 °C and maintain it for a minimum of 4 h.

NOTE — If instrumentation is available to ensure that the components are at the test temperature and the water is frozen, a shorter soak time may be used.

Following this period, increase the temperature to 20 °C ± 2 °C until the ice has completely thawed, but in any case no longer than 4 h. Repeat this freeze/thaw cycle to give a total of six cycles. After the last cycle, test the functioning of the washing system (3.3).

NOTE — If instrumentation is available to ensure that the water and components are at the test temperature, a shorter soak time may be used.

4.4.2.3 High-temperature exposure

Increase the ambient temperature to 60 °C ± 3 °C and maintain it for 8 h. Then reduce the temperature to 20 °C ± 2 °C. Test the functioning of the washing system (3.3).

NOTE — If instrumentation is available to ensure that the water and components are at the test temperature, a shorter soak time may be used.

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5 Verification of wiping system

5.1 General requirements

The purpose of this test is to determine the wiped area of the rear-window.

A complete wiping system shall be submitted to the test described in this clause. At the commencement of the test, the equipment shall be in a condition equivalent to new and shall be of the same type as used in clause 4.

The wiping system shall be capable of wiping a specified percentage of a specified area.

5.2 Test equipment

5.2.1 Equipment as specified in 4.2.1.

NOTE — If the vehicle manufacturer so desires, the washing system may be removed for the purposes of this test. If the washing system is kept and activated, the washer solution shall be as defined in 3.11.

5.2.2 **Spray equipment** to apply water to the glazed surface.

5.3 Test method

5.3.1 During the test, maintain the temperature in the range 5 °C to 40 °C.

5.3.2 Apply water for the period of the test and operate the wiping system as indicated by the vehicle manufacturer.

5.3.3 Using a suitable marker, outline on the inside of the glazed surface the area that is wiped by the blade(s). (See annex A.)

5.3.4 At the completion of the test, the wiped area shall be recorded and the performance verified.

6 Verification of performance of washing and wiping systems

6.1 General requirements

For the purposes of the test in this clause, the washing and wiping systems shall be of the same model as those used for the tests in clauses 4 and 5 and in a condition equivalent to new.

When tested in accordance with 6.3, the washing system in conjunction with the wiping system shall be capable of removing the test mixture from a specified percentage of a specified area, within a time of ten wiper cycles using the input values specified by the vehicle manufacturer, which shall not exceed those given in the table 3.

6.2 Test equipment

6.2.1 Equipment as specified in 4.2.

6.2.2 **Wiper cycle counting device,** if required.

6.3 Test method

The test shall be conducted as indicated in 6.3.1 to 6.3.4, regardless of the temperature range (see clause 4).

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6.3.1 Using the pump operating force specified by the vehicle manufacturer, but not exceeding that specified in table 3, adjust the washing system nozzle(s) as indicated by the vehicle manufacturer.

6.3.2 Thoroughly degrease the outer and inner glazed surfaces using methylated spirit or another appropriate degreasing agent. When dry, apply a solution of ammonia in water with a volume fraction of 3 % to 10 %, allow to dry and finally wipe with a dry cotton cloth or a paper towel that contains no additive.

6.3.3 Apply a quantity of freshly prepared and shaken test mixture (4.2.2) uniformly to the entire outer glazed surface, without coating the wiper blades.

6.3.4 After the mixture has completely dried, activate within 1 h the washing system as indicated by the vehicle manufacturer, for a maximum of 10 cycles of the wiping system. The ambient temperature shall be in the range 5 °C to 40 °C, and the washer system filled with washer solution or low temperature washer solution. Measure the washed/wiped area by the method given in annex A and check the performance.

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Annex A
(normative)

Suggested methods of determining washed/wiped and wiped areas

A.1 Washed/wiped area for washing and wiping system

Place a piece of heavy clear tracing paper on the outer glazed surface and trace the rear window outline and also the outline of the specified area. Trace the outline of the area from which the test mixture has been removed and calculate the percentage of the specified area that was washed/wiped during the test.

NOTE — It is recommended that the cleared area be outlined on the glazed surface prior to transference on to the tracing paper.

A.2 Wiped area

Place a piece of heavy clear tracing paper on the outer glazed surface and trace the outline of the rear window, the specified area and the wiped area pattern. (See 5.3.3.) Using the traced wiped area pattern, calculate the percentage of specified area that was wiped during the test.

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