

## Loss Prevention Standard

LPS 1207 : Issue 3.1

Requirements for the LPCB approval and listing for fire performance of temporary protective covering materials for use in the interior of buildings

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## **PARTICIPATING ORGANISATIONS**

This standard was approved by the BRE Global Governing Body with input from the BRE Global Standing Panel and Group D. The following organisations participated in the preparation of this standard:-

Association for Specialist Fire Protection (ASFP)  
 Association of British Insurers (ABI)  
 Association of Insurance Surveyors  
 BAA plc  
 British Automatic Fire Sprinkler Association (BAFSA)  
 British Property Federation (BPF)  
 British Rigid Urethane Foam Manufactures Association (BRUFMA)  
 Chief Fire Officers' Association (CFOA)  
 Construction Industry Council (CIC)  
 Construction Products Association  
 Co-op Banking  
 Door & Hardware Federation  
 Engineered Panels in Construction (EPIC)  
 Fire Industry Association (FIA)  
 Glass & Glazing federation (GGF)  
 Heating, Ventilation & Air Conditioning Manufacturers Association (HEVAC)  
 Home Builders Federation (HBF)  
 Homes & Communities Agency (HCA)  
 International Association for Cold Storage construction (IACSC)  
 Intumescent Fire Seals Association (IFSA)  
 Lend Lease  
 London Underground Ltd  
 Modular & Portable Building Association (MPBA)  
 Mineral Wool Insulation Manufacturer Association (MIMA)  
 National Access & Scaffolding Confederation (NASC)  
 NHBC  
 RIBA  
 RICS  
 Risc Authority  
 Risktech Ltd  
 Sustainability + Architecture  
 Sustainable by Design

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## **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.redbooklive.com](http://www.redbooklive.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. (See amendments table on page 14)

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 POSSESS THE LATEST ISSUE AND ALL AMENDMENTS.**

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## FOREWORD

This Standard identifies the evaluation and / or testing practices undertaken by LPCB for the purposes of approval and listing of products and services. LPCB listing and approval of products and services is based on evidence acceptable to LPCB:-

- that the product or service meets the standard;
- that the manufacturer or service provider has staff, processes and systems in place to ensure that the product or service delivered meets the standard

and on:-

- periodic audits of the manufacturer or service provider including testing as appropriate;
- compliance with the contract for LPCB listing and approval including agreement to rectify faults as appropriate;

The responsibility for ensuring compliance with the technical and managerial process and requirements for the product or service lies with the manufacturer, service provider or supplier.

## NOTES

Compliance with this LPS does not of itself confer immunity from legal obligations. Users of LPSs should ensure that they possess the latest issue and all amendments.

LPCB welcomes comments of a technical or editorial nature and these should be addressed to “the Technical Director” at [enquiries@breglobal.co.uk](mailto:enquiries@breglobal.co.uk).

The BRE Trust, a registered charity, owns BRE and BRE Global. BRE Global and LPCB (part of BRE Global) test, assess, certificate and list products and services within the fire and security sectors. For further information on our services please contact BRE Global, Watford, Herts. WD25 9XX or e-mail to [enquiries@breglobal.co.uk](mailto:enquiries@breglobal.co.uk)

Listed products and services appear in the LPCB “List of Approved Products and Services” which may be viewed on our website: [www.redbooklive.com](http://www.redbooklive.com) or by downloading the LPCB Red Book App from the App Store (for iPhone and iPad), from Google Play (for Android devices) or from the Windows Store (for Windows 8 Phones and Tablets from 2014).

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## **1 SCOPE**

This standard describes the fire test methods and performance requirements for ignitability, flammability, smoke emission, toxic gas emission and oxygen index. The performance requirements are intended to ensure that protective coverings for floors, walls, furnishings or other fixtures and fittings, in sheet or preformed form, used internally during construction or refurbishment of buildings do not significantly add to the fire risk. This standard covers fire performance only. This standard does not cover other requirements that may be required of protective coverings, such as resistance to abrasion or liquid absorption.

LPCB approval demonstrates compliance with the Temporary Covering Materials requirements of Fire Prevention on Construction Sites – The Joint Code of Practice on the Protection from Fire of Construction Sites and Buildings Undergoing Renovation<sup>(1)</sup>.

