

Barré: Visual Assessment and Grading

Developed in 1992 by AATCC Committee RR97; revised 1993, 1994; editorially revised 1995, 1997; reaffirmed 1999, 2004.

1. Purpose and Scope

1.1 Barré is the optical result of physical or dye differences in the yarns, geometric differences in the fabric structure or any combination of these differences. This test method provides a standard procedure for evaluating barré intensity and for describing pattern characteristics based on visual comparison to a Uniformity Reference Scale and description of the barré pattern using a standard terminology. It can be used with knitted fabrics, woven fabrics and garments. The standard terminology is particularly useful in oral and written communications.

2. Principle

2.1 Continuous lengths of fabric on an inspection frame, individual garments, or samples of fabric are observed under specified conditions, rated for barré intensity, assessed for barré pattern characteristics and assigned an overall grade. Included in the grade are the following items:

2.1.1 An estimate of barré intensity on a 9 to 1 Uniformity Reference Scale as shown in Fig. 1 [from no barré (9) to severe barré (1)] (see 11.1).

2.1.2 A description of the barré pattern as "simple," "complex" or "banded" as defined in Section 3, Terminology.

2.1.3 A description of those yarns that contrast with the normal population such as "light," "bulky," etc. as defined in Section 3.

2.1.4 An estimate of the percentage of yarns within each pattern repeat containing the barré pattern.

2.2 Fabrics are examined but not rated for barré while they are moving over an inspection frame which is positioned at a $45 \pm 5^\circ$ angle to the horizontal (see Fig. 2 and 7.1.1-7.1.2) or as agreed upon by buyer and seller.

2.3 Garments are examined for barré while hanging vertically under overhead lighting (see Fig. 3 and 7.2.1-7.2.8) or as agreed upon by buyer and seller.

2.4 Barré intensity is rated by visual comparison with the Uniformity Reference Scale.

3. Terminology

3.1 Definitions

3.1.1 **barré**, n.—an unintentional, repetitive visual pattern of continuous bars and stripes usually parallel to the filling of woven fabric or the courses of circular knit fabric.

NOTE: The term barré is sometimes used as a synonym for "filling bands." Barré in warp knit fabrics is most often referred to as "warp streaks."

3.2 Descriptive Terms and Code Letters for Barré Patterns

3.2.1 **simple**, adj.—consisting of not more than two contrasting yarns—light, dark; lean, bulky; intermittent, uniform; etc.—spaced at regular intervals. (A)

3.2.2 **banded**, adj.—a simple pattern in which the contrasting yarns alternate in equal width intervals. (B)

3.2.3 **complex**, adj.—consisting of two or more interspersed simple patterns. (C)

3.3 Descriptive Terms and Code Letters for Yarn Appearance

3.3.1 **single yarn**, n.—one yarn that contrasts with adjacent yarns. (D)

3.3.2 **multiple yarns**, n.—two or more yarns that contrast with adjacent yarns. (E)

3.3.3 **lean yarn**, n.—a yarn having a smaller diameter than the normal population. (F)

3.3.4 **bulky yarn**, n.—a yarn having a greater diameter than the normal population. (G)

3.3.5 **light yarn**, n.—a yarn that appears to be lighter than the normal population. (H)

3.3.6 **dark yarn**, n.—a yarn that appears to be darker than the normal population. (I)

3.3.7 **intermittent yarn**, n.—a yarn that is nonuniform in color intensity along its length, appearing as light and dark sequences. (J)

3.3.8 **flashes**, n.—a type of intermittent yarn in which the lengths of the light/dark sequences are usually 2.5 cm (1.0 in.) or less. (K)

4. Safety Precautions

NOTE: These safety precautions are for information purposes only. The precautions are ancillary to the testing procedures and are not intended to be all inclusive. It is the user's responsibility to use safe and proper techniques in handling materials in this test method. Manufacturers MUST be consulted for specific details such as material safety data sheets and other manufacturer's recommendations. All OSHA standards and rules must also be consulted and followed.

4.1 Good laboratory practices should be followed.

4.2 Hands should not come in contact with the inspection frame while the fabric is in motion.

4.3 Inspection frames MUST be turned off while fabric samples are being graded with the Uniformity Reference Scale.

5. Apparatus and Materials

5.1 Uniformity Reference Scale (see 11.1).

5.2 Inspection frame.

5.3 An evaluation area arranged as shown in Fig. 2 using two 8-ft. Type F96 CW (cool white) preheat rapid-start fluorescent lamps (without baffle or glass) and a white enamel reflector (without baffle or glass) having a known lighting intensity of no less than 100 lx.

