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*Incorporating
Amendment No. 1*

Paints and varnishes — Pressure test for stackability

The European Standard EN ISO 4622:1994 has the status of a
British Standard

UDC 667.613:620.198

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Pigments, Paints and Varnishes Standards Policy Committee (PVC/-) to Technical Committee PVC/10, upon which the following bodies were represented:

- European Resin Manufacturer's Association
- Health and Safety Executive
- Institute of Metal Finishing
- Ministry of Defence
- National Centre of Tribology
- Oil and Colour Chemists' Association
- Paint Research Association
- Paintmakers' Association of Great Britain Ltd.
- Titanium Pigment Manufacturers' Technical Committee

This British Standard, having been prepared under the direction of the Pigments, Paints and Varnishes Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 15 April 1993

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The following BSI references relate to the work on this standard:
Committee reference PVC/10
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Amendments issued since publication

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National foreword

This Part of BS 3900 has been prepared under the direction of the Pigments, Paints and Varnishes Standards Policy Committee. It is identical with ISO 4622:1992 *Paints and varnishes — Pressure test for stackability*, published by the International Organization for Standardization (ISO).

In 1994, the European Committee for Standardization (CEN) accepted ISO 4622:1992 as European Standard EN ISO 4622:1994.

This edition supersedes BS 3900-C7:1982, which is withdrawn.

The difference between BS 3900-C7:1982 and this standard is that provisions are now included for larger test pieces.

Cross-references

International Standard	Corresponding British Standard
	BS 3900 <i>Methods of test for paints</i>
ISO 1512:1991	Part A1:1992 <i>Sampling</i> (Identical)
ISO 1513:1992	Part A2:1993 <i>Examination and preparation of samples for testing</i> (Identical)
ISO 2808:1991	Part C5:1992 <i>Determination of film thickness</i> (Identical)
ISO 3270:1984	BS EN 23270:1991 <i>Specification for temperatures and humidities for conditioning and testing paints, varnishes and their raw materials</i> (Identical)

This standard makes reference to the forthcoming revision of ISO 1514. ISO 1514:1984 is identical with BS 3900-A3:1986 *Standard panels for paint testing*. The Committee has reviewed the provisions of ISO 1514:1983 to which normative reference is made in the text and has decided that, until the revision is published, they are acceptable for use in conjunction with this standard.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN ISO title page, pages 2 to 8, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

UDC 667.613:620.198

Descriptors: Paints, varnishes, tests, stacking tests, compression tests

English version

Paints and varnishes — Pressure test for stackability

(ISO 4622:1992)

Peintures et vernis — Essai de pression pour
aptitude à l'empilement
(ISO 4622:1992)

Lacke und Anstrichstoffe — Druckprüfung zur
Bestimmung der Stapelfähigkeit
(ISO 4622:1992)

This European Standard was approved by CEN on 1994-08-22. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

This European Standard has been taken over by the Technical Committee CEN/TC 139, Paints and varnishes, from the work of ISO/TC 35, Paints and varnishes, of the International Organization for Standardization (ISO).

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 1995, and conflicting national standards shall be withdrawn at the latest by February 1995.

According to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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1 Scope

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 specifies a test method for determining, under standard conditions, whether a single-coat film or a multi-coat system of paints or related materials after a specified drying period is sufficiently dry to resist damage when two painted surfaces or one painted surface and another surface are placed in contact under pressure.

The method is intended to simulate the conditions when painted articles are stacked upon each other.

NOTE 1 In some countries, the test is called a "block resistance" test.

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:—, *Paints and varnishes — Standard panels for testing*¹⁾.

ISO 2808:1991, *Paints and varnishes — Determination of film thickness*.

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

3 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.

4 Apparatus

4.1 *Test apparatus*, as shown in Figure 1, consisting of a base-plate and a free-sliding plunger. The plunger, with a head of diameter (50 ± 1) mm, shall have a mass not exceeding 250 g and be designed in such a way that the face of the plunger is aligned with the top surface of the test panel.

NOTE 2 It is recommended that a balljoint connection be present between the plunger and its head.

4.2 *Weight*, of a mass suitable for the coating and its intended application.

NOTE 3 A mass in the range 100 g to 1 000 g will normally be suitable.

5 Sampling

Take a representative sample of the product to be tested (or of each product in the case of a multi-coat system), as described in ISO 1512.

Examine and prepare each sample for testing, as described in ISO 1513.

6 Test panel

6.1 Substrate

Unless otherwise agreed, select the substrate from one of those described in ISO 1514 and, where possible, in accordance with the desired practical application.

