

## Loss Prevention Standard

LPS 1270: Issue 1.1

Requirements and testing procedures for the LPCB approval and listing of intruder resistant security glazing units

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## **PARTICIPATING ORGANISATIONS**

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

Association of British Insurers  
 Association of Building Engineers  
 Association of Chief Police Officers  
 Association of Insurance Surveyors  
 Association for Specialist Fire Protection  
 British Automatic Fire Sprinkler Association  
 British Fire Protection Systems Association  
 British Security Industry Association  
 BT  
 Cabinet Office (Observers)  
 Chief Fire Officers Association  
 Door & Hardware Federation  
 Electrical Contractors Association  
 European Fire Sprinkler Network  
 Health & Safety Executive  
 Home Office  
 Home Office Scientific Development Branch  
 Metronet  
 Post Office  
 Risk Engineering Data Exchange Group  
 Royal and Sun Alliance  
 Royal Institution of Chartered Surveyors  
 Security Services Group  
 TPS Consult

## **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 security glazing units. LPCB listing and approval of security glazing units is based on evidence acceptable to LPCB:-

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

and on:-

- periodic audits of the manufacturer 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)

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## 1 SCOPE

This standard describes tests for classifying the intruder resistance of security glazing units.

The intruder resistance of the security glazing unit is classified regardless of design or materials used in its construction.

The resistance to thermal shock attack, chemical attack, explosion or ballistics are outside the scope of this standard.

The adequacy of the installation method is not assessed or classified because it depends on the product into which the glazing unit is fitted. It is assumed that the products into which the glazing unit is fitted, and the methods by which the glazing unit is installed, are classified in accordance with LPS 1175: Issue 7 *Requirements and testing procedures for the LPCB approval and listing of intruder resistant building components, strongpoints, security enclosures and free-standing barriers*.

*Notes:*

- 1) *For guidance, the security rating system is loosely based upon domestic risks (1 and 2), commercial risks (2, 3 and 4), high security risks (5 and 6) and extremely high security facilities (7 and 8).*
- 2) *The security rating applies to the make-up and configuration of the glass and/or glazing film tested. The same materials placed in different orders may not provide the same attack resistance.*

The standard was developed because the current method for classifying the attack resistance of security glazing (BS EN 356: 2000 *Glass in Building - Security Glazing - Testing and Classification of Resistance Against Manual Attack*) is not considered to be compatible with that employed within LPS 1175: Issue 7. This is because:

- BS EN 356: 2000 does not classify glass according to its resistance to different levels of attack based on the tools and time available to an intruder.
- The tests contained within BS EN 356: 2000 do not evaluate the glass's susceptibility to attacks involving the creation of small holes through which locking hardware may be manipulated and/or protected items, such as items on display within shop windows or display cases, may be removed.
- Glazing materials rated to BS EN 356: 2000 that have been included within products and systems tested to LPS 1175: Issue 7 have undermined those product's/system's ability to offer intruder resistance commensurate with the security ratings sought to LPS 1175: Issue 7.

The classification system presented within this standard will aid specifiers wishing to determine whether a security glazing unit's intruder resistance is commensurate with that provided by security products and systems rated in accordance with LPS 1175: Issue 7.

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When selecting security glazing units it is important to consider other aspects of the barrier or enclosure into which the glazing unit is to be fitted, for example the method by which the glazing unit is held in place. Manufacturers and specifiers should therefore ensure the complete barrier or enclosure is assessed and classified in accordance with LPS 1175: Issue 7.

## **2 DEFINITIONS**

### **2.1 Attack face(s)**

The surface(s) of a glazing unit confronting the person attempting forced entry.

### **2.2 Glazing unit**

A specific configuration of glazing formed from either a single sheet of glazing material or multiple layers of glazing and/or plastic material formed or adhered together to form a unit with or without gaps between each layer.

### **2.3 Intruder resistance**

The capacity of a glazing unit to withstand forced entry.

### **2.4 Manual intervention attack test**

An attempt at forced entry through a glazing unit by a person using tools.

### **2.5 Security glazing unit**

A glazing unit designed to provide resistance to manual attack.

### **2.6 Security glazing film**

Plastic film adhered to the surface(s) of a glazing unit to enhance its resistance to manual attack.

