BRITISH STANDARD

BS 8434-1:2003
Incorporating Amendment No. 1

Methods of test for assessment of the fire integrity of electric cables —

Part 1: Test for unprotected small cables for use in emergency circuits — BS EN 50200 with addition of water spray

ICS 13.220.40; 29.060.20

BSI
British Standards

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by Technical Committee, GEL/20, Electric cables, to Subcommittee GEL/20/18, Fire test methods, upon which the following bodies were represented:

BEAMA Installation Ltd.

British Approvals Service for Cables

British Cables Association

British Plastics Federation

DTI — Consumer Safety Unit

Electricity Association

ERA Technology Ltd.

Institute of Fire Prevention Officers

MOD UK Defence Standardisation

Network Rail

Nuclear Industry Fire Safety

QinetiQ

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 14 August 2003

The following BSI references relate to the work on this British Standard:
Committee reference GEL/20/18
Draft for comment 02/209891 DC

ISBN 0 580 42255 0

Amendments issued since publication

Amd. No.	Date	Comments
15846	18 November 2005	See Foreword

Contents

Foreword

BS 8434-1:2003 has been prepared by GEL/20, Electric cables, through its Subcommittee GEL/20/18. UK has been granted (D116/088) derogation from standstill in respect of the publication of BS 8434-1:2003.

A number of clauses in this standard are, by numbering and content, identical to the equivalent clause in BS EN 50200:2000. Such clauses are identified with the words "The provisions of BS EN 50200 shall apply" and are intended to be read as though the relevant wording from that standard was included at that point.

〈A1〉 Changes as a result of Amendment 1:2005 are indicated by tags (〈A1〉 〈A1〉) in the text. 〈A1〉

It has been assumed in the drafting of this British Standard that the execution of its provisions is entrusted to appropriately qualified staff and experienced people, for whose guidance it has been prepared.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its 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, pages 1 to 5 and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

1 Scope

This British Standard specifies a method of test to be used for small unprotected cables where, in addition to the requirements of BS EN 50200, a means of applying a water spray to the cable during the test is required. Compliance with the requirements of BS 5839-1:2002, **26.2**d) may be demonstrated using this method.

NOTE This water spray application is included as an option in a proposed amendment (prA1) to EN 50200 that is currently within CENELEC Procedures. UK has been granted derogation from standstill in respect of the publication of BS 8434-1:2003.

It is emphasized that the fire tests do not assess a fire hazard, nor can the results of the fire tests alone guarantee safety. They only provide information to assist in the assessment of the suitability of a cable for a given application.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the reference cited applies. For undated references, the latest edition of the referenced document (including any amendments).

BS EN 50200, *Method of test for resistance to fire of unprotected small cables for use in emergency circuits.*

3 Terms and definitions

The terms and definitions given in BS EN 50200 apply.

4 Duration of survival

4.1 Time

〉A1〈 The duration of the test shall be 30 min (15 min for the initial fire and impact phase followed by an additional 15 min for the fire, impact and water phase), during which the cable shall not reach the point of failure.

Conformity to this requirement shall qualify for a 30 min classification.

NOTE 1 The 30 min classification meets the requirement specified in BS 5839-1:2002, **26.2**d) (see Clause **1** of the present standard).

NOTE 2 Particular product standards or specifications may use the same test protocol, and may contain other durations of test that do not lead to a classification under this standard. 〉A1〈

4.2 Point of failure

The provisions of BS EN 50200 shall apply.

5 Test environment

The provisions of BS EN 50200 shall apply.

6 Test apparatus

6.1 *Test equipment.* In addition to the provisions of BS EN 50200, the test equipment shall include a water spray device as described in **6.6**.

6.2 *Wall and its mounting*, conforming to BS EN 50200.

6.3 *Continuity checking arrangement*, conforming to BS EN 50200.

6.4 *Source of heat*, conforming to BS EN 50200 except that the nominal burner face width shall be 10 mm.

6.5 *Shock producing device*, conforming to BS EN 50200.

6.6 *Water spray device*, consisting of a metallic tube (copper or stainless steel) of nominal thickness 1.00 mm and overall diameter (15.5 ± 1.0) mm, closed at one end and open at the other to allow the inflow of water.

The tube shall have one row of 17 holes of 0.85 mm nominal diameter drilled on 30 mm centres as shown in Figure 1.

The bar shall be positioned centrally with respect to the test sample as shown in Figure 2.

It shall be supplied by water at a flow rate of (0.80 ± 0.05) l/min.

NOTE 1 The input water pressure should be sufficient to meet the specified water flow rate. This should be verified by volumetric measurement.

The tube shall be capable of adjustment such that the resulting water spray is centralized around the burned portion of the test sample.

The use of a metal plate device over the burner to avoid ingress of water is permitted. If a plate is used, the calibration shall be carried out with the metal plate in place.

NOTE 2 A metal plate 0.4 mm thick extending horizontally 12 mm from the burner face and fixed 12 mm vertically above the centre line of the burner has been found to be satisfactory.

7 Verification procedure for source of heat

The provisions of BS EN 50200 apply, except that if the metal plate device over the burner is used (see **6.6**), it shall be in place for the verification procedure.

8 Test sample

The provisions of BS EN 50200 shall apply.

9 Cable test procedure

9.1 General

The provisions of BS EN 50200 shall apply.

9.2 Procedure for different cable types

The provisions of BS EN 50200 shall apply.

9.3 Ignition and shock production

The provisions of BS EN 50200 shall apply.

