

Artificial sports surfaces —

Part 2: Methods of test —

Section 2.3: Methods for determination of durability

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Textiles and Clothing Standards Policy Committee (TCM/-) to Technical Committee TCM/14, upon which the following bodies were represented:

- Birmingham City
- British Amateur Athletic Board
- British Amateur Weight Lifters' Association
- British Association of Advisers and Lecturers in Physical Education
- British Leather Confederation
- British Sports and Allied Industries Federation
- Central Council of Physical Recreation
- City of Glasgow
- Consumer Policy Committee of BSI
- Department of Education and Science
- Department of the Environment (Building Research Establishment)
- Department of Trade and Industry (Consumer Affairs Division)
- English Basketball Association
- Home Office
- Institute of Trading Standards Administration
- Ministry of Defence
- Physical Education Association of Great Britain and Northern Ireland
- Recreation and Leisure Trade Association
- Sports Council

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- Association of District Councils
- British Floor Covering Manufacturers' Association
- British Plastics Federation
- Institute of Leisure and Amenity Management
- RAPRA Technology Ltd
- Sports Turf Research Institute
- Textile Institute
- Textile Research Council

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Foreword

This Section of BS 7044 has been prepared under the direction of the Textiles and Clothing Standards Policy Committee and forms part of a comprehensive British Standard on artificial sports surfaces. A classification and general introduction is given in Part 1.

This Section supersedes BS 7044-2.3:1989 which is withdrawn. This edition introduces additional methods but does not reflect a full review or revision of the standard which will be undertaken in due course.

This Section of BS 7044 describes six methods of test. Methods 1 to 5 are largely based on the methods of test given in the Sports Council Specification for Artificial Sports Surfaces, 1984. Method 5, however, differs in that a spiked tetrahedron is used instead of a spiked sphere.

Method 6 is largely based on section 5 of BS 7188:1989 but differs in the diameter of the foot and the duration of the test.

WARNING NOTE These methods do not necessarily detail all precautions necessary to meet the requirements of the Health and Safety at Work etc. Act 1974. Attention should be paid to any appropriate safety precautions and the methods should be operated only by trained personnel.

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 10, 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 Section of BS 7044 describes methods of test for the determination of abrasion resistance to abrasive wheels, abrasion resistance to metal blades, fatigue resistance, low temperature impact resistance, spike resistance and resistance to indentation of artificial sports surfaces.

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

2 Method 1. Determination of abrasion resistance to abrasive wheels

2.1 General

This method is suitable for testing all types of artificial sports surfaces, other than artificial grasses, using test pieces in the laboratory. The result obtained gives a measure of the resistance of the surface to abrasion by abrasive wheels.

2.2 Principle

A test piece is abraded by the action of a pair of abrasive wheels, and the resulting loss in mass is measured.

2.3 Apparatus

2.3.1 *Rotary platform double head abrasion machine*, as specified in ISO 5470.

2.3.2 ¹⁾ *Freshly refaced abrasive wheels*, acting under a load of 500 g per wheel.

2.3.3 *Balance*, weighing to an accuracy of ± 0.01 g.

2.3.4 *Graph paper*.

2.4 Test pieces

Three pieces of surface of minimum length 100 mm and minimum width 100 mm for unaged material or one piece of surface of minimum length 100 mm and minimum width 100 mm for aged material shall be tested.

2.5 Conditioning

Condition the test piece(s) for a minimum duration of 3 h at the test temperature. Unless otherwise specified, the test temperature shall be 23 ± 2 °C.

2.6 Procedure

Use the balance (2.3.3) to weigh the test piece (2.4). Position the test piece in the abrasion machine (2.3.1), lower the abrasive wheels (2.3.2) on to the test piece and start the machine. After 1 000 revolutions stop the machine, remove any loose debris from the test piece and reweigh.

Repeat this procedure four times so that the test piece is subjected to a total of 5 000 revolutions. After each 1 000 revolutions reface the abrasive wheels in accordance with the manufacturer's instructions.

NOTE If smearing of abrasive occurs causing the wheels to become loaded, the test should be regarded as invalid. The problem may be overcome by shortening the interval before refacing the wheels.

When testing unaged material, repeat the procedure with the other two test pieces.

2.7 Calculation and expression of results

2.7.1 Aged material. Calculate and record the incremental mass loss per 1 000 revolutions.

Plot a graph (2.3.4) of the incremental mass loss against the number of revolutions.

2.7.2 Unaged material. Calculate and record the incremental mass loss per 1 000 revolutions for each test piece.

Calculate and record the arithmetic mean mass loss for the three test pieces after each of the five successive 1 000 revolution test periods.

Plot a graph of the mean incremental mass loss against the number of revolutions.

2.8 Test report

The test report shall include the following particulars:

- a) complete identification of the surface tested including manufacturer's references and previous history;
- b) a reference to this method, i.e. method 1 of BS 7044-2.3:1990;
- c) the temperature of test and relative humidity, if required;
- d) the type of abrasive wheels used;
- e) the incremental mass loss per 1 000 revolutions for the aged test piece, or, when testing unaged material, the arithmetic mean mass loss for each 1 000 revolutions for the test pieces;
- f) details of any deviation from the procedure.

3 Method 2. Determination of abrasion resistance to metal blades

3.1 General

This method is suitable for testing non-sand filled artificial grass surfaces using test pieces in the laboratory. The result obtained gives a measure of the resistance of the surface to abrasion by metal blades.

¹⁾ For information on the availability of suitable abrasive wheels, apply to Enquiry Section, BSI, Linford Wood, Milton Keynes, MK14 6LE, enclosing a stamped addressed envelope for reply.