BS 3838 :1980

UDC 677.027.687.112.2

Specification for

Blazer fabrics

'Etoffes pour blazers – Spécifications
Gewebe für Blazer'

British Standards Institution

Gr 3

British Standard Specification for

Blazer fabrics

1. Scope

This British Standard specifies requirements for blazer fabrics made from wool or wool blends or man-made fibres or blends. It is applicable to woven and knitted fabrics.

2. References

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

3. Definition

For the purposes of this standard the following definition applies.

snag. A yarn or a number of filaments that have been pulled out from a fabric to form unsightly distorted loops on the surface of the fabric.

4. Technical requirements

When tested in accordance with the methods specified in the second column of table 1 the fabrics shall comply with the requirements specified in the third column.

5. Sampling

A representative sample of fabric is required for testing purposes, having an area of 150 cm x 175 cm. No specimen shall be cut less than 10 cm from a selvedge or from the end of a piece.

6. Marking

Fabric shall be marked with the following information:

(a) the number and date of this British Standard, i.e. BS 3838 : 1980*;

(b) the name, trademark or other means of identification of the supplier and/or manufacturer;

(c) cleansing instructions in accordance with the recommendations and terminology of BS 2747;

Garments made from fabrics complying with the requirements of this standard shall be marked additionally with either (d) or (e) as follows:

(d) 'Made from fabric which complies with the requirements of BS 3838 : 1980 Extra hard wearing blazer fabric';

(e) 'Made from fabric which complies with the requirements of BS 3838 : 1980 Standard hard wearing blazer fabric'. '

*Marking BS 3838 : 1980 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is therefore solely the responsibility of the person making the claim. Such a declaration is not to be confused with third party certification of conformity, which may also be desirable.'

AMD 5561.

Contents

Foreword

This first revision of BS 3838 has been prepared under the direction of the Fibres, Yarns and Fabrics Standards Committee. It is based on the first edition of BS 3838, published in 1964, and on the Hard Wearing Blazer Cloth Scheme developed by the Retail Trading Standards Association Incorporated. This revision is applicable both to wool and wool blends and to man-made fibres and blends. The first edition of BS 3838 covered blazer fabrics for school use; in the present edition it has been decided not to specify the end use of the fabrics but to allow the standard to be applied to other blazer fabrics if required.

Additional performance criteria have been introduced. The extension of the standard to permit the use of man-made fibres in blazer fabrics has necessitated the inclusion of test procedures for dimensional stability and for colour fastness to washing. Procedures for colour fastness to dry cleaning and perspiration and for resistance to pilling have also been included.

Two sets of requirements have been specified, one for extra hard wearing blazer fabrics and one for standard hard wearing blazer fabrics. For black and navy fabrics it is sometimes possible to obtain higher levels of performance for certain properties, such as tensile strength, colour fastness and abrasion resistance, than it is for fabrics of other colours. It should be indicated on the blazer whether the garment has been manufactured from fabric which complies with the requirements for the extra hard wearing blazer fabric or for the standard hard wearing blazer fabric.

'Compliance with a British Standard does not of itself confer immunity from legal obligations. In particular, attention is drawn to Statutory Instrument 1986 No. 26, the Textile Products (Indications of Fibre Content) Regulations 1986.'

Table 1. Technical requirements

Property to be assessed	Test procedure	Requirements	
		Extra hard wearing blazer fabric	Standard hard wearing blazer fabric
*Tensile strength	BS 2576	Minimum Warp 240 N, Weft 240 N	Minimum Warp 225 N, Weft 225 N
†Bursting strength	BS 4768	Minimum 490 kPa‡	
*Seam slippage	BS 3320	Maximum opening 4 mm at a mass of 12 kg	
Dimensional stability	BS 4736	Maximum warp or wales ± 2 % Maximum weft or courses ± 2 %	
	BS 5807§‖	Maximum warp or wales ± 2 % Maximum weft or courses ± 2 %	
Colour fastness			
(a) Light	BS 1006, section B02	Minimum 5-6	Minimum 4-5
§(b) Washing	BS 1006, section C02	Maximum change in shade 4 Maximum staining 4	Maximum change in shade 4 Maximum staining 3-4
(c) Dry cleaning	BS 1006, section D01	Maximum change in shade 4 Maximum staining of the solvent 4	Maximum change in shade 4 Maximum staining of the solvent 4
(d) Perspiration	BS 1006, section E04	Maximum change in shade 4 Maximum staining 3-4	Maximum change in shade 4 Maximum staining 2-3
(e) Rubbing	BS 1006, section X12	Maximum dry, staining 4 Maximum wet, staining 3-4	Maximum dry, staining 3-4 Maximum wet, staining 3
Abrasion resistance	BS 5690 under a load of 9 kPa	End-point in excess of 30 000 cycles	End-point in excess of 20 000 cycles
Appearance retention	BS 1006, section A02	Maximum change in shade 4 after 15 000 cycles	
¶Resistance to pilling	BS 5811	Minimum rating of standard 4 after 10 h (36 000 cycles)	
**Tendency to snag	Appendix A	Minimum rating of 3-4	

*Applicable to woven fabrics only.