5.4 An evaluation area in an otherwise darkened room using the overhead lighting arrangement as shown in Fig. 3.

5.4.1 Lighting equipment for viewing test specimens with two 8-ft Type F96 CW (cool white) preheat rapid-start fluorescent lamps (without baffle or glass), a white enamel reflector (without baffle or glass) and a general type spring loaded swatch mount. Fabricate using 22 gauge sheet metal. A quarter-inch plywood mounting board having outside dimensions of 183×122 cm (6×4 ft), painted gray to match Grade No. 2 on the AATCC Gray Scale for Staining.

6. Test Specimens

6.1 Rate a minimum of three specimens of each textile item under evaluation and assign an average barré grade.

6.1.1 For fabrics, the full length and width of an entire roll constitutes one specimen. Where fewer than three rolls are available, three or more approximately equal but separate areas of the specimen length available must be marked for identification and rated. Each separate area constitutes a specimen.

6.1.2 For garments, one garment constitutes a specimen.

7. Procedure

7.1 Length of fabric.

7.1.1 View a single layer of the moving fabric on an inspection frame which is positioned at a 0.79 ± 0.09 rad ($45 \pm 5^\circ$) angle to the observer. The observer should be positioned approximately 1 m (1 yd) from the bottom edge of the inspection frame (see Fig. 2).

7.1.2 Three or more trained observers

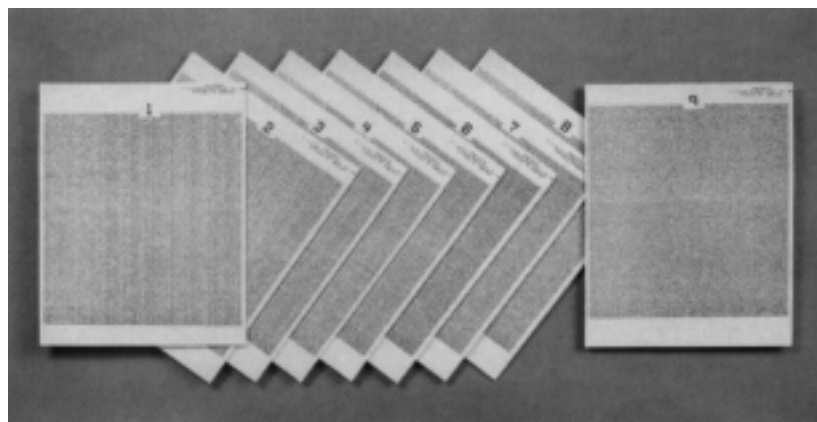


Fig. 1A—Illustration of Uniformity Reference Scale.

USE OF THE SYSTEM

This description consists of four elements the combination of which allows barré to be described in as much detail as needed. These are:

- 1) An estimate of barré intensity on a 9 to 1 scale,
- 2) A description of the barré pattern such as “simple,” “complex,” etc.,
- 3) An estimate of the percentage of yarns within each pattern repeat that are involved in the barré, and
- 4) A description of the yarns that contrast with the normal population such as “light,” “bulky,” etc.

Examples

1. 3, C, 10%, F, I.
A 3-intensity, complex pattern, in which 10% of the yarns appear to be either lean (low in bulk) or dark dyeing.
2. 4, B, 50%, H.
A 4-intensity banded pattern, in which 50% of the yarns are grouped together and appear lighter than the standard shade.
3. 4, A, 2%, D, I.
A 4-intensity, simple pattern of one dark end.
4. 4, C, 20%, E, F, K.
A 4-intensity pattern consisting of low bulk ends and ends containing dark and light sequences less than 2.5 cm long.

TERMINOLOGY

Definition for Barré

barré, n.—an unintentional, repetitive visual

pattern of continuous bars or stripes usually parallel to the filling of woven fabric or the courses of circular knit fabric.

NOTE: The term “barré” is sometimes used as a synonym for filling bands. Barré in warp knit fabrics is most often referred to as “warp streaks.”

Descriptive Terms for Barré Patterns

- A. **simple**—consisting of not more than two contrasting yarns—light, dark; lean, bulky; intermittent, uniform, etc.—spaced at regular intervals.
- B. **banded**—a simple pattern in which the contrasting yarns alternate in equal-width intervals.
- C. **complex**—consisting of two or more interspersed simple patterns.

