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## QUALITY STANDARD CIRCULAR KNITTED FABRICS

### I. PURPOSE

To establish a uniform method for determining, quantifying and measuring the quality of circular fabrics; and a method for measuring length and width; and to define technical terms to promote understanding.

### II. APPLICABILITY

These standards apply to the following types of circular knitted fabrics:

- A. Basic Fabrics - including but not limited to finished single knit, rib, terry, double knit and interlock fabric.
- B. Surface Finished Fabrics - including but not limited to finished velour, sanded, brushed, sueded, napped, fleeced, sheared, printed and bonded fabrics.
- C. Novelty Fabrics - including but not limited to finished fabrics of surface interest yarns and stitches such as fabrics with slubs, nubs, loops, boucle, ratine, flakes, hair, blisters and fabrics of multiple blend yarns.

### III. METHOD

- A. Four-Point System - Penalty points are assessed to a piece of fabric according to the length of defects measured in inches. The following schedule of penalty points is based on fabrics 60-62 inches in width for defects visible when inspected on face side of the fabric only:

LENGTH OF DEFECTS	NUMBER OF PENALTY POINTS
3 inches or less	1
Over 3 but not over 6 inches	2
Over 6 inches but not over 9 inches	3
Over 9 inches	4

1. Four penalty points per linear yard are the maximum assessable for fabrics up to 60/62 inches in width.
2. For fabrics over 60/62 inches in width, maximum penalty points are to be increased in proportion as the width exceeds 60 inches.
3. Regardless of the length of the fabric, the quality shall be expressed in the number of penalty points per 100 yard length. (Example: A 40 yard piece with six penalty points is to be rated as 15 points per 100 yards.)

B. Identification and Rating of Defects.

1. This method of evaluating quality relates only to:
  - a. Knitting defects
  - b. Grease - oil spots
  - c. Dye spots
  - d. Stains
  - e. Slubs - except where they are an inherent part of the yarn
  - f. picks
2. Bias/Bowing may not exceed 5% of cuttable width for solids and any yard containing bias or bowing in excess of these limits shall be penalized four points. 2.5% will be the limit for stripes/plaids.  
\*See formula Section VII.
3. Fabrics are to be examined for these defects only on the face side unless prior agreement made between Buyer and Seller expressly provides otherwise.

IV. QUALITY DETERMINATION

Determining first quality circular knitted fabrics shall be done as follows:

- A. Basic fabrics shall be classified as first quality if the number of penalty points does not exceed 40 points per 100 linear yards. However the maximum number of defects may not exceed 25 per 100 yards.  
*30*
- B. Surface finished fabrics shall be classified as first quality if the number of penalty points does not exceed 50 points per 100 linear yards.

C. Novelty fabrics are to be classified by the knitter in relation to difficulties of producing them. (Types of yarns, stitches, fibers, etc. affect the difficulties of production.) Novelty fabrics shall be classified as first quality if the number of penalty points does not exceed the maximum for the type(s) as designated by the Seller in the sales contract or by written notice prior thereto:

NOVELTY TYPE	MAXIMUM POINTS PER 100 LINEAR YARDS	MAXIMUM ALLOWABLE DEFECTS PER 100 LINEAR YARDS
A	70	43
B	75	47
C	80	50
D	85	53

NOTE: Laps: No more than 3 lapped pieces per 100 yards are allowable. The shortest unlapped portion of a piece shall not be less than 10 yards. In P.F.P. fabrics, all laps are to be sewn in each roll. No more than 25% of a lot can contain laps.

V. EXCLUSIONS IN EVALUATING QUALITY, THE FOLLOWING CONDITIONS ARE TO BE EXCLUDED IN DETERMINING POINTS:

- A. General aesthetic fabric characteristics.
- B. Defects appearing outside selling width, selling width being centered in the total width of the fabric.
- C. Conditions resulting from napped, shearing and other surface treatments (which shall be otherwise evaluated).
- D. Barre. (This condition shall be judged by the extent and degree to which it occurs and its probable effect on the type of garment or other end use.)
- E. Irregularities normal to the existing state of the art or beyond reasonable control of the manufacturer, or inherent in circular knitted fabrics.

VI. LENGTH, WIDTH, WEIGHT - Measurement and Tolerances

- A. Length - length shall be measured with any surface contact device (Trumeter or equivalent) that is calibrated regularly. The device shall contact the back or a smooth surface of circular knitted fabrics. (Preferred calibration method: Measure a known length

of canvas or other stable, low elongation fabric - less than 2% in either direction - through the measuring device. References: ASTM D1910-64 hand method.) Actual yardage of each piece shall be accurate to within plus or minus 2% when measured by the above method.

B. Width - Width shall be measured with an accurate tape after laying circular knit fabric flat on a table without tension or elongation. (Reference: ASTM 3887-80).

1. Conformity to the selling width of circular knit fabric shall be determined on the basis of one of the three following methods:
  - a. Width between gummed edges of gummed fabrics.
  - b. Width between tenter frame pin marks when pin marks remain in shipped fabrics.
  - c. Overall width of circular knit fabric when neither of the criteria in (a) and (b) exists.

NOTE: If width is stated in range such as 60/62 inches, the lower figure governs cuttable width.

C. Tolerances - weight of circular knitted fabric may not vary by more than plus or minus 5% from the stated weight. Standard weight is to be stated in a full figure as 6 ounces, not a range such as 6-6 1/2 ounces. Yield is to be based on individual roll measurements of length/pounds.

## VII. BOW AND SKEW (BIAS) - DEFINITIONS AND MEASUREMENTS

### A. Definitions

1. Bow - a fabric condition resulting when knitted courses are displaced from a line perpendicular to the selvages and form one or more arcs across the width of the fabric. (See Fig. 1)
2. Skewness (Bias) - a fabric condition resulting when knitting courses are angularly displaced from a line perpendicular to the edge or side of the fabric. (See Fig. 2)

### B. Measurement Method

1. Bow - a straightedge is placed across the fabric between the points at which a marked filling yarn or knitted course meets the two selvages or edges. The greatest distance between the straightedge and the market filling yarn or course is measured parallel to the selvages. (Fig. 1 Distance "D")

2. Skewness or Bias - measure the skewness in three places spaced as widely as possible along the length of the fabric (1 yd.). If possible, make no measurement closer to the ends of the roll or piece of fabric than 1 m. Draw a line perpendicular to the selvage across the fabric from a point C where the marked yarn or course meets one selvage, meeting the other selvage at point B. Measure the distance between point A and B or D and B, and B and C, as shown in Fig. 2. Record the three or more skewness or bias as a percentage of the fabric width using Eq. 2:

Skewness (bias) %

$$= (\text{Distance AB or DB} \times 100 / [\text{width BC}])$$

ADD TEST METHODS FOR SHRINKAGE, STRETCH, BURST STRENGTH, PILLING, COLOR FASTNESS (et al) FLAMMABILITY.