This standard does not cover flame retardant temporary containment sheeting, net or sheet materials for external use on construction sites. The fire performance requirements of these materials are covered in LPS 1215; Requirements for the LPCB approval and listing for Fire Performance of Containment Nets and Sheet Materials for External Use on Construction Sites<sup>(2)</sup>.

## **2 DEFINITIONS**

### **2.1 Flaming debris**

For the purposes of this standard, flaming debris shall be taken as any burning material on the floor or base of the test equipment, detached from the test sample.

### **2.2 Transient ignition**

For the purpose of this standard, transient ignition shall be the appearance of flashes or flames, which are not sustained for a continuous 10 seconds after withdrawal of the ignition source.

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### **3 REQUIREMENTS**

#### **3.1 Documentation**

The applicant of the flame retardant protective covering materials for use internally in buildings shall supply a full description of the product or product range to be tested and approved as follows:

- a) The type and base colour of material from which the product is made and whether it is rigid or flexible and sheet or pre-formed form.
- b) For single-layer coverings, without cavities, the range of thicknesses available, together with their weight per unit area ( $\text{g/m}^2$ ) including manufacturing tolerances.
- c) Details and dimensions of any indentations etc. in single-layer products
- d) For multi-layer coverings, with cavities, for each specification available, the thickness and weight of each layer, the overall thickness and weight per unit area ( $\text{g/m}^2$ ) including manufacturing tolerances. A statement of whether the cavities are continuous or discontinuous.
- e) For multi-layer coverings, without cavities, the thicknesses and weight of each layer, the overall thickness and weight per unit area ( $\text{g/m}^2$ ) including manufacturing tolerances.
- f) For reinforced coverings, state the reinforcement material specifications and the dimensions of the scrim (warp and weft).
- g) The range of sizes in which the covering is supplied.
- h) Information and description of all materials used for joining sheets of covering together.
- i) If, for the purposes of printing, a tape or receiving layer is laminated, bonded or in any way part of the product, then this shall be declared and full details supplied.
- j) Where products are printed with additional logo's or advertising, full details of the print type and colour ranges shall be supplied.
- k) A complete formulation list of components by % weight addition including tolerance.
- l) Supplier data sheets for all components incorporated in the product.
- m) Instructions for the correct use, storage, transportation, handling and installation of the product.

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## 3.2 Flammability Testing

The range of product variations that are to be tested shall be decided by LPCB in consultation with the applicant. Testing shall cover the product thickness range, weight and base colour and, where applicable, print type and colour, in the product range. Typically, where various print colours are used for additional logos or advertising, the primary colour print colour inks, yellow, magenta and cyan shall be tested during the flammability tests. In this case, test samples may be prepared with a solid block of each colour of at least 100mm wide across the width of the product and at least 300mm high and repeated at regular intervals on the sample submitted for test. A sample of a typical information band, which will normally carry the applicant's name and approval information, and the reinforcing, shall also be represented in the tests.

All testing shall be carried out under the direction of LPCB and shall normally be conducted by BRE Global. Exceptionally, LPCB may commission testing with an organisation with a suitable schedule of accreditation issued by UKAS (or equivalent) and acceptable to LPCB. All the flammability tests shall be carried out in suitably ventilated, draught-free conditions

Prior to test, the specimens shall be conditioned according to BS EN 13238, Reaction to fire tests for building products. Conditioning procedures and general rules for selection of substrates<sup>(3)</sup>. This conditioning procedure supersedes any other conditioning requirements specified in the individual test standards referenced in this LPS.

### 3.2.1 Small Flame Test (ignitability)

3.2.1.1 The test is described in BS 476: Part 12, Fire tests on building materials and structures - Method of test for ignitability of products by direct flame impingement<sup>(4)</sup>.

Three samples shall be tested for each flame application position (surface and edge) on each base material, print colour band, information band and reinforcing band as applicable.

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 bottom edge
- (iv) Flame application time: 20 seconds.

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3.2.1.2 The requirements for the small flame test for any of the samples tested are:

- (a) Transient ignition - zero
- (b) No flaming droplets after flame removal
- (c) No flaming shall reach any edge of the specimen during application of the ignition source.