Descriptive Terms for Yarn Appearance

- D. **single yarn**—one yarn that contrasts with adjacent yarns.
- E. **multiple yarns**—two or more yarns that contrast with adjacent yarns.
- F. **lean yarn**—a yarn having a smaller diameter than the normal population.
- G. **bulky yarn**—a yarn having a greater diameter than the normal population.
- H. **light yarn**—a yarn that appears lighter than the normal population
- I. **dark yarn**—a yarn that appears darker than the normal population
- J. **intermittent yarn**—a yarn that is non-uniform in color intensity along its length, appearing as light and dark sequences.
- K. **flashes**—a type of intermittent yarn, in which the lengths of the light/dark sequences are usually 2.5 cm or less.

Fig. 1B—Terminology for Uniformity Reference Scale.

shall rate each specimen.

7.1.3 Base the grade on the full fabric width.

7.1.4 Position the center of the light source 60-90 cm (2-3 ft) from the top edge of the inspection frame parallel to the fabric surface and above and in front of the viewer such that light rays are at a 90° angle to the fabric (see Fig. 2).

7.1.5 Assess the fabric using reflected light (see 11.2).

7.1.6 Stop the inspection frame and place the Uniformity Reference Scale on the inspection frame adjacent to the fabric with the long dimension of the scale panel parallel to the fabric length.

7.1.7 Rate the fabric and assign the appropriate grade as specified in Section 8.

7.2 Garments.

7.2.1 Designate those garment components which are important to the item's appearance for barré.

7.2.2 Three or more trained observers shall rate each component independently.

7.2.3 Display the garments in the lighted evaluation area. Mount each item on the viewing board so that the area or component to be rated is approximately 150 cm (5 ft) from the floor as illustrated in Fig. 3 with the Uniformity Reference Scale placed adjacent to the item being rated with the long dimension of the scale panel parallel to the item length.

7.2.4 The overhead fluorescent light should be the only light source for the viewing board; turn off all other lights in the room.

7.2.5 Light reflected from the walls near the viewing board can interfere with the rating results. Therefore, the walls should be painted black or blackout curtains should be mounted on either side of the viewing board to eliminate reflection.

7.2.6 The observer shall stand directly in front of the test item 120 cm (4 ft) away from the board. Normal variations in the height of the observer above and below the arbitrary 150 cm (5 ft) eye level have no significant effect on the grade given.

7.2.7 Rate the individual components of the item for barré and assign them the appropriate grades as specified in Section 8.

7.2.8 Similarly, the observer independently rates each additional specimen. The other two observers proceed in the same manner, assigning grades independently.

7.3 Fabric samples.

7.3.1 Lay the fabric sample on a flat table using the largest fabric dimensions possible with that side of the fabric visible which the customer will use on the garment face.

7.3.2 Illuminate the fabric with fluorescent light at an intensity of no less than 100 lx (see 5.3).

7.3.3 Lay one or more uniformity scale

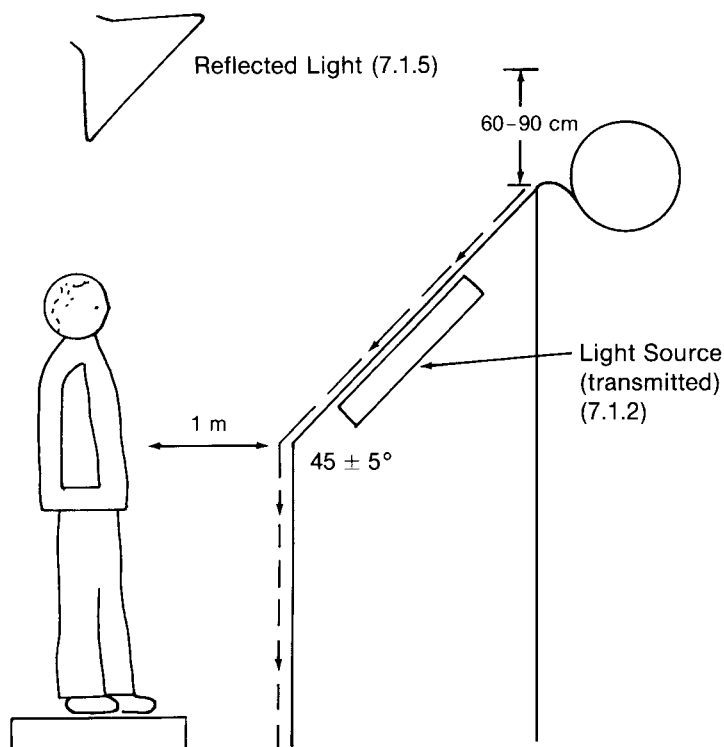


Fig. 2—Arrangement for viewing continuous lengths of fabric.

