

CONFIRMED
AUGUST 1984

Laboratory method of test for

**Assessment of the
horizontal burning
characteristics of
specimens no larger
than 150 mm × 50 mm ×
13 mm (nominal) of
cellular plastics and
cellular rubber
materials when
subjected to a small
flame**

UDC 678.01 – 405.8:536.468

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW



Document Sharing Hub

Co-operating organizations

The Plastics and Rubber Industry Standards Committees, under whose supervision this British Standard was prepared, consist of representatives from the following Government departments and scientific and industrial organizations:

British Association of Synthetic Rubber Manufacturers	Malaysian Rubber Producers' Research Association
British Plastics Federation	Ministry of Defence, Army Department
British Resin Manufacturers' Association	Ministry of Defence, Navy Department
British Rubber Manufacturers' Association*	Ministry of Defence, Procurement Executive
Chemical Industries Association	Plastics Institute
Department of the Environment	Post Office
Department of Trade and Industry*	Royal Institute of British Architects
Electrical and Electronic Insulation Association	Royal Institute of Public Health and Hygiene
Electrical Installation Equipment Manufacturers' Association	Rubber and Plastics Research Association of Great Britain*
Electrical Research Association	Rubber Growers' Association
Engineering Equipment Users' Association	Society of Motor Manufacturers and Traders Limited*

The organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

British Furniture Manufacturers' Federated Association	Ministry of Defence
British Railways Board	National Bedding Federation
British Rigid Urethane Foam Manufacturers' Association	Safety in Mines Research Establishment
Department of Employment	The Society of British Aerospace Companies Limited
Expanded Polystyrene Products Manufacturers' Association	

This British Standard, having been approved by the Plastics and Rubber Industry Standards Committees, was published under the authority of the Executive Board on 30 September 1974

© BSI 03-1999

First published March, 1971
First revision September, 1974

The following BSI references relate to the work on this standard:
Committee references
PLC/RUC/-/1 and PLC/RUC/-/1/1
Draft for approval 74/50735

ISBN 0 580 08127 3

Amendments issued since publication

Amd. No.	Date of issue	Comments
7687	July 1993	Indicated by a sideline in the margin

Contents

	Page
Co-operating organizations	Inside front cover
Foreword	ii
1 Scope	1
2 Reference	1
3 General	1
4 Apparatus	1
5 Size, number and marking of test specimens	2
6 Conditioning of specimens	2
7 Test procedure	2
8 Calculations	3
9 Test report	3
Figure 1 — Test chamber	4
Figure 2 — Details of flame and relative positions of burner wing top, specimen and specimen support	5
Figure 3 — Dimensions of specimen and specimen support	6
Figure 4 — Gauze holder	7
Publication referred to	Inside back cover

Foreword

This British Standard was first published in 1971 under the authority of the Plastics and Rubber Industry Standards Committees. This revision is in line with a Draft International Standard under consideration by ISO/TC 45 — Rubber and Rubber Products, and ISO/TC 61 — Plastics, of the International Organization for Standardization (ISO).

In this revision greater emphasis is placed on the intended purpose of the test method and the strengthening of the warnings against misusing the test results to predict behaviour under the complex conditions existing in an actual fire. In line with the ISO draft and so as to emphasize the limited interpretation that can be put on the test results, the classification system given in the first edition has been omitted and the test results are now only reported as simple numerical values. The principle of classification in relation to small-scale tests is being reviewed as a matter of policy, both in BSI and in ISO.

In this revision the title of the standard has been altered to emphasize the limited nature of the test.

Technical changes from the first edition are the use of thinner test specimens to align with international agreement, modifications to the design of the test chamber to ensure an adequate oxygen supply, and conditioning of the test specimens at 23 °C, 50 % r.h., in line with international agreements for the conditioning of plastics and rubbers.

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, pages 1 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.

1 Scope

This British Standard describes a small-scale laboratory procedure for comparing the relative horizontal burning characteristics of cellular plastics and cellular rubber materials, as such, exposed to a low energy source of heat. It has no relevance to the environmental conditions under which cellular plastics and cellular rubber materials may be used either singly or in conjunction with other materials.

This test method is not intended to be used to assess potential fire hazard in use (see 3.1).

2 Reference

The title of the publications referred to is given on the inside back cover.

3 General

3.1 Tests made on specimens of material under the conditions described in this standard can be of value in controlling manufacturing processes to ensure consistency of production. There is no known evidence of correlation between the results of such tests and burning under actual use conditions. Therefore conclusions cannot and shall not be drawn from such results regarding burning behaviour under actual use conditions. If it is desired to measure and compare fire hazards for a finished product containing cellular plastics or cellular rubber materials, another test method which simulates as nearly as possible the actual conditions of use has to be used.

3.2 Horizontal burning characteristics under the action of a small flame as measured by this test procedure are affected by such factors as density and anisotropy of the cellular material and the thickness of the specimen.

3.3 Some test specimens of certain materials may shrink from the applied flame without igniting. In this event test results are not valid and additional test specimens may be required to obtain the ten sets of data required.

3.4 Test specimens of certain materials may show burning only along the upper surfaces. In such cases measurement of percentage mass loss may be made and reported if required.

3.5 Inter-laboratory trials have shown that many variables influence the reproducibility of the results of this type of test. For this reason the procedure laid down shall be adhered to in all respects, especially as regards the use and construction of the test chamber and the use and location of the support gauzes and gauze holder.

NOTE Since, with some materials, the horizontal burning characteristics of test specimens may change with time, it is advisable that a series of tests should be carried out both before and after an appropriate ageing procedure, details of which should be given in the test report.

4 Apparatus

4.1 Test chamber. A test chamber shall be used, constructed of non-combustible (non-asbestos) insulating board, having inside dimensions of 600 ± 5 mm length, 300 ± 5 mm width and 760 ± 5 mm height, and being otherwise as depicted in Figure 1. To allow easy access between tests the chamber may be designed so that the front panel containing the window is removable, but if so constructed then provision shall be made for ensuring that a draught-proof seal is obtained when the panel is in position. The chamber shall be used in a fume cupboard.

The air in the chamber shall be draught-free, yet permit normal thermal circulation of air past the specimen during burning.

4.2 Fuel supply. Propane gas of at least 93 % purity and complying with the requirements of BS 4250, supplied through pressure-regulating and on/off valves, shall be used.

4.3 Burner. A burner of internal barrel diameter 9.5 ± 0.5 mm and jet size 0.3 ± 0.1 mm shall be used. The jet shall be such that the propane pressure to obtain the flame as shown in Figure 2 is less than 7 kN/m^2 .

4.4 Wing top. A wing top having an opening of internal length 48 ± 1 mm and internal width 3.0 ± 0.2 mm shall be fitted to the burner.

4.5 Specimen support gauze. The support shall be 215 mm long, 75 mm wide and shall have 13 mm of its length bent to form a right angle as indicated in Figure 3. It shall consist of 6.4 mm mesh gauze constructed from 0.8 mm diameter steel wire. A minimum of four supports shall be available.

4.6 Gauze holder. The gauze holder shall be constructed from mild steel and shall be as depicted in Figure 4, so that

- the gauze is maintained with its long axis horizontal to within $\pm 1^\circ$, and parallel to the 600 mm dimension of the test chamber;
- the nearest end of the specimen is 13 ± 1 mm above the burner wing top (see Figure 2);
- the space both above and below the specimen is unobstructed;
- a means is provided for clamping the burner in the correct position relative to the specimen;