Note;

Should one sample of material not comply with any of the above requirements, a retest shall be conducted on three additional samples of the same specification (colour, thickness etc.) and at the particular flame application time and orientation where the failure occurred. If all the retest samples comply with the requirements listed above, the material can be considered to comply with the requirements of the small flame test.

### **3.2.2 Large Flame Test**

3.2.2.1 This test was developed by LPCB 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 7, as specified in BS 5852: 2006 - Methods of test for assessment of the ignitability of upholstered seating by smouldering and flaming ignition sources<sup>(5)</sup>, is used as the ignition source. This ignition source provides a flame height of approximately 400mm measured from the ground level.

This test is not required for products that are manufactured in preformed, non-sheet form (e.g. preformed tubular products).

The width of the test specimen shall not be less than 1.2m and shall include the print colour bands and reinforcing strip, where applicable. If the protective covering material is supplied in a width less than that, two sheets shall be joined together using a tape recommended by the applicant. 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 as shown in Figure 1. Jointing tape may be used to join the vertical to the horizontal sheet if required.

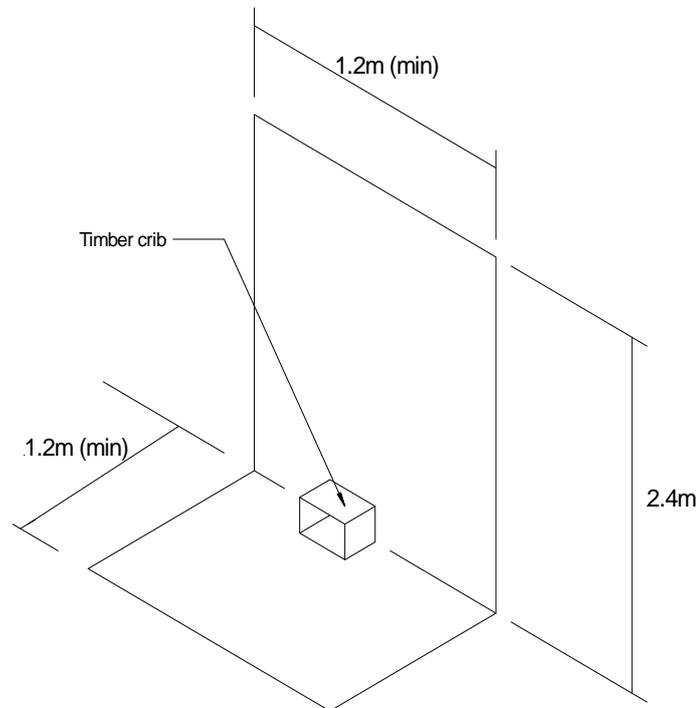
Note; where a jointing tape is not supplied by the client, a generic jointing tape agreed by LPCB may be used by the test laboratory where required. The jointing tape used and method of jointing shall be recorded in the test report.

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The crib shall be placed in direct contact with the vertical sheet and located at the mid-width position. The lint pad shall be soaked with  $1.4 \pm 0.1$  ml of propan-2-ol applied slowly to the centre of the pad using a suitable graduated measuring container. The lint pad shall be ignited within 2 minutes of adding the propan-2-ol.

The behaviour of the protective covering throughout the duration of the test shall be observed and recorded.

After the test, the extent of fire damage to the covering shall be measured and recorded.



**Figure 1**

3.2.2.2 The requirements for the large flame test are:

- (a) There shall be no flaming droplets from the vertical sheet.
- (b) Flaming of the material does not reach beyond 300mm from the centre line of the crib in any direction on either the vertical or horizontal sheets.

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### 3.2.3 Oxygen index

3.2.3.1 Oxygen index test shall be conducted in accordance with BS EN ISO 4589-2, Plastics - Determination of burning behaviour by oxygen index - Part 2: Ambient-temperature test<sup>(6)</sup>.

3.2.3.2 The requirements for the Oxygen Index are;

The product shall have an oxygen index, OI, greater than 23%.

### 3.3 Smoke and Toxicity Tests

#### 3.3.1 Smoke emissions

3.3.1.1 The test equipment and general test details are described in BS EN 2824, Aerospace series — Burning behaviour of non-metallic materials under the influence of radiating heat and flames — Determination of smoke density and gas components in the smoke of materials — Test equipment apparatus and media<sup>(7)</sup>. The test procedure is described in BS EN 2825, Aerospace series — Burning behaviour of non-metallic materials under the influence of radiating heat and flames — Determination of smoke density<sup>(8)</sup>.

