

Methods for

Determination of the resistance of textiles to microbiological deterioration

Committees responsible for this British Standard

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- Association of Heavy Textile Proofers of Great Britain
- British Narrow Fabrics Association
- British Pest Control Association
- British Textile Technology Group
- British Wood Preserving and Damp-proofing Association
- Chemical Industries' Association
- Health and Safety Executive
- International Wool Secretariat
- Ministry of Defence
- Society of Dyers and Colourists
- Textile Finishers' Association

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Foreword

This British Standard has been prepared under the direction of the Textiles and Clothing Standards Policy Committee. It is a revision of BS 6085:1981, which is withdrawn.

BS 6085 has been prepared taking into account the methods given in BS 2011-2.1 J. A bacterial resistance test has been introduced in this revision.

Attention is drawn to the guidance notes on mould growth testing given in BS 2011-2.1 J. This test is based on normal microbiological techniques and should be performed and assessed only by, or under supervision of, trained microbiologists.

The general purpose of these methods is to determine the susceptibility of textiles to microorganisms and to evaluate the resistance of treated textiles and textile-containing products to attack by microorganisms. The test procedure selected for use will depend on the investigator's interest and the type of exposure to which the textile may be subjected in use, for example, if the final product is likely to come into contact with soil, the test procedure simulating this exposure should be used; if the final product is to be used inside a building and would not be expected to come into contact with soil, a much less severe test would be suitable. The two important considerations when evaluating resistance of textiles to microorganisms are the actual deterioration of the product in terms of performance loss and surface disfigurement not necessarily leading to substrate deterioration.

The soil burial procedure is the most severe and is applicable to all textiles. The mixed culture tests are limited in the number of organisms, and because of this general limitation and the wide range of biodeteriogens likely to be encountered, allowance has been made for the use of other organisms.

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. In particular attention is drawn to section 6 of the Health and Safety at Work etc. Act 1974 and the Environmental Protection Act 1990.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 12, 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.

Section 1. General

1 Scope

This British Standard describes methods of test for the determination of resistance of textiles to deterioration by the action of microorganisms. Methods are also included for assessment of durability of resistance.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Principle

Specimens are subjected to microbiological attack by soil burial or by microbial inoculation either on agar plates or in a saturated atmosphere. The specimens are then examined visually and a subjective assessment of deterioration is made. Additionally, or alternatively, loss in performance caused by exposure may be assessed.

3 Health and safety of operators

Since the procedures involve handling and working with microorganisms, personnel trained in them should perform those portions involving the handling of organisms and inoculated specimens. Attention is also drawn to the general recommendations on personnel safety given in BS 2011-2.1J and the code of practice issued by the Advisory Committee on Dangerous Pathogens (ACDP) for the handling and categorization of microorganisms¹⁾.

4 Atmosphere for conditioning and testing of textiles

When required, use the standard temperate atmosphere for conditioning and testing textiles as defined in BS 1051, i.e. temperature 20 ± 2 °C and a relative humidity 65 ± 2 %.

5 Test specimens

5.1 Dimensions

5.1.1 Visual assessment

Fabric specimens shall measure at least 20 mm × 20 mm. Yarn specimens shall be wound round a stainless steel or glass frame in order to give a surface area of approximately 20 mm × 20 mm.

5.1.2 Performance loss

Fabric specimens shall measure 150 mm × 25 mm. For the soil burial test, yarn specimens shall be 600 mm long and tied round a stainless steel or glass frame in a single loop. For the agar plate test the 600 mm long specimens shall be formed into a coil so that they fit the test container.

5.2 Number of specimens

5.2.1 Visual assessment

At least four specimens shall be used.

5.2.2 Performance loss

Specimens shall be taken at random from the laboratory bulk sample.

Five fabric specimens shall be taken with their longer side in the machine direction and five fabric specimens with their longer side in the cross direction.

Twenty yarn specimens shall be taken in equal portions from the packages in the laboratory bulk sample.

5.3 Number of sets of specimens

NOTE 1 The number of sets of specimens of material under test and control fabric to be taken depends upon the particular tests being carried out, and whether these are carried out in conjunction with some form of durability assessment.

One set of specimens shall be provided for each variant of procedure available for the test materials (see 5.4).

NOTE 2 It is essential that the choice of tests be clarified in a performance or test specification.

Similar requirements shall apply to the cotton control fabric, with the exception of the “as received”, each variant requiring one set of specimens as specified in 5.2.1 and 5.2.2.

5.4 Variants of procedure

The variants of procedure used shall be chosen from the following:

- a) as received, but after sterilization, as specified for each test;
- b) after procedures to test durability, whether after each procedure or after a series of procedures, dependent on the specific requirements;
- c) on the same specimen in succession, if required;
- d) after agar plate without nutrient;
- e) after agar plate with nutrient;
- f) after saturated atmosphere;
- g) after b) and c);

¹⁾ “Categorization of pathogens according to hazard and categories of containment”. 2nd Edition (1990): HMSO. Available from HMSO, Sovereign House, Botolph Street, Norwich, NR2 1DN.

- h) after b) and d);
- i) after b) and e);
- j) after b) and f).

5.5 Pretreatment

If required by the performance specification, subject all the specimens, including the cotton control fabric, to a durability procedure.

NOTE Some examples of durability procedures are given in Appendix A.