INTERNATIONAL STANDARD 1521

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Paints and varnishes — Determination of resistance to water — Water immersion method

First edition — 1973-12-15

UDC 667.613 : 535.685

Ref. No. ISO 1521-1973 (E)

Descriptors : paints, varnishes, tests, waterproofing, submerging.

Price based on 2 pages

FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (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 set up 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.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, International Standard ISO 1521 replaces ISO Recommendation R 1521-1971 drawn up by Technical Committee ISO/TC 35, *Paints and varnishes*.

The Member Bodies of the following countries approved the Recommendation :

Austria	Israel	Spain
Chile	Italy	Sweden
Denmark	Netherlands	Switzerland
Egypt, Arab Rep. of	New Zealand	Turkey
France	Poland	United Kingdom
Germany	Portugal	U.S.S.R.
Greece	South Africa, Rep. of	Yugoslavia

No Member Body expressed disapproval of the Recommendation.

Printed in Switzerland

Paints and varnishes — Determination of resistance to water — Water immersion method

0 INTRODUCTION

This International Standard is one of a series dealing with the testing of paints, varnishes and related products. The method specified is intended to give an indication of the results obtained when articles are stored under conditions where contact with condensed water is likely to take place.

Comparative tests carried out by an ISO Task Group with the co-operation of five countries showed good correlation between results obtained with this method and those obtained with more complex humidity resistance tests (cycling and non-cycling) and it was therefore recommended to adopt this method for international use.

This International Standard should be read in conjunction with ISO 1512, ISO 1513, and ISO 1514.

The method of test specified requires to be completed, for any particular application, by the following supplementary information. This information should be derived from the national standard or other document for the product under test or, where appropriate, should be the subject of agreement between the interested parties.

a) Material and surface preparation of substrate.

b) Method of application of test coating to substrate.

c) Thickness, in micrometres, of the coating, including method of measurement, and whether it is a single coating or a multicoat system.

d) Duration and conditions of drying of the coated panel before testing (or conditions of stoving and ageing, if applicable).

e) Duration of test.

f) How inspection of the test coating is to be made and what characteristics are to be considered in evaluating its resistance properties.

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a procedure for the comparative determination of the resistance to water immersion of a paint or paint system. The method gives an indication of the results likely to be obtained when painted articles are stored under conditions where prolonged condensation may be produced but not an extremely corrosive atmosphere.

The method is not intended to reproduce any particular condition of condensation.

2 REFERENCES

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 2808, *Paints and varnishes — Determination of film thickness.*

3 APPARATUS

NOTE — All parts of the apparatus in conctact with water shall be made from inert materials.

3.1 Tank, of suitable size (a convenient size of tank is 700 mm × 400 mm × 400 mm), fitted with a cover, a heater and thermostatic control.

3.2 System for circulation and aeration of water or a means for stirring used in conjunction with a source of dry, oil-free, pressurized air.

If a pump is used, it shall be of a suitable capacity to agitate the whole contents of the tank.

3.3 Support for the test panels, made from non-conductive material and arranged so that the panels are maintained at an angle of 15 to 20° to the vertical, with the test surface uppermost, and with their plane parallel to the direction of the flow of water in the tank.

The panels shall be at least 30 mm apart, at least 30 mm from the bottom of the tank and at least 50 mm from the walls of the tank. Their positions shall be interchanged periodically, either mechanically or by hand.

4 SAMPLING

A representative sample of the product to be tested (or of each product in the case of a multicoat system) shall be taken as specified in ISO 1512. The samples shall then be examined and prepared for testing as specified in ISO 1513.

5 TEST PANELS

5.1 Materials and dimensions

Unless otherwise specified or agreed, the test panel shall be of burnished steel complying with ISO 1514, of approximate dimensions 150 mm × 100 mm × 1,25 mm.

5.2 Preparation and coating of panels

The test panel shall be prepared in accordance with ISO 1514, unless otherwise specified, and shall then be coated by the specified method with the product or system under test.

The back and edges of the panel shall be coated with a good quality protective paint not containing zinc chromate or any similarly water-soluble pigment.

5.3 Thickness of coating

The thickness, in micrometres, of the dry coating shall be determined by the method specified, using one of the procedures specified in ISO 2808.

6 PROCEDURE

6.1 Drying the test panels

The coated test panels shall be dried (or stoved and aged) for the specified time and under the specified conditions and, unless otherwise specified, shall be conditioned at a temperature of 23 ± 2 °C and relative humidity of 50 ± 5 % for a minimum of 16 h, with free circulation of air and not exposed to direct sunlight. The appropriate test procedure shall then be carried out as soon as possible.

6.2 Immersion procedure

Add to the tank sufficient deionized water of conductivity not greater than 0,2 mS/m such that the test panels, when placed in position, are immersed for three-quarters of their length. Commence the circulation and aeration of the water in the tank, adjust the temperature of the water to 40 ± 1 °C and maintain this temperature throughout the test.

Place the test panels in the tank for the specified period, rearranging their positions at regular intervals of not more than 3 days. If at any time during the test the water becomes turbid or coloured, or its conductivity exceeds 2 mS/m, it shall be replaced.

6.3 Interim inspections

For interim inspections during the test period, if specified, the panels shall be removed from the tank, blotted with absorbent paper, examined for blistering or other signs of deterioration, and immediately returned to the tank.

6.4 Final inspection

At the end of the specified test period, remove the panels from the tank, blot them with absorbent paper, and immediately examine the whole test surface of each panel for blistering or other signs of deterioration. Allow the panels to stand at room temperature for 24 h and examine the test surface again for loss of adhesion, rust staining, change of colour, embrittlement or other characteristics which may be specified.

Carefully remove a 150 mm × 50 mm strip from the test surface with a non-corrosive paint remover and examine the exposed metal for signs of corrosion. For reference purposes, the exposed area shall be protected by a suitable transparent lacquer.

7 TEST REPORT

The test report shall include the following information :

a) a reference to this International Standard or to a corresponding national standard;

b) the type and identification of the coating under test;

c) the items of supplementary information referred to in the Introduction to this International Standard;

d) the national standard or other document supplying the information referred to in c) above;

e) any deviation, by agreement or otherwise, from the test procedure specified;

f) the results of the test in terms of the stated requirements, including any difference observed between the immersed and non-immersed portions of the test surface;

g) the date of the test.