

British Standard

Testing coated fabrics

Part 10. Methods 12A and 12B. Determination of surface drag

Méthodes d'essai des supports textiles revêtus

Partie 10. Méthodes 12A et 12B. Détermination de la traînée superficielle

Verfahren zur Prüfung beschichteter Gewebe

Teil 10. Verfahren 12A und 12B. Bestimmung des Oberflächenreibungswiderstandes

IMPORTANT NOTE. It is recommended that this Part be read in conjunction with the information in Part 0 'Foreword and general introduction'.

Foreword

The frictional properties of coated fabrics are important for many applications. In clothing, footwear, upholstery, industrial belting, constructional applications and other end uses as well as during processing, friction is an important consideration. In some cases it is the frictional behaviour of the coating with itself that is of prime importance. In others it is the frictional behaviour of the coating with another surface that is the major consideration.

Invariably the static coefficient of friction is required to be known but also the kinetic coefficient can be as important. Similarly the differences between the two may, in some cases, have to be as small as possible, whilst the absolute value, be it high or low, may not be significant.

The methods included in this Part of BS 3424 will provide essential information on both static and kinetic coefficients of friction. Method A will provide both coefficients in a

single operation. A means of quantifying the frictional properties is also provided. Method B on the other hand has been included because the instrument is simple and cheap to fabricate, both the method and equipment are well known within the industry and, if different modes of operation are employed, can give a measure of the static and kinetic coefficient of friction.

The determination of frictional coefficients of coated fabrics requires somewhat different considerations to be taken into account than is the case when testing other materials, for example metals. For a more detailed discussion of these considerations it is recommended that reference be made to BS 4618 : Section 5.6 including the bibliography.

This Part supersedes method 12 of BS 3424 : 1973.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

1 Scope

This Part of BS 3424 describes two methods of assessing the frictional properties of coated fabrics.

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

2 Definitions

For the purposes of this Part of BS 3424 the following definitions apply.

2.1 coefficient of static friction (μ_s). The ratio of the force necessary to cause the tangential separation of two stationary surfaces to the perpendicular force acting upon the two surfaces.

2.2 coefficient of kinetic friction (μ_k). The ratio of the force necessary to maintain a constant velocity between two surfaces in contact to the perpendicular force acting upon the two surfaces.

2.3 kinetic angle of surface drag (D_k). The angle of the inclined plane at which the test sled will slide down the inclined plane when sliding is initiated by a standard impulse.

2.4 static angle of surface drag (D_s). The angle of the inclined plane at which the test sled will slide down the inclined plane under its own mass and momentum.

3 Method A. Flat bed method

3.1 Principle

A rectangular strip of the coated fabric is mounted with the coating outermost on a sled to which is attached a strain gauge and autographic recording device. The sled is caused to move over a rigidly mounted horizontal bed to which is fastened the comparator material (either a melton cloth or the coated fabric itself). The force necessary to initiate movement of the sled and thereafter maintain a constant velocity is measured.

3.2 Apparatus

3.2.1 A sled, 150 ± 1 mm long $\times$ 100 ± 1 mm wide having a mass of 700 ± 15 g to which is attached the coated fabric

test specimen (see 3.3.1) and a test specimen support of cellular rubber or plastics material 3 mm thick and of medium apparent density. The surface of the sled is flat and smooth or polished. The edges of the sled do not contain any burrs or roughnesses.

When laid upon the horizontal bed of the test instrument the sliding surface of the sled is parallel with the horizontal bed and in full planar contact and without distortion.

3.2.2 A driving mechanism, to move the sled or horizontal bed in such a manner that the relative movement of one with the other can be maintained at a constant velocity of 800 ± 80 mm/min.

The drive mechanism is automatically disengaged or de-energized at the end of the test run (see 3.2.3).

3.2.3 A flat bed of rigid construction, having a smooth or polished surface to which the comparator material (see 3.3.2) is fixed in such a manner that the comparator material is not stretched more than a necessary minimum to remove wrinkles or other non-permanent distortions. The flat bed is of a length to permit a relative surface travel during the test of approximately 400 mm and of a width to permit approximately 50 mm of clearance between the edge of the sled and any edge obstructions.

3.2.4 A measuring device, in the form of a strain gauge, is employed with an associated autographic recording instrument to determine accurately the force necessary to initiate movement and the force necessary to maintain a constant velocity thereafter. The response time of the recording instrument is less than 0.25 s.

3.3 Preparation of test specimens and comparator material

3.3.1 Cut two coated fabric specimens each measuring 250 mm $\times$ 100 mm, one in the longitudinal direction of the coated fabric and one in the transverse direction of the coated fabric.

3.3.2 Cut two comparator specimens each not less than 550 mm long $\times$ 200 mm wide, from either the coated fabric under test or from a woollen melton cloth* similar to OC 7 of BS 1771 : Part 1 : 1984.

*Information concerning sources of supply for the woollen melton cloth and the apparatus can be obtained by sending a stamped addressed envelope to Enquiry Section, BSI, Linford Wood, Milton Keynes MK14 6LE.