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TEXTILE INDUSTRY STANDARD OF
THE PEOPLE'S REPUBLIC OF CHINA

ICS 59.060.01

W 40

FZ/T 50015-2009

**Test and assessment for dyeing uniformity of viscose
filament yarn**

粘胶长丝染色均匀度试验和评定

Issued on: November 17, 2009

Implemented on: April 01, 2010

**Issued by: Ministry of Industry and Information Technology of the
People's Republic of China**

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Test and assessment for dyeing uniformity of viscose filament yarn

1 Scope

This Standard stipulates the test and assessment methods for dyeing uniformity of viscose filament yarn after weft knitting.

This Standard applies to viscose filament yarn; other similar products can refer it for use.

2 Normative references

The terms in the following documents become the terms of this Standard by reference to this Standard. For dated references, all subsequent amendments (not including errata content) or revisions do not apply to this standard. However, parties to agreements that are based on this Standard are encouraged to study whether the latest versions of these documents can be used. For undated references, the latest edition applies to this Standard.

GB/T 250, Textiles - Tests for colour fastness - Grey scale for assessing change in colour

GB/T 6502, Sampling method of man-made filament yarns

3 Terms and definitions

The following terms and definitions are applicable to this Standard.

3.1 Yarn irregularity

After the weft-knitted fabric is dyed, the uneven thickness of yarns in the loop results in uneven thickness of the warp loops or uneven density between the sets.

3.2 Color strip

Chromatic yarn

Zebra yarn

After weft-knitting dyeing, the thickness of the filaments in the knitted fabric loops is uniform, but there is a section or more of color difference between the

- Dye solution (0.08 g/L);
- Liquor ratio: 1:100 (reduce the liquor ratio appropriately for rope and jet dyeing; control the liquor ratio at 1:20 ~ 1:100; remain the concentration of the dye solution unchanged).

Note: add the reagents in the dye liquor in the order of sodium carbonate-sodium sulfate-dye; prepare in time during dyeing.

6 Device

6.1 Single-feed circular hosiery machine: the diameter of the needle cylinder is 88.9 mm (3.5 in), with a tension adjustment device.

6.2 Boiling-off and dyeing device: it has a temperature control system that controls the heating rate, so that the sample can be dyed dynamically.

6.3 Cloth counting glass.

6.4 Balance: it has an appropriate weighing range; the weighing accuracy is 1%.

6.5 D₆₅ standard light source: it is a neutral gray tone around the light source.

6.6 Standard sample: GB/T 250 Gray scale for assessing change in colour.

6.7 Illuminance meter.

6.8 Centrifuge: household dehydration machine or other centrifugal dehydration device.

6.9 Tension meter (0 cN ~ 350 cN).

6.10 General laboratory equipment, special markers.

7 Test procedure

7.1 Sampling

- According to the number of spinning machines and the doffing time, the manufacturing plant randomly and uniformly selects a certain number of packages from each doffing package; the number of the selected dyeing performance samples shall be determined by each manufacturing plant;
- Take out laboratory samples of loose parts as needed;
- The sampling of laboratory samples in batch samples shall be in accordance with GB/T 6502.

7.5.1 Conditions and observations

Use the D₆₅ standard light source to illuminate above the working point, with gray surroundings and no scattered light around. Use an illuminance meter to test that the illuminance of the working point is greater than or equal to 600 lx. The incident light is at an angle of 45° with the sample surface; the direction of eye observation is roughly perpendicular to the sample surface.

Smoothly unfold the sample garter; place it on top of the gray card; move it slowly to observe the sample section by section. Use the frame compression frame that is provided by GB/T 250 to press the deepest and shallowest sample; access it visually according to the gray scale.

Compare the dark and light spots, stripes, bands and patterns in the same garter belt with the surroundings; evaluate it visually according to the gray scale.

7.5.2 Evaluation rules

7.5.2.1 The sample shall be uniformly colored and free of variegation that is caused by the dyeing process, before it can participate in the dyeing uniformity assessment. When uneven dye is found, weave and dye again.

7.5.2.2 For the range of the dyed sample (including the depth strips in the same section of the garter), the gray scale shall be assessed according to the GB/T 250 comparison.

7.5.2.3 Blue uneven dyes, stripes, bands, patterns: set it as a qualified product when there are two or less samples; set it as a non-standard product when there are three or more samples. Shallow uneven dyes, stripes, bands, patterns: set it as a qualified product when there is one sample; set it as a non-standard product when there are two or more.

When shallow color strips cause the sample to break, it is deemed as a non-standard product.

7.5.2.4 When there is yarn irregularity, set the sample of the uniform thin filament segment as qualified product.

8 Matters needing attention

When using dyes, pay attention to the strength value of the dye, which shall be converted to the mass when the strength is 110%; calculate according to Formula (1):

$$m = m_1 \times \frac{c}{S} \dots\dots\dots (1)$$

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