### **2.7 Security rating**

A numeric indication of the resistance to manual attempts of forced entry provided by a glazing unit.

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## 2.8 Total test time

The maximum duration of an individual manual intervention attack test. It is the accrued sum of the:

- working time;
- rest time of an operative for well being and safety reasons;
- time taken to change tools or exchange defective expendable tool elements; and
- inspection time called by the project leader.

## 2.9 Working time (resistance time)

The time of an individual manual intervention attack test in which a tool or tools is used to attempt to create a change in the test specimen.

The working time excludes:

- rest time of an operative for well being and safety reasons;
- time to change tools or exchange defective expendable tool elements; and
- inspection time called by the project leader.

## 3 REQUIREMENTS

### 3.1 Documentation required from client

An applicant shall furnish comprehensive information about the glazing unit to the LPCB for consideration prior to examination and testing. This shall define the construction of the product over the range to be covered by the evaluation. It shall include:

- a) Details of the applicant and, if different, the manufacturer of the glazing unit(s), including:
  - (i) Name of manufacturer.
  - (ii) Place of manufacture.
  - (iii) Year of manufacture.
  - (iv) Relationship of applicant to manufacturer.
  - (v) Company responsible for design and quality assurance.
- b) Specifications for all materials used to form the security glazing and the method by which the glazing is manufactured and assembled.
- c) Instructions and specification for secure installation / use including limitations for any security glazing films being submitted for evaluation.
- d) The face of the security glazing designed to resist manual attack.
- e) The applicant's security rating expectation.

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- f) Quality plan covering the control of the composition and quality of the security glazing film and/or glazing units to be classified, from receipt of raw materials through to despatch of completed glazing units. This shall include all relevant specifications for processes critical to the products/materials providing their defined performance.

All documents shall be dated and given a reference number and issue description.

### 3.2 Specimens to be supplied for testing

The following shall be observed subsequent to the acceptance of an application for approval:

- a) The applicant shall supply an agreed number of specimens.
- b) The number and type of specimens selected shall be representative of the range of glazing units and/or security films to be assessed and shall take into account likely differences in performance provided by each within the range and the classification(s) sought. The specimens selected shall cover the most vulnerable aspects of design, composition and configuration.
- c) It is not necessary to undertake additional tests on glazing units incorporating additional layers to those present on the glazing unit tested providing it can be proven that the attack resistance exhibited by the glazing unit tested is not undermined by the application of the additional layers.
- d) The size of the specimens shall be as detailed in clause 4.4.2.
- e) If a prototype glazing unit is supplied for testing, approval will not be given for that configuration until the specification documents and quality plans for subsequent series production have been examined and confirmed that they accord with the tested prototype or that any changes will not reduce the security rating.

*Note: Changes to production methods or design between prototype and final production stages may affect the product's performance. Therefore, it is not automatically possible to attribute security ratings achieved by prototype test samples to subsequent series production.*

- f) When the product incorporates advances or changes in technology, then additional sample pieces, parts or sections can be requested for evaluation prior to the supply of the agreed specimens.

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## 4 TESTING

### 4.1 Test requirements

#### 4.1.1 General

The overall objective is to confirm the security rating of the glazing unit by conducting a series of manual intervention attack tests designed to identify the minimum resistance to attack provided by the glazing unit.

The attack methods used by the test team shall be those most likely, in the opinion of the test team, to result in the lowest resistance values. Exploratory tests may be made as necessary to enable the test team to determine the most effective attack methods.

Performance requirements for each security rating are defined in Table 1.

The security rating shall only be confirmed when all the requirements for the anticipated security rating are met, irrespective of height constraints.

Glazing units that do not achieve a security rating of at least "001" cannot be classified in accordance with this standard.

#### 4.1.2 Data

All information and drawings supplied will be reviewed to ensure suitability for test, and certification purposes.

Instructions and recommendations for secure installation shall be reviewed in order to assess potential weaknesses for test purposes.

#### 4.1.3 Conformity between specimen and documentation

The test specimen(s) shall be visually examined for conformity with the details supplied by the applicant prior to testing.

*Note: A lack of conformity identified at this stage or during testing may prevent the issue of a test report and subsequent approval / certification unless promptly corrected.*

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## 4.2 Tests

Undertake a series of manual intervention attack tests on the product in accordance with clause 4.4 using tools from the tool category appropriate to the applicant's anticipated security rating (as defined in Table 1), with a view to passing the appropriate test blocks specified in clause 4.3 through the test specimen.

