



Loss Prevention Standard

LPS 1207 Issue 2.1

Fire Requirements for the LPCB Approval and Listing of Protective Covering Materials

This standard describes methods of tests and performance requirements with regard to ignitibility, smoke emission, toxic gas emission and oxygen index. The requirements set are those which should ensure that protective coverings for floors, walls and furnishings used during construction or refurbishment of buildings should not significantly add to the fire risk. The standard does not cover other features required of protective coverings, such as resistance to abrasion or liquid absorption.

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- Developing world leading environmental assessment methods
- Undertaking research and consultancy for clients and regulators
- Promulgating standards and knowledge throughout the industry through publications and events
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PARTICIPATING ORGANISATIONS

This standard was prepared by Expert Group D and approved by the LPC Fire and Security Board of BRE Global Ltd. The following organisations participated in the preparation of this standard:-

Association of British Insurers
 Association of Chief Police Officers
 Association for Specialist Fire Protection
 British Fire Protection Systems Association
 British Rigid Urethane Foam Manufacturer's Association
 British Security Industry Association
 Chief & Assistant Chief Fire Officers Association
 Confederation of British Industry
 Department of the Environment
 Door & Shutter Manufacturers' Association
 Electrical Contractors Association
 EURISOL UK Mineral Wool Association
 Glass & Glazing Federation
 Health & Safety Executive
 Heating Ventilating & Air Conditioning Manufacturers Association
 Intumescent Fire Seals Association
 National Council for Building Material Producers
 National Prefabricated Building Association
 Office of the Deputy Prime Minister
 Risk Engineering Data Exchange Group
 Royal Institution of Chartered Surveyors
 Smoke Ventilation Association

REVISION OF LOSS PREVENTION STANDARDS

Loss Prevention Standards will be revised by issue of revised editions or amendments. Details will be posted on our website at www.breglobal.com

Technical or other changes which affect the requirements for the approval or certification of the product or service will result in a new issue. Minor or administrative changes (e.g. corrections of spelling and typographical errors, changes to address and copyright details, the addition of notes for clarification etc.) may be made as amendments.

The issue number will be given in decimal format with the integer part giving the issue number and the fractional part giving the number of amendments (e.g. Issue 3.2 indicates that the document is at Issue 3 with 2 amendments).

USERS OF LOSS PREVENTION STANDARDS SHOULD ENSURE THAT THEY

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POSSESS THE LATEST ISSUE AND ALL AMENDMENTS.

FOREWORD

This standard identifies the evaluation and testing practices for the LPCB approval and listing of products. LPCB Listing of life safety and security products for inclusion in the “Red Book” is based on the following

- i. Satisfactory product performance during testing and audit testing
- ii. Satisfactory product construction
- iii. Satisfactory manufacturing processes
- iv. Satisfactory product service experience.

NB:- Compliance with this LPS standard does not in itself confer immunity from legal obligations.

LPCB offers a full range of services for approval and testing. Listed products appear in the LPCB List of Approved Fire and Security Products and Services which may be viewed on our website at www.breglobal.com or obtained in hard copy or CD ROM by contacting us at LPCB, Garston, Herts WD25 9XX.

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* NOTE: BRE and BRE Global are owned by the Foundation for the Built Environment which is a registered charity. The Loss Prevention Certification Board (LPCB) is part of BRE Global and lists approved products and services within the fire and security

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sectors.

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1 SCOPE

This standard describes methods of tests and performance requirements with regard to ignitibility, smoke emission, toxic gas emission and oxygen index. The requirements set are those which should ensure that protective coverings for floors, walls and furnishings used during construction or refurbishment of buildings should not significantly add to the fire risk. The standard does not cover other features required of protective coverings, such as resistance to abrasion or liquid absorption.

