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Passenger cars — Windscreen wiping systems — Test method

*Voitures particulières — Dispositif d'essuie-glace du pare-brise —
Méthode 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 9619 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Sub-Committee SC 17, *Visibility*.

Annexes A, B, C and D form an integral part of this International Standard.

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Introduction

This International Standard is one of a series of four Standards dealing respectively with the testing of defrosting (ISO 3468), washing (ISO 3469), demisting (ISO 3470), and wiping systems (ISO 9619) for windscreens.

The testing of demisting, defrosting, and washing and wiping systems and equipment for rear windows of passenger cars is dealt with in ISO 5897, ISO 5898 and ISO 6255 respectively.

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Passenger cars — Windscreen wiping systems — Test method

1 Scope

This International Standard specifies the test method for passenger car (term 3.1.1 in ISO 3833:1977) windscreen wiping systems, when they are fitted. It does not specify reference areas or levels of performance.

The tests need not be repeated on types of power-driven vehicles which do not differ from one another in respect of the following essential features as far as windscreen wiping performance is concerned:

- a) shape, size, surface characteristics and aerodynamic characteristics of the windscreen and its surroundings;
- b) characteristics of each system designated by the vehicle manufacturer as contributing to wiping of the windscreen.

This International Standard permits aerodynamic tests to be carried out either in a wind tunnel or on a test track, the results from which are equivalent.

2 Normative reference

The following standard contains 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 edition 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 control: Device or accessory for starting and stopping the windscreen wiper system. Starting and stopping may be coordinated with the operation of the windscreen washer or be totally independent of it.

3.2 test mixtures: Mixture as specified in annex A.

3.3 test fluid: Water with sufficient additives to enable a permanent record to be made of the wiped area, but which does not affect the performance of the wiping system. (See annex B.)

3.4 wiped area: Area of the outer glazed surface that is cleared by the wiper blade(s) when operating on a wet windscreen. The parking travel, if it exists, is disregarded.

3.5 dry windscreen: Windscreen which has been cleaned in accordance with 4.3.2.

3.6 wet windscreen: Windscreen which is uniformly wetted over its whole area at a simulated rainfall rate of at least 1 mm/min, calculated normal to the glazed surface.

3.7 test speed: Ground speed on road or track, or relative airspeed in wind tunnel at 0° yaw angle.

3.8 wiper cycle: Movement of a wiper blade which is required to cover its wiping travel and to return to its starting point. The parking travel, if it exists, is disregarded.

3.9 wiper travel: Arc that the blade travels in one cycle.

3.10 wiping system frequency: Number of wiper cycles per unit of time.

3.11 windscreen wiping system: Device for wiping the outer glazed surface of the windscreen, together with the necessary accessories and controls.

3.12 windscreen washing system: Device for storing washer solution and applying it to the wind-

screen outer glazed surface, together with the necessary controls.

3.13 spray equipment: Equipment which may be attached to the vehicle, which will produce a wet windscreen but which will not significantly affect the aerodynamic characteristics of the vehicle.

4 Verification of wiping system

4.1 General requirements

4.1.1 For the purposes of these tests a complete wiping system shall be submitted to all of the tests. At the commencement of the tests, the equipment shall be in a condition equivalent to new and the blades shall be clean.

4.1.2 The purpose of these tests is to determine the windscreen wiped area. When tested in accordance with the procedures in 4.3 and 4.4, the wiping system shall be capable of clearing a specified percentage of a specified area.

4.2 Test equipment

4.2.1 For static tests, a test fixture consisting of a structure used to mount the windscreen and the components of the wiping system in a manner representative of the vehicle installation or a **test vehicle**.

4.2.2 For aerodynamic tests, either a test vehicle or a test fixture which has representative vehicle aerodynamic properties.

NOTE 1 It is permissible to relocate any components for the convenience of testing if this does not affect the verification of the system in the vehicle.

4.2.3 Test mixture or test fluid and related equipment necessary for its application.

4.2.4 Static test facility, test track or wind tunnel.

4.3 Static test

4.3.1 For the period of the tests the ambient temperature shall be in the range 5 °C to 40 °C. The electrical conditions shall be as given in 5.3.1.2.

Prior to testing, locate spray equipment and adjust the test fluid.

4.3.2 Thoroughly degrease the outer and inner glazed surface using an appropriate degreasing agent. When dry, apply a 3 % (V/V) to 10 % (V/V) solution of ammonia in water, allow to dry and finally wipe with a dry cotton cloth or a paper towel that contains no additive.

4.3.3 Trace the specified reference area on the windscreen inner surface using suitable marking means.

4.3.4 Apply test fluid and operate the wiping system as indicated by the vehicle manufacturer for eight cycles \pm two cycles. Stop fluid spray but continue wiping for a further two cycles. Any deposit subsequent to the completion of wiper operation shall not be included within the specified area.

NOTE 2 Other equivalent methods (e.g. talc spray) may be used provided that they give equivalent results.

4.3.5 At the completion of the test, record the wiped area and verify the appropriate performance. (See annex D.)

4.4 Aerodynamic test

4.4.1 General

For the purposes of this test, the requirements of 4.4.1.1 and 4.4.1.2 apply and the test shall be conducted as given in either 4.4.2 or 4.4.3 as specified by the vehicle manufacturer.

4.4.1.1 This test is to be conducted, when required, at a specified speed. This test does not apply to vehicles when their maximum speed is less than 60 km/h.

4.4.1.2 The environmental conditions on the test track or in the wind tunnel shall be as follows:

- temperature: 5 °C to 40 °C;
- for the track test, the wind speed measured in any direction shall be as low as possible; it shall not exceed 15 % of the vehicle ground speed and shall not affect uniform distribution of spray onto the windscreen;
- for the track test, the road surface shall be dry enough not to influence test results.

4.4.2 Track test

4.4.2.1 Test preparation

Prior to the test, install the spray equipment on the vehicle and adjust the spray to provide a wet windscreen at the specified test speed over the test distance. Fill and fully prime the spray equipment with test fluid.

Thoroughly degrease the outer and inner glazed surface using the procedure given in 4.3.2.

Trace the specified reference area on the windscreen inner surface using suitable marking means.