*Note: The purpose of the manual intervention attack tests is not to determine the glazing unit's resistance to removal from supporting substrate but determine its resistance to attempts at penetrating the glazing unit. For tests considering the resistance to removal of the glazing unit from a supporting substrate refer to LPS 1175: Issue 7.*

The working time (resistance time) shall be recorded in order to determine whether the glazing unit is capable of meeting the desired security rating.

## 4.3 Test blocks

The test blocks used to determine whether access is possible through the security glazing shall be at least 300 mm long and have the following cross-sectional dimensions.

### 4.3.1 Local penetration

8 mm (+3 mm/-0 mm) by 25 mm (+3 mm/-0 mm) rectangular section.

*Note: This is to determine resistance to creation of a hole through which a piece of wire, screwdriver lever, or other such device can be passed in order to operate a panic bar, emergency lever handle or other non-deadlocked device capable of releasing the boltwork on the item in which the glazing is mounted or on an item directly adjacent to that in which the glazing is mounted.*

### 4.3.2 Hand hole

60 mm (+3 mm/-0 mm) diameter.

*Note: This is to determine resistance to creation of a hand hole through which to operate an unprotected thumbturn to release the boltwork on the item in which the glazing is mounted or on an item directly adjacent to that in which the glazing is mounted.*

### 4.3.3 Complete access

Elliptical section of 400 mm (+3 mm/-0 mm) major axis by 225 mm (+3 mm/-0 mm) minor axis.

*Note: This directly reflects the size of aperture specified in LPS 1175: Issue 7 and ensures the glazing offers resistance to complete access through the glass commensurate with that provided by products approved by LPS 1175: Issue 7.*

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#### 4.4 Testing methods

##### 4.4.1 General

General laboratory procedures, confidential handling of specimens, event record requirements and presentation of the test report shall be in accordance with the requirements specified in BS EN ISO/IEC 17025: 2005 - *General requirements for the competence of testing and calibration laboratories*.

##### 4.4.2 Test facilities

The apparatus for this test shall consist of the rigid test frame defined in BS 6206: 1981 (incorporating amendments numbers 1 to 5) - *Specification for impact performance requirements for flat safety glass and safety plastics for use in buildings*, into which the test specimens shall be mounted for test.

The apparatus shall also comprise attack tools of the appropriate category specified in clause 4.4.5.

The size of test specimens supplied for test shall be 865 mm ( $\pm 3$  mm) wide by 1930 ( $\pm 3$  mm) high.

The specimens shall be mounted in the test frame in accordance with BS 6206: 1981 with the attack face confronting the attacker. If the attack face is not defined within the product installation instructions and/or clearly identified on the glazing unit, both faces of the glazing unit shall be treated as attack faces and tested accordingly.

Where a security glazing film is bonded to the face of the glazing unit, the security glazing film shall cover the whole of the specimen unless the security glazing film is designed to be for daylight applications only. In those instances, the security glazing film shall be applied so as not to cover areas around the edge of the glass that will be clamped within the test frame.

The test room temperature shall be between 18 °C and 30 °C at the time of testing and the sample shall be maintained in those conditions for at least 24 hours before testing.

The temperatures shall be recorded within the test report.

##### 4.4.3 Test team

The test team shall comprise a team leader whose function is to direct, time, compile an event record and control the testing work on a product specimen and a test operative whose prime function is to carry out the testing work on the specimen as directed by the team leader.

At any time during testing the team leader may substitute himself for the test operative, the operative assuming the role of time keeper whilst maintaining the event record.

A different test operative may be used for different styles of attack but only one operative (other than the team leader) shall partake in any individual test.

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#### 4.4.4 Test method

Mount the specimen in the test frame as detailed in clause 4.4.2.

Undertake a series of attack tests using tools of the appropriate category relative to the security rating sought. Each individual attack test shall be continued until either:

- (i) the objective is achieved;
- (ii) the maximum test duration is exceeded; or
- (iii) the team leader decides that the attack is ineffective for classification purposes.

During each individual attack test the timing device used to measure test duration shall remain activated. The resolution of this device shall be at least 1 second. The timing device(s) used to record working time shall have a resolution of at least 0.01 second. At the conclusion of the test the working time shall be rounded to the next full second.