2 PRODUCT SPECIFICATION

The manufacturer of the protective covering shall supply the following information:

- 2.1 The type of material from which the covering is made.
- 2.2 For single-layer coverings, without cavities, the range of thicknesses available, together with their weight (g/m^2)
- 2.3 Details and dimensions of any indentations etc. in single-layer products
- 2.4 For multi-layer coverings, with cavities, for each product available, the thickness of each skin, the overall thickness and weight (g/m^2). A statement if the cavities are continuous or discontinuous.
- 2.5 For multi-layer coverings, without cavities, the thickness of each layer, the overall thickness and weight (g/m^2).
- 2.6 The range of widths and lengths in which the covering is supplied.
- 2.7 Information and material description in relation to joining sheets of coverings together.
- 2.8 The colour of the covering.

3 TEST METHODS AND REQUIREMENTS

The product range variations that need to be tested will be decided by the laboratory in consultation with the manufacturer of the covering. Testing may include each thickness and colour in the product range.

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3.1 Ignitability

3.1.1 Small Flame Test

The test is described in BS 476: Part 12: 1991 (Fire tests on building materials and structures. Method of test for ignitability of products by direct flame impingement). The test details specific to these materials are as follows:

- (i) Ignition source: C
- (ii) Specimen size: 300 x 300 mm
- (iii) Flame application: surface and edge
- (iv) Flame application time: 20 seconds

3.1.2 The requirements for the small flame test are:

- (a) transient ignition zero
- (b) no flaming droplets after flame removal
- (c) no flaming reaching any edge of the specimen during application of the ignition source.
- (d) spread of flame not to reach the edge of the specimen at any point within the 10 seconds of the end of flame application time.

3.1.3 Large Flame Test

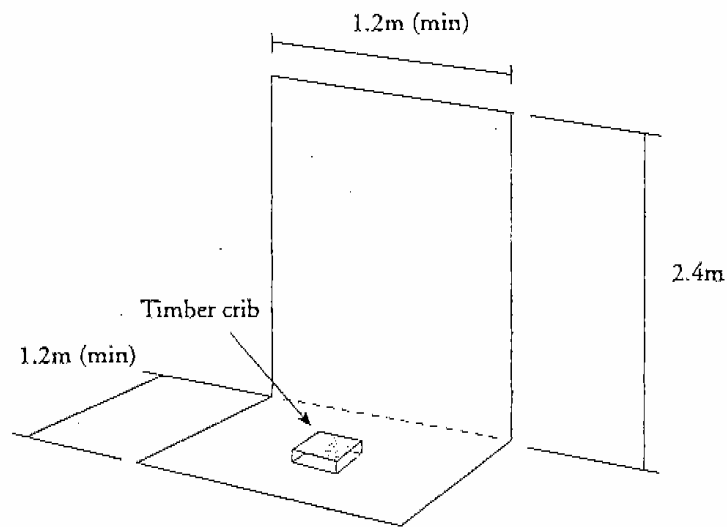
This test has been developed by LPC to represent a larger flame source created, for example, by burning newspaper. It has the advantage of providing the ability to test the protective covering in a more realistic orientation and specimen size. It is an ad hoc test procedure in which timber crib number 7 (as specified in BS 5852 - Fire tests for furniture. Methods of test for the ignitability of upholstered composites for seating by flaming sources) is used as an ignition source. This test provides a flame height of approximately 400mm relative to the ground level.

For test purposes the width of the protective covering material shall not be less than 1.2m. If the covering material is supplied in a width less than that, it is permissible to join two sheets together using a tape recommended by the manufacturer. One sheet of the protective covering material shall be laid at floor level to a distance of at least 1.2m from the vertical surface, and a second sheet suspended vertically with its top approximately 2.4m above the ground so that the bottom edge just touches the sheet laid on the ground. Using jointing tape recommended by the manufacturer, join the vertical to the horizontal sheet.

Place the crib in direct contact with the vertical sheet and located at the mid-width position. Place at the bottom centre of the crib a pad of lint soaked with 1.4 ml of propan-2-0l. Ignite the lint pad. Take observations of the behaviour of the protective covering throughout the time that the crib is burning.