6.2 Preparation and coating

Unless otherwise agreed, prepare each test panel in accordance with ISO 1514 and then coat it by the specified method with the product or system under test.

6.3 Drying

Dry (or stove) and age (if applicable) each coated test panel for the specified time under the specified conditions.

6.4 Preparation of test pieces

As soon as possible after the specified drying period, prepare from the test panels at least six strips preferably of width (30 ± 1) mm and length approximately five times the width, in such a manner as to avoid damage to the paint film, to produce the least distortion of the substrate and to ensure that it remains as plane as possible.

Remove any rim raised on the test pieces before testing.

¹⁾ To be published. (Revision of ISO 1514:1984)

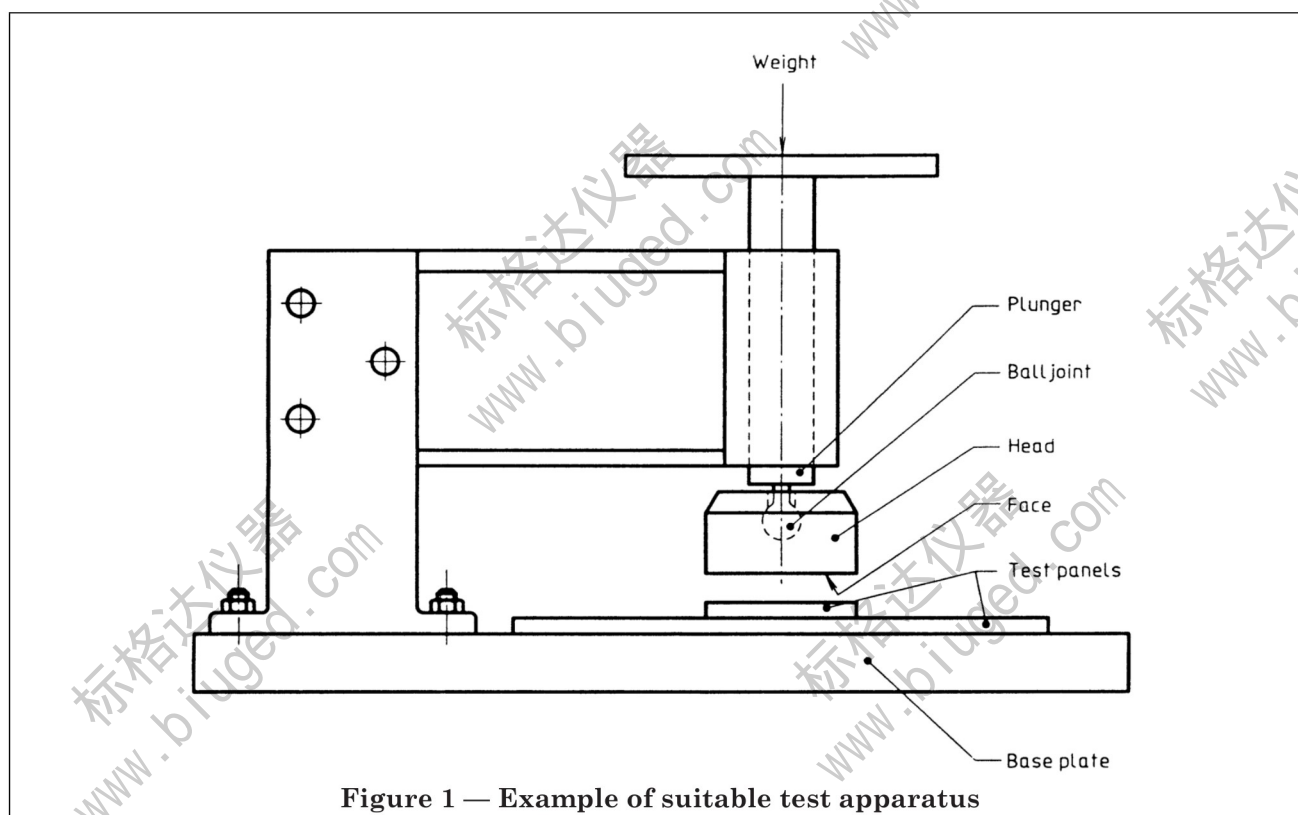


Figure 1 — Example of suitable test apparatus

If the preparation of adequate test pieces with dimensions as given above is shown to be impossible because the coating to be tested may be easily damaged, test pieces may be used of dimensions up to 100 mm × 75 mm. In this case, clause 8 shall be applied.

If the interaction between the painted surface and another surface is to be determined, prepare a similar test piece of the other material.