†Applicable to knitted fabrics only. (It is advisable not to proceed the test beyond the specified level.)

‡BS 4768 requires that the bursting strength be expressed in kN/m^2. The recommended unit of pressure is the pascal (Pa) and 1 kN/m^2 is equal to 1 kPa. When a revision of BS 4768 is published the units for expressing bursting strength will be changed to kPa.

§Applicable to fabrics intended to be used for washable garments.

‖Using the procedure in BS 4923 appropriate to the instructions given on the care label.

¶Applicable to spun woven fabrics only.

**This test is essentially applicable to knitted fabrics but can be used for textured woven polyester fabrics. The results obtained when testing woven fabrics may not be completely reliable.

Appendix A

Assessment of snagging tendency of weft knitted fabrics by a mace snag tester

A.1 Principle. The fabric specimen is formed into a sleeve and slipped over a cylinder which is rotated at a constant speed. A spiked ball (referred to as the mace for the purposes of this standard) is suspended by a chain in such a way that some of its points rest on the fabric. The rotation causes the mace to be continuously bounced from the fabric in a random manner due to the points catching in the threads of the rotating specimen. The degree of snagging produced is rated, under standard viewing conditions, against photographic standards.

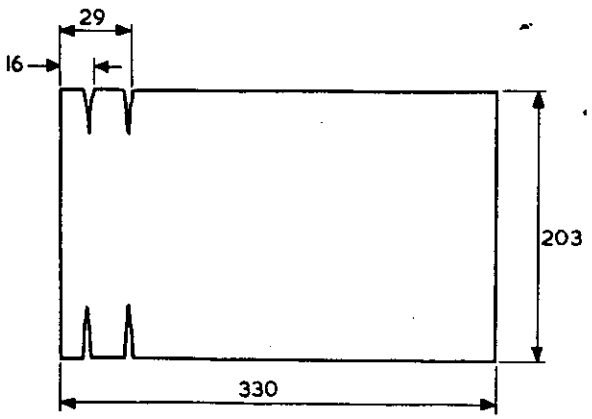
A.2.1 *Four-position mace snag tester* consisting of four rotating cylinders above which are suspended four spheres equipped with equi-spaced points (the mace). These are adjusted so that the points of the mace rest against the cylinder. A suitable machine is described in **A.9.**

A.2.2 *Gauge* for setting the position of the mace.

A.2.3 *Template,* 330 mm x 203 mm with two slots parallel to the short side to mark the sewing line (see figure 1). The slot 29 mm from the short side is to be used for extensible fabrics and the slot 16 mm from the short side is to be used for inextensible fabrics.

A.2.4 *Rubber rings* for securing the test specimens onto the cylinder.

A.2.5 *Lockstitch sewing machine* and sewing thread.



Dimensions are in millimetres.

Figure 1. Template

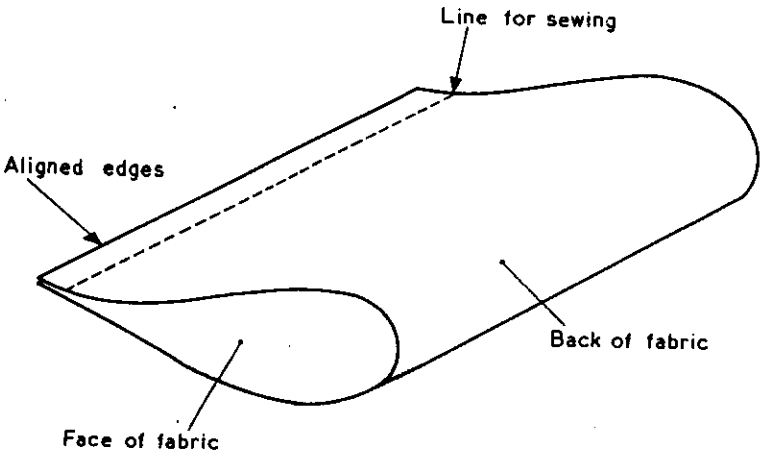


Figure 2. Single specimen folded for sewing

A.2.6 *Viewing cabinet* equipped with two illuminated viewing windows.

