

INTERNATIONAL STANDARD

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Second edition
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Paints and varnishes — Determination of resistance to neutral salt spray (fog)

*Peintures et vernis — Détermination de la résistance au brouillard salin
neutre*

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ISO 7253:1996(E)**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 7253 was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*.

This second edition cancels and replaces the first edition (ISO 7253:1984) of which it constitutes a technical revision. The main changes are:

- a) the addition of a calibration procedure to check the corrosivity within the apparatus;
- b) more details have been given on the preparation of the scratches to be applied to the panels.

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

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Introduction

There is seldom a direct relationship between the resistance of organic coatings to the action of salt spray (fog) and the resistance to corrosion in other environments. This is because the effect of each of the several factors influencing the progress of corrosion, such as the formation of protective films, varies greatly with the conditions encountered. Therefore, the results obtained in the test should not be regarded as a direct guide to the corrosion resistance of the tested coatings in all environments where these coatings may be used. Also, performance of different coatings in the test should not be taken as a direct guide to the relative corrosion resistance of these coatings in service, even under the severe conditions of marine exposure. Nevertheless, the method described gives a means of checking that the quality of a paint or paint system is being maintained.

NOTE 1 The apparatus and operating conditions described in this International Standard comply, but do not necessarily equate, with ISO 9227:1990, *Corrosion tests in artificial atmospheres - Salt spray tests*. The minimum size of cabinet permissible for testing paints, varnishes and related products is greater (see 6.1).

Paints and varnishes — Determination of resistance to neutral salt spray (fog)

1 Scope

This International Standard is one of a series of standards dealing with the sampling and testing of paints, varnishes and related products.

It describes a method for determining the resistance of coatings to neutral salt spray (fog) in accordance with the requirements of coating or product specifications.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were 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 standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1512:1991, *Paints and varnishes — Sampling of products in liquid or paste form*

ISO 1513:1992, *Paints and varnishes — Examination and preparation of samples for testing*

ISO 1514:1993, *Paints and varnishes — Standard panels for testing*

ISO 2808:—¹⁾, *Paints and varnishes — Determination of film thickness*

ISO 3270:1984, *Paints and varnishes and their raw materials - Temperatures and humidities for conditioning and testing*

ISO 3574:1986, *Cold-reduced carbon steel sheet of commercial and drawing qualities*

ISO 3696:1987, *Water for analytical laboratory use - Specification and test methods*

ISO 4628-1:1982, *Paints and varnishes - Evaluation of degradation of paint coatings - Designation of intensity, quantity and size of common types of defect - Part 1: General principles and rating schemes*

ISO 4628-2:1982, *Paints and varnishes - Evaluation of degradation of paint coatings - Designation of intensity, quantity and size of common types of defect - Part 2: Designation of degree of blistering*

ISO 4628-3:1982, *Paints and varnishes - Evaluation of degradation of paint coatings - Designation of intensity, quantity and size of common types of defect - Part 3: Designation of degree of rusting*

ISO 4628-4:1982, *Paints and varnishes - Evaluation of degradation of paint coatings - Designation of intensity, quantity and size of common types of defect - Part 4: Designation of degree of cracking*

ISO 4628-5:1982, *Paints and varnishes - Evaluation of degradation of paint coatings - Designation of intensity, quantity and size of common types of defect - Part 5: Designation of degree of flaking*

¹⁾ To be published. (Revision of ISO 2808:1991)

3 Principle

A coated test panel is exposed to neutral salt spray (fog) and the effects of exposure are evaluated by criteria agreed in advance between the interested parties, these criteria usually being of a subjective nature.

4 Required supplementary information

For any particular application, the test method specified in this International Standard needs to be completed by supplementary information. The items of supplementary information are given in annex A.

5 Test solution

5.1 The test solution shall be prepared by dissolving sodium chloride in water of at least grade 3 purity as defined in ISO 3696 to produce a concentration of (50 ± 5) g/l. The sodium chloride shall be white, of minimum assay 99,6 % (m/m), and substantially free from copper and nickel; it shall contain not more than 0,1 % (m/m) of sodium iodide. If the pH of the solution is outside the range 6,0 to 7,0, the presence of undesirable impurities in the salt or the water or both shall be investigated.

5.2 The pH of the test solution (5.1) shall be adjusted so that the pH of sprayed solution collected within the test cabinet (see clause 6) shall be between 6,5 and 7,2. Any necessary adjustment to the pH shall be made by additions of solutions of either hydrochloric acid or sodium bicarbonate of analytical grade.

NOTE 2 Attention is drawn to the possible changes in pH resulting from loss of carbon dioxide from the test solution when it is sprayed. Such changes may be avoided by reducing the carbon dioxide content of the solution by, for example, heating it to a temperature above 35 °C before it is placed in the apparatus or by making the solution from freshly boiled water.

5.3 The test solution shall be filtered before it is placed in the reservoir of the apparatus, in order to remove any solid matter which might block the nozzle(s) of the spraying device.

6 Apparatus

Ordinary laboratory apparatus and glassware, together with the following:

6.1 A spray cabinet, made of, or lined with, material resistant to corrosion by the spray and with a roof which prevents condensed moisture dripping on to the test panels. The cabinet shall have a capacity of not less than 0,4 m³ since, with smaller volumes, difficulties are experienced in ensuring even distribution of spray.

The size and shape of the cabinet shall be such that the quantity of solution collected in the spray-collecting devices (6.4) is within the limits stated in 10.2.

Cabinets with a volume greater than 2 m³ will be difficult to operate unless careful consideration is given to their design and construction. Factors which shall be taken into consideration are given in annex B.

6.2 Adjustable heater, adequate to maintain the cabinet and its contents at the specified temperature (see 10.1). The temperature shall be controlled by a thermostat element placed within the cabinet at least 100 mm from the walls. A thermometer, capable of being read from the outside, shall be placed wholly within the cabinet at least 100 mm from the walls, roof or floor.

6.3 Spraying device, comprising a supply of clean compressed air of constant pressure and humidity, a reservoir containing the solution to be sprayed and one or more spray nozzles made of material resistant to the solution.