
International Standard



6988

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Metallic and other non-organic coatings — Sulfur dioxide test with general condensation of moisture

Revêtements métalliques et autres revêtements non organiques — Essai au dioxyde de soufre avec condensation générale de l'humidité

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Foreword

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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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 6988 was prepared by Technical Committee ISO/TC 107, *Metallic and other non-organic coatings*.

Metallic and other non-organic coatings — Sulfur dioxide test with general condensation of moisture

0 Introduction

0.1 Moist air containing sulfur dioxide quickly produces easily visible corrosion of many metals in a form resembling that occurring in industrial environments. It is therefore a test medium well suited to detect pores or other sources of weakness in protective coatings and deficiencies in corrosion resistance associated with unsuitable alloy composition or treatments.

The results obtained in the test should not be regarded as a direct guide to the corrosion resistance of the tested materials in all environments where these materials may be used. Similarly, performances of different materials in the test should not be taken as a direct guide to the relative corrosion resistance of these materials in service.

0.2 The exposure conditions may be varied by either proceeding continuously or in cycles of alternate exposure to the sulfur dioxide-containing atmosphere and to the ambient atmosphere.

0.3 The variant of the test to be used, the test duration, the type of test specimen and the criteria of failure are not specified in this International Standard. Such details are provided in appropriate material and product specifications.

1 Scope and field of application

This International Standard specifies a method for assessing the resistance of materials or products to condensed moisture containing sulfur dioxide.

The method has been found to be suitable for testing metallic and non-organic coatings.

NOTE — For testing paints and varnishes, see ISO 3231, *Paints and varnishes — Determination of resistance to humid atmospheres containing sulphur dioxide*.

2 References

ISO 1462, *Metallic coatings — Coatings other than those anodic to the basis metal — Accelerated corrosion tests — Method for the evaluation of the results*.

ISO 4540, *Metallic coatings — Coatings cathodic to the substrate — Rating of electroplated test specimens subjected to corrosion tests*.

3 Apparatus and material

3.1 Test cabinet, of preferred capacity $300 \pm 10 \text{ dm}^3$, with a door capable of being closed hermetically, and fitted with the components specified in 3.2, 3.3 and 3.4. Typical test cabinets are shown in figures 1 and 2.

NOTE — Test cabinets of capacities other than $300 \pm 10 \text{ dm}^3$ may be used, provided that the other test conditions to which the test specimens are submitted are the same. The details and instructions given in this International Standard are, however, appropriate to test cabinets of the preferred capacity and will require corresponding modifications for other capacities.

3.1.1 Materials of construction

All the materials used in the construction of the test cabinet shall be resistant to the action of moist sulfur dioxide and shall themselves not emit any gas or vapour likely to influence corrosion of the test specimens.

The floor and lower parts of the walls shall be capable of being heated and shall be able to retain without leakage at least $2,5 \text{ dm}^3$ of water containing dissolved sulfur dioxide, this volume being required to flush the apparatus. Lead-clad construction material is suitable for these parts and for the framework and fittings of the cabinet, but the greater part of the walls and floor should be made of transparent sheet, such as glass or suitable plastics material.

A new cabinet shall be operated at least once, without introduction of test specimens, following the procedure applicable to an atmosphere containing 2 dm^3 of sulfur dioxide, before it is brought into use for testing. This should reduce risks of contamination of the atmosphere by vapours from the materials of construction.

3.1.2 Shape

Some variation in the shape of the test cabinet can be tolerated, but the roof should be shaped so that moisture condensing on it does not fall on test specimens in the test cabinet. An inclination of the roof of about 12° to the horizontal provides a suitable safeguard.

3.1.3 Ambient conditions

The test cabinet shall be installed in a room in which there is a clean atmosphere and shall be protected from large or rapid temperature fluctuations, strong direct sunlight and draughts. (See also 6.5.2.)