

International Standard



4623

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Paints and varnishes — Filiform corrosion test on steel

Peintures et vernis — Essai de corrosion filiforme sur acier

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (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 authorized 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 4623 was developed by Technical Committee ISO/TC 35, *Paints and varnishes*, and was circulated to the member bodies in July 1982.

It has been approved by the member bodies of the following countries :

Australia	Iran	South Africa, Rep. of
Canada	Iraq	Sri Lanka
China	Israel	Sweden
Czechoslovakia	Jamaica	Switzerland
Egypt, Arab Rep. of	Kenya	Thailand
France	Korea, Rep. of	United Kingdom
Germany, F. R.	Mexico	USSR
Hungary	Netherlands	
India	Portugal	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Belgium
Italy

Paints and varnishes — Filiform corrosion test on steel

0 Introduction

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

This International Standard describes a test procedure for assessing the protective action of coatings of paints or varnishes on steel against filiform corrosion arising from a scribed mark cut through the coating. This corrosion tends to develop when the relative humidity is high and when traces of salts are present either under the paint coating or at breaks in the coating. A certain amount of under-rusting of the substrate, starting from the scribed mark, will always occur. Filiform corrosion, however, is considered to be present only if the typical pattern in the form of threads is obvious (see figure 2).

For any particular application, the test method described in this International Standard needs to be completed by the following supplementary information. This information shall be derived, in part or totally, from the (inter)national standard or other document related to the product under test or, if appropriate, should be agreed between the interested parties.

- a) Material and surface preparation of the substrate.
- b) Method of application of the test coating to the substrate, including duration and conditions of drying between coats in the case of a multi-coat system.
- c) Duration and conditions of drying of the coat (or conditions of stoving and ageing, if applicable) before testing.
- d) Thickness, in micrometres, of the dry coating and method of measurement in accordance with ISO 2808, and whether it is a single coating or a multi-coat system.
- e) Procedure for initiation of corrosion including, in the case of the salt fog technique, the period of exposure.
- f) Duration of the test.

1 Scope and field of application

This International Standard describes a method for assessing the protective action of coatings of paints or varnishes against filiform corrosion on steel.

2 References

- ISO/R 483, *Plastics — Methods for maintaining constant relative humidity in small enclosures by means of aqueous solutions.*
- ISO 1512, *Paints and varnishes — Sampling.*
- ISO 1513, *Paints and varnishes — Examination and preparation of samples for testing.*
- ISO 1514, *Paints and varnishes — Standard panels for testing.*
- ISO 2409, *Paints and varnishes — Cross-cut test.*
- ISO 2808, *Paints and varnishes — Determination of film thickness.*
- ISO 7253, *Paints and varnishes — Determination of resistance to neutral salt spray.*

3 Definition

filiform corrosion : A type of corrosion proceeding under a coat of paint, varnish or related product, in the form of threads, generally starting from bare edges or from local damage to the coating.

NOTE — Usually the threads are irregular in length and direction of growth, but they may also be nearly parallel and of approximately equal length. It should be noted that filiform corrosion can also occur under other protective coatings.

4 Principle

Scribing of a mark on the coated test panel. Introduction of a small amount of sodium chloride into the scribed mark, either by dipping the panel in a solution of the salt or by exposure to salt-fog. Storage of the test panel in a test cabinet at 40 °C and a relative humidity of 80 %. Assessment of the amount of filiform corrosion developed from the scribed mark.

5 Test solutions

5.1 Sodium chloride solution, 1 g/litre (for the dipping technique)

Prepare this solution by dissolving 1 g of sodium chloride (see 5.2) in 1 litre of distilled or demineralized water. Place this solution in a vessel suitable for complete immersion of the test panel (see clause 8).