A.2.7 *Specimen mounting boards* appropriate to the size of the test specimen.

A.2.8 *Photographic snagging standards* comprising nine photographs ranging from Standard 5 (no snagging) to Standard 1 (severe snagging) in half-standard steps and carried on a slide.

A.3 Atmosphere for conditioning and testing. The atmosphere required for conditioning and testing is the standard atmosphere for testing textiles as defined in BS 1051, i.e. a relative humidity of 65 ± 2 % and a temperature of 20 ± 2 °C.

A.4 Sample size and preparation

A.4.1 *Size.* Select a sample of sufficient size to provide four test specimens as described in **A.5.** A fabric area of at least 610 mm x 610 mm is required for sampling.

A.4.2 *Conditioning.* Prior to testing, condition all fabric samples for at least 24 h in the standard atmosphere for testing specified in **A.3.**

A.5 Preparation of test specimens. Using the template in contact with the back of the fabric cut four test specimens from the sample, two lengthways and two widthways with the appropriate sewing line marked. Mark the lengthways specimen with an arrow indicating the direction of the knitting.

NOTE. For highly extensible fabrics it may be found necessary to use an alternative sewing line, as agreed between the parties concerned.

The specimens shall be as representative of the sample as possible and no specimens shall contain selvedge edges.

With the face of the test specimen inside, fold as shown in figure 2 and stitch accurately along the sewing marks. On completion turn the specimen face side out.

Repeat this for the remaining test specimens.

A.6 Test procedure

A.6.1 *Mounting.* Slide one of the prepared specimens carefully over one of the cylinders of the tester keeping the seam flat, i.e. one seam edge on each side of the line of sewing. Secure the inner end of the specimen by passing one of the circular rubber rings round it and the cylinder. Smooth out any creases or fullness in the specimen and secure the outer end with another rubber ring.

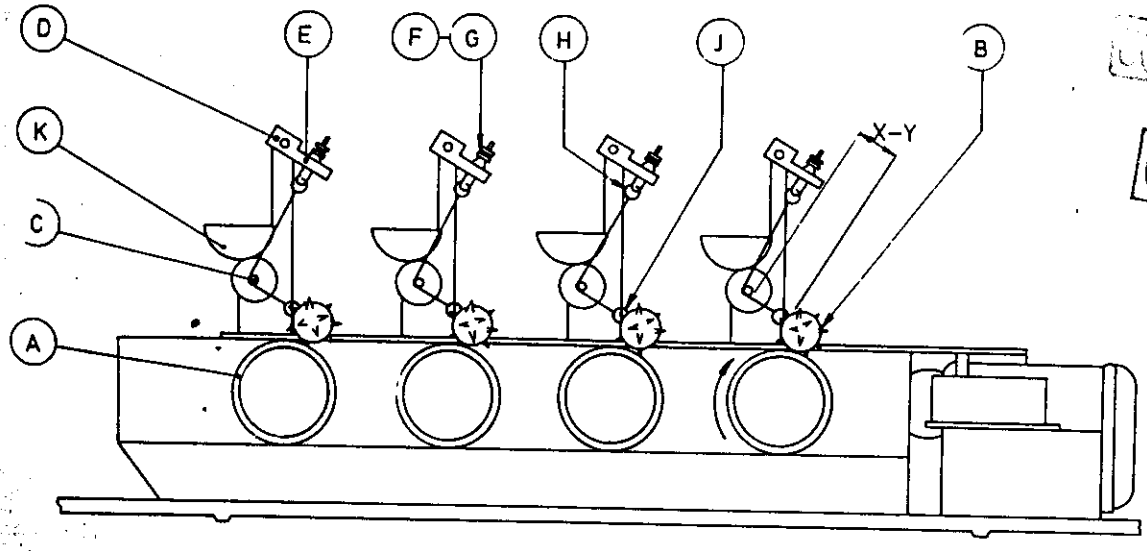


Figure 3. Outline sketch of mace snag tester

F. at the procedure for the remaining three specimens. Mount the lengthways specimens on the cylinders so that the heads of the loops (direction of arrow) face to the right of the machine.

NOTE. Lengthways and widthways specimens should be placed on cylinders chosen at random, i.e. lengthways specimens should not always be put on the same two cylinders.

A.6.2 *Testing.* With the machine at rest, take each appropriate mace from its holder and place it on its specimen with the chain passing round the covered guide rod.

Set the counter to the desired number of revolutions.

NOTE. The recommended test is 600 revolutions in 10 min.

Start the machine and check the behaviour of the maces. They should move freely in a random manner over the fabric surfaces and any tendency for movement to be restricted should be rectified.