6.5 Thickness of coating

Determine the thickness, in micrometres, of the dried coating by one of the procedures specified in ISO 2808.

7 Procedure

7.1 Carry out the procedure in triplicate at $(23 \pm 2)^\circ\text{C}$ and a relative humidity of $(50 \pm 5)\%$, unless otherwise agreed (see also ISO 3270).

7.2 Superimpose the test pieces at $(90 \pm 2)^\circ$ so that the test surfaces are in close contact (see plan view in Figure 2). Arrange the test pieces so that the areas fast damaged during preparation are superimposed.

NOTE 4 A set square may be used to ensure that the test area is square.

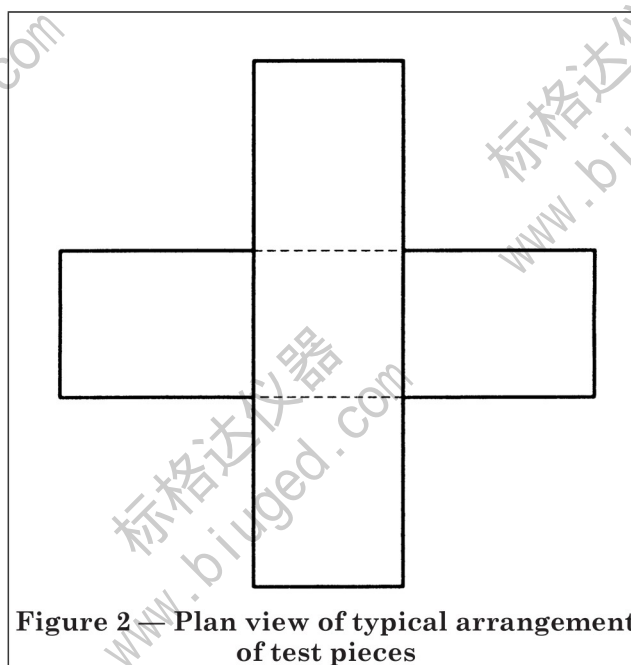


Figure 2 — Plan view of typical arrangement of test pieces

7.3 Place the test pieces on the base plate in such a manner that the plunger covers entirely the contact square. Place the agreed weight on the plunger and gently place the total mass in contact with the test pieces. Allow it to remain there for the specified time.

7.4 At the end of this period, remove the plunger, separate the test pieces and examine them for any damage to the coating in the area of contact; for example, the presence of visible impressions, any sticking of the test pieces, and any detachment of the coating.

8 Expression of results

If desired, the pressure p , in pascals, on the painted surfaces may be calculated from the following equation:

$$p = \frac{m_1 + m_2}{l^2} \times g \times 10^3$$

$$\approx \frac{m_1 + m_2}{l^2} \times 10^4$$

where

m_1 is the mass, in grams, of the plunger assembly;

m_2 is the mass, in grams, of the weight;

l is the width, in millimetres, of the test pieces;

g is the acceleration of free fall, in newtons per kilogram (approximately 10 N/kg).

9 Precision

No precision data are currently available.

10 Test report

The test report shall contain at least the following information:

- a) all details necessary to identify the product tested;
- b) a reference to this International Standard (ISO 4622);
- c) the items of supplementary information referred to in Annex A;
- d) a reference to the international or national standard, product specification or other document supplying the information referred to in c);
- e) the results of the test in terms of the stated requirements and describing any damage (see 7.4 and clause 8);
- f) any deviation from the test method specified;
- g) the date of the test.

Annex A (normative)

Required supplementary information

The items of supplementary information listed in this annex shall be supplied as appropriate to enable the method to be carried out.

The information required should preferably be agreed between the interested parties and may be derived, in part or totally, from an international or national standard or other document related to the product under test.

- a) Material (including thickness) 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 (or stoving) and ageing (if applicable) the coat 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 coat or a multi-coat system.
- e) The combined mass of the plunger and weight (i.e. test load) or the pressure to be used.
- f) The time of contact under load of the two pieces.

Annex ZA (normative)**Normative references to international publications with their relevant European publications**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

Publication	Year	Title	EN	Year
ISO 1512	1991	<i>Paints and varnishes — Sampling of products in liquid or paste form</i>	EN 21512	1994
ISO 1513	1994	<i>Paints and varnishes — Examination and preparation of samples for testing</i>	EN ISO 1513	1994
ISO 3270	1984	<i>Paints and varnishes and their raw materials — Temperatures and humidities for conditioning and testing</i>	EN 23270	1991

List of references

See national foreword.

BSI — British Standards Institution

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British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

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