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JIS

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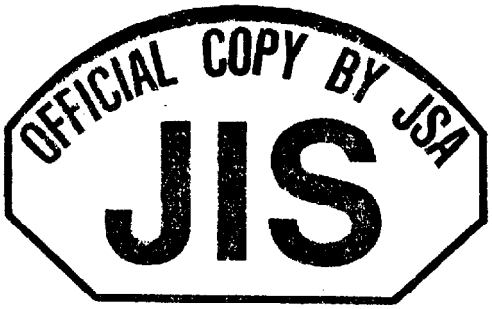
JAPANESE INDUSTRIAL STANDARD

Testing Methods for Man-Made Filament Yarns

JIS L1013-1981



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JAPANESE INDUSTRIAL STANDARD J I S

Testing Methods for Man-Made Filament Yarns

L 1013-1981
(Reaffirmed: 1987)

1. Scope

This Japanese Industrial Standard specifies testing methods for man-made filament yarns. However, except bulky finished yarns and other special yarns.

Remark: In this Standard the units and numerical values shown in { } are in accordance with the International System of Units (SI) and are appended for informative reference.

2. Definitions

For the purpose of this Standard following definitions apply:

(1) standard condition of test room The condition of standard temperature and humidity of Class 2 (temperature 20 ± 2°C, relative humidity 65 ± 2 %) of JIS Z 8703.

(2) standard condition of sample The condition where preliminarily drying is carried out in a dryer at a temperature of 40 ± 5°C and after making moisture content not more than the official regain, left in a test room or apparatus at standard condition to be moisture equilibrium.

Remarks 1. In the case of viscose rayon, cuprammonium rayon, acetate, the drying temperature shall be 65 ± 5°C.

2. In the case of promix, and synthetic fibers, these shall be left in test room or apparatus for not less than 24 h for the length of yarns to be stabilized.

3. For fibers of 0 % in official regain, preliminarily drying shall not be carried out.

(3) moisture equilibrium The condition of sample in the case where the sample is left at a definite condition of test room, weighed in mass at interval of not less than 1 h, and when the difference of masses before and after has become within 0.1 % of the after mass.

(4) absolute dry condition of sample The condition when the sample is left in dryer of hot wind at a temperature of 105 ± 2°C to be constant quantity.

Remark: Concerning fibers of 0 % in official regain, take the standard condition as the absolute dry condition.

Applicable Standards and Reference Standards: See pages 49 and 50.

(5) absolute dry mass The mass at absolute dry condition.

(6) constant mass condition The condition in the case where it is heated at definite conditions in dryer or the like, its mass is weighed at intervals of not less than 15 min and the mass difference before and after it, has become within 0.1 % of the after mass.

(7) constant mass The mass when made constant mass condition.

(8) official regain The moisture regain specified officially.

(9) corrected mass The absolute dry mass added by mass equivalent to official regain.

(10) fineness The unit to express thickness of fiber. The fineness used in this Standard shall be as follows:

(a) denir The mass per 9000 m in length expressed by number of grams.

(b) tex The mass per 1000 m in length expressed by number of grams. 1 denir corresponds to 0.11 tex.

(11) apparent fineness Fineness at optional condition.

(12) fineness at corrected mass The fineness at the condition containing moisture corresponding to the official regain.

(13) initial load The load of such degree that the yarn becomes linear without elongation.

3. Marking of Fineness, Number of Filaments and Twist

3.1 Marking of Fineness The fineness shall be marked as follows:

(1) In the Case of Using Denir

120 denir ..... 120 D

(2) In the Case of Using Tex The marking shall be in accordance with 7. Marking Method of JIS L 0101.

3.2 Marking of Number of Filaments The number of filaments shall be marked as follows:

(1) Number of filaments 24 .... 24 F

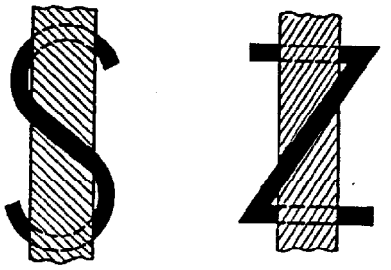
3.3 Marking of Twists

3.3.1 The direction of twists shall be marked by S and Z as shown in Fig. 1.

S ..... S twist

Z ..... Z twist

Fig. 1



3.3.2 The number of twists shall be marked by numerical value between 1 m and, appended with the unit.

Example: 40 T/m

3.3.3 In the case where both the number of twists and the direction of twist are marked, these shall be marked as follows:

Example: S 40 T/m, Z 60 T/m

4. Preparation of Sample

The sample to be used for test(1). to be influenced by temperature and humidity, shall be skein(2) or single yarn and it shall be in the standard condition before test. However, the sample to be used for moisture regain and adhering moisture regain, a suitable amount from the raw sample shall be taken quickly and, stored in a tightly sealed device.