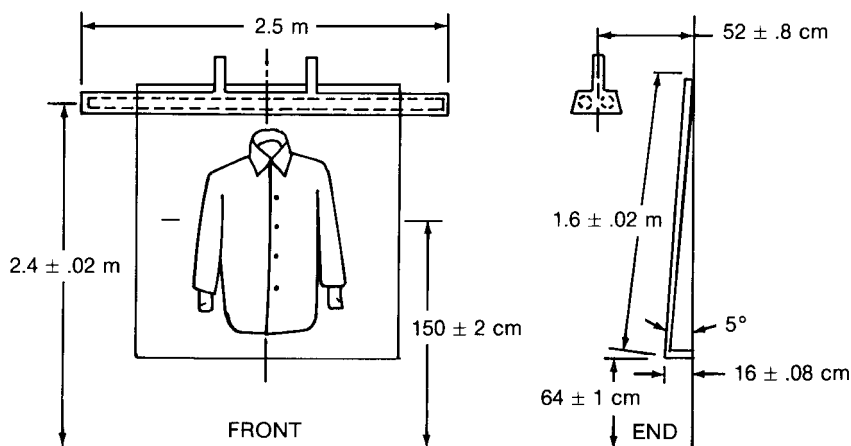


Fig 3—Arrangement for viewing garments or short lengths of fabric.

panels on or beside the fabric with the long dimension of the panel parallel to the fabric stripiness.

7.3.4 The observer shall not be in one fixed position, but be free to move around the table and away from it as necessary so as to view the fabric at various angles.

7.3.5 Rate the fabric sample at the most critical viewing angle and assign grades as specified in Section 8.

7.3.6 If more than one observer is available, repeat the process, and report the results as specified in Section 8.

8. Rating

8.1 Assign the number of the Uniformity Reference Scale that most nearly matches the barré intensity of the test specimen or assign a number midway between those whole-number standards if

the barré of the test specimen warrants it.

8.2 Assign A, B or C to describe the barré pattern.

8.3 Assign D, E, F, G, H, I, J and/or K to describe yarn appearance. Include all yarn appearances observed.

8.4 Assign a percentage estimate as to the overall coverage of barré in the test specimen.

8.5 Example—A grade of 3, C, 10%, F, I shows this fabric to have an intensity rating of 3 with a complex pattern (C), in which 10% of the yarns appear to be either lean (F) (low in bulk) or dark dyeing (I).

9. Report

9.1 Report the average numerical grade to the nearest 0.1 and, if different, letter grades for all specimens for all observers.

9.2 Report whether lengths of fabric, garments or fabric samples were rated.

10. Precision and Bias

10.1 *Precision.* An interlaboratory test was conducted in 1991-1992 to establish precision of the test method. Sixteen raters from Laboratory A and 15 raters from Laboratory B were tested using ten uniformity reference panels plus a replicate and five fabric panels in a four-by-four balanced lattice design with appropriate lighting. Five Laboratory A raters performed ratings at Laboratory B and five Laboratory B raters performed ratings at Laboratory A. Eight Laboratory A raters then re-rated at Laboratory A. There was no significant location or time effect. For the 10 to 1 Uniformity Reference Scale, the standard deviation for one reading by one rater calculated to be 0.73 (see 11.3).

10.2 *Bias.* Within the limitations of this test method, the test method has no known bias.

11. Notes

11.1 Available from AATCC, P.O. Box 12215, Research Triangle Park NC 27709; tel: 919/549-8141; fax: 919/549-8933; e-mail: orders@aatcc.org. This scale is copyrighted by the DuPont Co. and is based on U.S. Patent 4984181, August 28, 1990, Method of Simulating By Computer the Appearance Properties of a Fabric, Harvey L. Kliman and Royden H. Pike, assignors to E.I. du Pont Company, Wilmington, DE.

11.2 Should physical barré be suspected, view with transmitted light instead of reflected light.

11.3 For the purpose of this test method, the number 10 reference panel is not used.