After the test, measure and record the extent of fire damage to the covering.

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3.1.4 The requirements for the large flame test are:

- (a) There shall be no flaming droplets from the vertical sheet
- (b) That the material shrinks away from the flame from the crib without ignition or if the protective covering does ignite, any flaming does not reach beyond 300mm from the centre line of the crib in any direction, either in the vertical or horizontal sheets.

3.2 Smoke emission

3.2.1 Test

The test equipment and general test details are described in prEN2824 (Aerospace series. Burning behaviour, determination of smoke density and gas components in the smoke of materials under the influence of radiating heat and flames – test equipment, apparatus and media). The test procedure is described in prEN2825 (Aerospace series. Burning behaviour, determination of smoke density and gas components in the smoke of materials under the influence of radiating heat and flames – determination of smoke density).

Test results should be calculated as described in paragraph 9 of prEN2825.

3.2.2 Requirement

Specific Optical Density should not be greater than 150 within 4 minutes of the start of the test.

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3.3 Toxic gas emission

3.3.1 Test

The test equipment and general test details are described in prEN2824, the procedure is described in prEN2826 (Aerospace series. Burning behaviour, determination of smoke density and gas components in the smoke of materials under the influence of radiating heat and flames – determination of gas components in the smoke).

3.3.2 Requirement

Gases for which concentrations are to be measured, and acceptable limits as follows:

Hydrogen cyanide, at 4 minutes concentration to be less than 150ppm.

Carbon monoxide, at 4 minutes concentration to be less than 3500ppm.

Nitrous gases, at 4 minutes concentration to be less than 100ppm.

Sulphur dioxide, at 4 minutes concentration to be less than 100ppm.

Hydrogen chloride, at 4 minutes concentration to be less than 150ppm.

Hydrogen fluoride, at 4 minutes concentration to be less than 100ppm.

3.4 Oxygen index

3.4.1 Test

Oxygen index test to be conducted in accordance with BS 2782: Part 1: Method 141: 1986 (Determination of flammability temperature of materials).

3.4.2 Requirement

The oxygen index resulting from the test should be greater than 23%.

3.5 Test report

The test report should include details as required in each of the above standards with a full product specification (see section 2) of the material tested and should include the results in relation to the requirements for each test.

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4 MARKING AND LABELLING

For protective coverings that fully satisfy the requirements for this LPS, the following shall be provided:

4.1 The covering shall be suitably marked with the following:

4.1.1 The name or identification mark of the supplier.

4.1.2 A clear statement, in a colour contrasting with the colour of the covering, having letters not less than 25mm high: Flame retardant, LPCB approved to LPS 1207. This statement should be repeated at intervals not greater than 1.2m down the length and/or width.

5 PUBLICATIONS REFERRED TO

BS 476: Part 12: 1991: Fire tests on building materials and structures: Part 12: Method of test for ignitibility of products by direct flame impingement.

BS 5852: Part 2: 1982: Fire tests for furniture: Part 2: Method of test for the ignitibility of upholstered composites for seating by flaming sources.

PrEN2824, CEN. Aerospace series. Burning behaviour, determination of smoke density and gas components in the smoke of materials under the influence of radiating heat and flames – test equipment, apparatus and media.

PrEN2825, CEN. Aerospace series. Burning behaviour, determination of smoke density and gas components in the smoke of materials under the influence of radiating heat and flames – determination of smoke density.

PrEN2826, CEN. Aerospace series. Burning behaviour, determination of smoke density and gas components in the smoke of materials under the influence of radiating heat and flames – determination of gas components in the smoke.

BS 2782: Part 1: Determination of flammability temperature of materials.
Method 141: 1986.

For undated references the latest edition of the publication referred to applies.

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Amendments Issued Since Publication

DOCUMENT NO.	AMENDMENT DETAILS	SIGNATURE	DATE
LPS1207-2.1	Change to copyright information	CJA	16/09/05