Notes (1) The tests to be influenced by temperature and humidity mean the fineness, tensile strength and elongation rate, knot strength, loop strength, impact strength, elongation elastic modulus, primary tensile resistance, number of twists, definite length maximum twist number, cross-linking degree, shrinkage percentage, etc.

(2) In case where hank is difficult, the skein may be sampled directly from cake, burn, cheese, cone, etc. However, samples to be used for tests of number of twists and definite length maximum twist number shall be taken directly.

Remark: In case where the test room or apparatus in standard condition is in possible to be used, place the sample in a tightly sealed container (containing 36 % sulfuric acid) to be at a constant temperature (20 ± 2°C). In this case, append the effect.

5. Test Conditions

5.1 Test Place The test(1) influenced by temperature and humidity shall be carried out in a room at the standard condition.

Remark: In case where the test(1) influenced by temperature and humidity is carried out in a place other than test room at the standard condition, the temperature and humidity at the time of test shall be appended.

5.2 Absolute Dry Mass In the case of obtaining absolute dry mass, the infrared dryer, high frequency dryer, reduced pressure dryer, etc. may be used. In this case, the conditions shall be appended.

Further, in the case of fibers sensitive to temperature, a temperature lower than 105°C shall be used and, appended.

5.3 Official Regain The official regains relative to absolute dry mass shall be as shown in Table 1, respectively.

Table 1

Kind of fiber	Official regain %
Rayon	11.0
(polynosic)	11.0
Cuprammonium rayon	11.0
Acetate	6.5
(Triacetate)	3.5
Promix	5.0
Nylon	4.5
Vinylon	5.0
Vinylidene	0
Polyvinyl chloride	0
Polyester	0.4
Polyethylene	0
Polypropylene	0
Acrylic	2.0
Benzoate	0.4

5.4 Initial Load The following load shall be used.

Rayon, cuprammonium rayon, acetate

At standard time .... number of grams of 1/30 of marked denir number {2.94 mN of marked tex number}

At wet time ..... number of grams of 1/60 of marked denir number {1.47 mN of marked tex number}

Promix, nylon, vinylon, polyvinyl chloride, polyester, polyethylene, polypropylene, acrylic, benzoate

At standard time, at wet time .... number of grams of 1/30 of marked denir number {2.94 mN of marked number of tex}

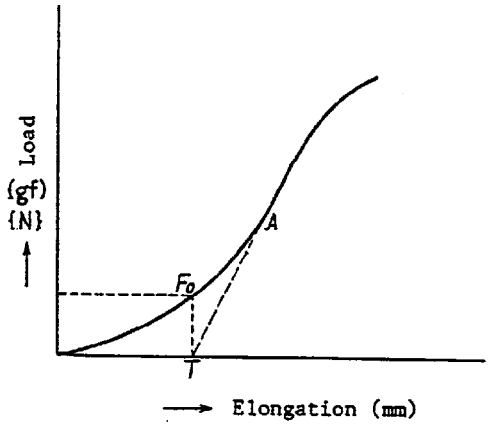
Vinylidene

At standard time, at wet time .... number of grams of 1/40 of marked denir number {2.21 mN of marked tex number}

However, in case where this load is not suitable, draw the initial load–extension curve as shown in Fig. 2, draw a vertical line from point T of intersecting point of tangent at point A of the maximum of load variation relative to elongation variation at nearly origin (the maximum point of tangential angle) and use the load corresponding to point F_0 at intersecting with load–extension curve.

Remark: This applies to tests of tensile strength and elongation percentage, knot strength, loop strength, extension elastic modulus, initial tensile resistance, shrinkage percentage, etc.

Fig. 2



5.5 Measurement of Temperature and Humidity For measurement of temperature and humidity, the Meteorological Agency type or Assmann psychrometer specified in JIS Z 8806 shall be used, and the relative humidity, obtained according to the humidity table of Sprung type.

6. Test Items

The test items shall be as follows:

(1) Moisture regain and percentage of free water

(2) Equivalent moisture regain

(3) Fineness based on corrected mass

(4) Number of filaments

(5) Tensile strength and elongation percentage

(6) Knot strength