The product shall be tested in both flaming mode and non-flaming mode i.e. with and without the burner.

Test results shall be calculated as described in clause 9 of BS EN 2825.

3.3.1.2 The requirements for the smoke emissions are:

The Specific Optical Density,  $D_s$ , shall not be greater than 150 within 4 minutes of the start of the test for any of the samples tested.

#### 3.3.2 Toxic gas emissions

3.3.2.1 The test equipment and general test details are described in BS EN 2824, the procedure is described in BS EN 2826, Aerospace series — Burning behaviour of non-metallic materials under the influence of radiating heat and flames — Determination of gas components in the smoke<sup>(9)</sup>.

3.3.2.2 The requirements for toxic gas emissions are:

Gases for which concentrations shall be measured and their acceptable limits are as follows:

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

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

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

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

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

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

### **3.4 Test report**

The test report shall include a full description of the material tested including suppliers product designation, thickness, weight, colour and print where applicable, details of multiple layers and any reinforcing scrim (weft and warp) shall also be included. The report shall also include details as required in each of the above test standards and the results in relation to the requirements for each test.

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#### **4 CLASSIFICATION AND DESIGNATION**

The manufacturing quality assurance requirements as detailed in SD198 shall apply to all approved materials.

#### **5 MARKING, LABELLING AND PACKAGING**

LPCB approved temporary protective covering materials for use in the interior of buildings shall be suitably marked as detailed in Scheme Document SD 198, the "Use of the Certification Mark" publication PN103 and shall carry information that relates to the batch and/or date of manufacture.

Any limitations relating to the product shall be controlled, wherever possible, through the use of appropriate packaging e.g. sensitivity to UV exposure.

#### **6 ADDITIONAL GUIDANCE DOCUMENTATION**

1) Fire Prevention on Construction Sites – The Joint Code of Practice on the Protection from Fire of Construction Sites and Buildings Undergoing Renovation, Eighth edition July 2012, Construction Industry Publications/Fire Protection Association 2012, ISBN 978-1-902790-77-0

(2) LPS 1215 Fire Performance Requirements for the LPCB approval and listing of Flame Retardant Containment Nets and Sheet Materials for External Use on Construction Sites. BRE Global, Watford.

(3) BS EN 13238, Reaction to fire tests for building products. Conditioning procedures and general rules for selection of substrates

(4) BS 476: Part 12 Fire tests on building materials and structures: Part 12: Method of test for ignitability of products by direct flame impingement.

(5) BS 5852: 2006 Methods of test for assessment of the ignitability of upholstered seating by smouldering and flaming ignition sources.

(6) BS EN ISO 4589-2:1999, Plastics- Determination of burning behaviour by oxygen index Part 2: Ambient - temperature.

(7) BS EN 2824, Aerospace series — Burning behaviour of non-metallic materials under the influence of radiating heat and flames — Determination of smoke density and gas components in the smoke of materials — Test equipment apparatus and media.

(8) BS EN 2825 Aerospace series — Burning behaviour of non-metallic materials under the influence of radiating heat and flames — Determination of smoke density

(9) BS EN 2826 Aerospace series — Burning behaviour of non-metallic materials under the influence of radiating heat and flames — Determination of gas components in the smoke.

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SD 198 Scheme Document for LPCB approval of passive fire protection products.

PN 103 Use of the BRE and LPCB Certification marks.

For undated references please refer to the latest published issue.

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### AMENDMENTS ISSUED SINCE PUBLICATION

DOCUMENT NO.	AMENDMENT DETAILS	SIGNATURE	DATE
LPS 1207 -2.1	Change to copyright information	CJA	16/09/05
LPS 1207-2.2	<ol style="list-style-type: none"> <li>1. New front cover</li> <li>2. Title added to header</li> <li>3. Contents page moved to Page 1</li> <li>4. Notes amended on Page 3</li> <li>5. Repagination</li> <li>6. Update to copyright information</li> </ol>	DC	Jan. 2014
LPS 1207-3.0	6.1 Re-write with updated references and test requirements for printed product	TB	April 2014
LPS 1207-3.1	3.3.1.2 Editorial correction	DW	July 2014