If the security glazing incorporates a security glazing film that is designed to be applied on site, the glazing film shall be applied to the glazing unit in the laboratory in accordance with the application instructions supplied for evaluation and shall be left to cure for the time advised within the instructions before commencing the manual intervention attack tests.

If the instructions do not provide a curing time or recommendations regarding protection of the glazing while the security glazing film cures, the manual intervention attack tests shall be completed within between 4 hours and 3 days of the security glazing film being applied to the glazing.

#### 4.4.5 Attack tools

The tool manifest for the manual intervention attack tests and ascribed tool category is described in clause 4.4.2.3 of LPS 1175: Issue 7.

All dimensions are the maximum permitted unless otherwise specified.

No alterations shall be made to the tools other than those required to maintain the tools in good working order. Likewise, tool safety devices such as guards, fuses and other current limiting features and/or maximum speed controls, shall not be removed or altered.

The test team and anyone else present during the tests shall wear appropriate personal protective equipment.

## 5 CLASSIFICATION AND DESIGNATION

The intruder resistance achieved by a product is indicated by a three digit security rating. Each digit indicates the glazing unit's minimum resistance to creation of a different size hole, as follows:

- The first digit indicates the glazing unit's minimum resistance to creation of a hole through which the test block defined in clause 4.3.1 can pass.

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- The second digit indicates the glazing unit's minimum resistance to creation of a hole through which the test block defined in clause 4.3.2 can pass.
- The third digit indicates the glazing unit's minimum resistance to creation of a hole through which the test block defined in clause 4.3.3 can pass.

In order to be classified to this standard, glazing units must achieve a rating of at least "001".

*Note: The security rating does not indicate the glazing unit's resistance to removal from the product/substrate in which the glazing unit is mounted nor does the rating indicate its resistance to penetration around the edges of the glazing unit. Such resistance is largely affected by the design/performance of the product/substrate in which the glazing unit is mounted. Therefore, the resistance to those modes of failure can only be determined by evaluating that product/substrate in accordance with LPS 1175: Issue 7.*

**Table 1** Security rating requirements for each manual intervention attack test

| Security rating classification | Tool category*  | Maximum working time (minutes) | Maximum test duration (minutes) |
|--------------------------------|---|--------------------------------|---------------------------------|
| 0 <sup>†</sup>                 | The glazing fails to achieve the manual intervention attack resistance requirements defined for security rating 1 |                                |                                 |
| 1                              | A   | 1                              | 10                              |
| 2                              | B   | 3                              | 15                              |
| 3                              | C   | 5                              | 20                              |
| 4                              | D   | 10                             | 30                              |
| 5                              | D+  | 10                             | 30                              |
| 6                              | E   | 10                             | 30                              |
| 7                              | F   | 10                             | 30                              |
| 8                              | G   | 20                             | 60                              |

## 6 MARKING

All specimens submitted for test shall be marked with the manufacturer's/supplier's name or trademark, product type designation and either a batch number or date of manufacture. The sample shall also be marked to indicate the attack face.

\* As described in clause 4.4.2.3 of LPS 1175: Issue 7.

<sup>†</sup> Security rating 0 only applies to local penetration (clause 4.3.1) and creation of a hand hole (clause 4.3.2).

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## 7 PUBLICATIONS REFERRED TO:

|   |   |
|---|---|
| BS 6206: 1981 ( <i>Incorporating Amendments Nos. 1, 2, 3, 4 and 5</i> ) | Specification for impact performance requirements for flat safety glass and safety plastics for use in buildings  |
| BS EN ISO/IEC 17025: 2005   | General requirements for the competence of testing and calibration laboratories.  |
| BS EN 356: 2000   | Glass in building - Security glazing - Testing and classification of resistance against manual attack   |
| LPS 1175: Issue 7   | Requirements and testing procedures for the LPCB approval and listing of intruder resistant building components, strongpoints, security enclosures and free-standing barriers |

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 1270-1.1 | <ol style="list-style-type: none"> <li>1. New front cover</li> <li>2. Title added to header</li> <li>3. Notes amended on Page 4</li> <li>4. Repagination</li> <li>5. Update to copyright information</li> </ol> | DC        | Jan.2014 |