When the machine stops, carefully lift each mace from its cimen and return it to its individual holder. P ove the specimens from the cylinders and pair th m as lengthways and widthways specimens.

A.7 **Assessment of the test specimens.** Take a specimen and pull it over the appropriate flat mounting board, keeping the seam at the centre back. Insert the mounted specimen into the left side of the viewing cabinet so that it is visible through the left hand viewing opening. Adjust the set of photographic standards so that one photograph at a time is visible on the right hand viewing opening.

Rate the specimen for the density of snags by comparison with the standards. If the density of snags lies between two photographs it is given the more severe rating.

Repeat this procedure for the three remaining specimens.

A.8 **Test report.** The report shall state:

(a) that the test was conducted in accordance with the method given in appendix A of BS 3838 : 1980;

(b) any deviations from the test method;

(c) the number of revolutions used;

(d) the sewing line used (extensible or inextensible fabric);

(e) the individual ratings for the two lengthways and two widthways specimens and the mean of the four results obtained.

A.9 **Four-position mace snag tester**

A.9.1 *Description.* The test machine consists of four rubber-covered aluminium cylinders each 203 mm long and 83 mm in diameter. These cylinders are driven at a constant speed of 60 ± 2 r/min by toothed rubber belts from a 0.1 kW h geared electric motor. The cylinders are further covered with a single layer of 3.2 mm thick woven wool felt in tubular form. This prepared felt forms the backing for the fabric test specimens.

A phosphor-bronze sphere 31.75 mm in diameter and carrying 11 equi-spaced tungsten-carbide points, each projecting 9.5 mm, is suspended above each cylinder by a link chain attached to the framework by a ball-and-socket joint. The soldered link chain* 114 mm long has 42 links.

The chain passes round a 9.5 mm diameter guide rod covered with PTFE, and the points of the mace rest against the cylinder. A pre-set counter coupled to the drive motor stops the machine automatically after the pre-determined number of revolutions.

A.9.2 *Checking and maintenance* (see figure 3). Check that the felt covering the cylinders A has a good even surface. The felt should be changed after each 200 h of running. To renew the worn felt, first remove the cylinder by unscrewing the grub screws and then slit the felt with a sharp blade, taking care not to damage the rubber cover on the cylinder. Position the new felt centrally over the cylinder and moisten with hot water. Remove surplus water with a towel and leave the felt to dry. If necessary, slight heat may be used to accelerate the drying process.

*The chain can be obtained from F. Martin and Sons, Walsall.

The position of the maces B and their snagging points relative to the cylinders, should be checked weekly or whenever suspect snagging results are obtained.

With the mace resting on the cylinder by the snagging points, set the distance (X–Y) between the PTFE-covered rod C and the surface of the mace to 45.7 mm using a gauge. This distance is set by adjusting the knurled nut F and the locking nut G fitted on top of the support D. Check that the ball E is able to move freely in its socket. Apply a few drops of light machine oil to the ball, lower it into the socket and re-check for freedom of movement.

The split rings H and J and the chain K should be replaced when showing severe wear.

Each phosphor bronze mace is fitted with eleven 3.2 mm diameter tungsten-carbide points which have a tip radius of 0.13 mm. Replace the points if the tips have become damaged. All the points should be examined weekly, using an eyeglass magnifier. The points fit into a 3.2 mm x 9.5 mm deep hole and each is secured by a 6 BA grub screw. Make sure that the points are pushed fully home before locking the grub screw. The points should project 9.5 mm beyond the circumference of the sphere.

A.9.3 *Machine performance check.* When the tester is set up, a test run should be made to test the performance of the four snagging positions. Using a fabric of known performance, run four lengthways specimens and then four widthways specimens. The rating of the two sets of specimens for frequency of snag produced should give no significant difference for each of the four snagging positions. This performance check should be carried out periodically.

Standards publications referred to

BS 1006	Methods of test for colour fastness of textiles and leather
BS 1051	Glossary of terms relating to the conditioning and testing of textiles
BS 2576	Methods of test for textiles – Woven fabrics – Determination of breaking strength and elongation (strip method)
BS 2747	Textile care labelling code
BS 3320	Method for the determination of seam slippage of woven fabrics
BS 4736	Method of test for the determination of dimensional change of fabrics by cold water immersion
BS 4768	Method for the determination of the bursting strength and bursting distension of fabrics
BS 4923	Schedule of domestic washing and drying procedures for textile testing
BS 5690	Method of test for the determination of the abrasion resistance of fabrics
BS 5807	Method of test for determination of dimensional change of textiles in domestic washing and drying
BS 5811	Method of test for determination of the resistance to pilling of woven fabrics (pill testing box method)