9.4 Electrification or optical monitoring

The provisions of BS EN 50200 shall apply.

9.5 Application of water spray

After the required period of exposure in accordance with **9.3**, with the flame and shock still being applied, start the water spray in accordance with **6.6**.

Continue applying the water for the time required by the relevant requirement for resistance to fire and water.

WARNING If the application of the water extinguishes the flame then, for safety reasons, turn the gas supply off and consider the test invalid.

The point of failure shall be as defined in **4.2**.

9.6 End-point

Continue the test either:

a) until 15 min of fire and impact alone, followed by 15 min of fire, impact and water has been completed; or

b) to the point of failure.

The point of failure shall be as defined in **4.2**.

10 Test report

The test report shall include the following information:

a) the number of this British Standard;

b) full description of cable tested;

c) manufacturer of cable tested;

d) test voltage or test wavelength;

e) any options used in methodology (i.e. type of test wall, mass flow meter), and point of failure mechanism;

f) use of the metal plate with the water spray application;

g) type and disposition of clips supporting cable sample;

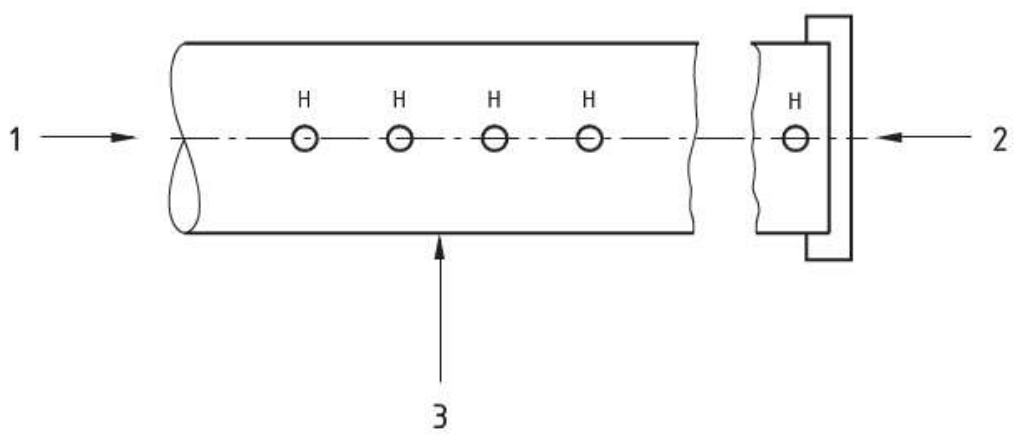
h) the actual cable bending radius used for the test;

i) method used for temperature monitoring during the verification procedure;

j) the survival time achieved;

A1 k) The classification, if any, claimed. A1

NOTE The only classification possible against BS 8434-1 is 30 min. A1



Key

1 Inflow of water

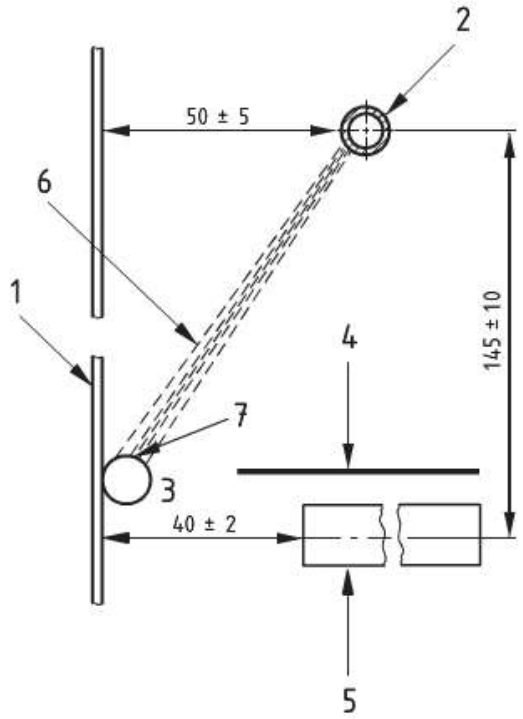
2 Closed end

3 Metallic tube

H 17 holes, 0.85Ø at 30 mm centres (Ø = (15.5 ± 1.0) mm nominal)

Figure 1 — Water spray tube

All dimensions in millimetres



Key

1 Test wall
2 Water spray tube
3 Test sample
4 Metal plate (see **6.6**)
5 Burner
6 Spray bar holes directed at sample
7 Centre-point of spray

Figure 2 — Water spray application

Bibliography

Standards publications

BS 5839-1:2002, *Fire detection and alarm systems for buildings — Part 1: Code of practice for system design, installation, commissioning and maintenance.*

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

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

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: +44 (0)20 8996 9000. Fax: +44 (0)20 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: +44 (0)20 8996 9001. Fax: +44 (0)20 8996 7001. Email: orders@bsi-global.com. Standards are also available from the BSI website at http://www.bsi-global.com.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre. Tel: +44 (0)20 8996 7111. Fax: +44 (0)20 8996 7048. Email: info@bsi-global.com.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration. Tel: +44 (0)20 8996 7002. Fax: +44 (0)20 8996 7001. Email: membership@bsi-global.com.

Information regarding online access to British Standards via British Standards Online can be found at http://www.bsi-global.com/bsonline.

Further information about BSI is available on the BSI website at http://www.bsi-global.com.

Copyright

BSI
389 Chiswick High Road
London
W4 4AL