IS 1605 : 2022

भारतीय मानक
Indian Standard

वस्त्र प्रसंस्करण सहायक सामग्री — सूती वस्त्र उद्योगो के लिये टैपिओका की माड़ी — विशिष्टि

(दूसरा पुनरीक्षण)

Textiles Auxiliaries — Tapioca Starch for Cotton Textile Industry — Specification

(Second Revision)

ICS 59.040

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुरशाह ज़फर मार्ग, नई दिल्ली –110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI-110002
www.bis.gov.in www.standardsbis.in

October 2022 **Price Group 3**

Textile Speciality Chemicals and Dyestuffs Sectional Committee, TXD 07

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Textile Speciality Chemicals and Dyestuffs Sectional Committee had been approved by the Textiles Division Council.

Tapioca starch is manufactured from the tuberous roots of tapioca plants. It is manufactured both on the cottage industry basis and on the factory scale. Tapioca starch is used in the textile industry for sizing and printing applications. Starch is applied to coat the yarns to obtain glossy and smooth thread. It is also used as a lubricant in preventing the single yarns from disintegrating during in-line loom weaving. In addition, starch is used in printing cloth more even while printing.

This standard was first published in 1960. First revision of this standard was undertaken in 1977 to prescribe requirements of viscosity and method of measurement of viscosity by Redwood viscometer and Brook-field viscometer.

The present revision has been made in the light of experience gained since last revision and to incorporate the following major changes:

a) Title of the standard has been modified;
b) Amendments issued have been incorporated;
c) Temperature for measuring viscosity has been specified;
d) Packaging and sampling clauses have been modified;
e) BIS certification marking clause has been modified; and
f) References to Indian Standard given in Annex A has been updated.

The composition of the Committee responsible for the formulation of this standard is given in Annex C.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard
TEXTILE AUXILIARIES — TAPIOCA STARCH FOR COTTON TEXTILE INDUSTRY — SPECIFICATION
(Second Revision)

1 SCOPE

This standard prescribes the requirements of tapioca starch used in the textile industry (mainly cotton) as a sizing and finishing material.

2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards.

3 REQUIREMENTS

3.1 The tapioca starch used as a textile sizing and finishing material shall be in the form of a fine white powder, free from black specks, dirt and other adventitious impurities. It shall meet the physical requirements given in Table 1.

Table 1 Physical Requirement of Tapioca Starch
(*Clause* 3.1)

Sl No. (1)	**Characteristic** (2)	**Requirement** (3)	**Method of Test, Ref to** (4)
i)	Identification	To compare favourably with the photomicrograph given in Fig. 1	Visual
ii)	Particle size (fineness) 100 percent shall pass through	180 micron IS Sieve	**3** of IS 4706 (Part 1)
iii)	Viscosity at 75°C, s *Min* (*see* NOTE)	50	**5** of IS 4706 (Part 1)
iv)	Cold water solubility, Percent, *Max*	0.4	**12** of IS 4706 (Part 1)

NOTE — When Redwood viscometer No. 1 is used for determination of viscosity the following method for preparation of paste shall be followed:

Weigh 6.0 g of the dry material. Add this to a beaker containing 200 ml water, with continuous stirring. Weigh the beaker and the stirrer along with its contents. Keep the beaker in a boiling waterbath and cover with a plastic plate. Stir this with the paddle type mechanical stirrer at a speed of 45 to 50 rev per min. After one and a half hours weigh the contents along with the stirrer. Add sufficient water to compensate for the loss of water during cooking. Cook it for another 10 min and determine the viscosity of the paste.

3.2 The tapioca starch used as textile sizing and finishing material shall also meet the chemical requirements given in Table 2.

3.2.1 If the original test specimens are analyzed as such in order to eliminate the time-consuming oven drying, the observed mass should be corrected for moisture content while calculating the results.

Table 2 Chemical Requirement of Tapioca Starch
(*Clause* 3.2)

Sl No.	**Characteristic**	**Requirement**	**Method of Test, Ref to**
(1)	(2)	(3)	(4)
i)	Moisture content, Percent, *Max*	15.0	**4** of IS 4706 (Part 2)
ii)	Starch content, Percent, *Max*	98	**9** of IS 4706 (Part 2)
iii)	Total ash, Percent, *Max*	0.4	**5** of IS 4706 (Part 2)
iv)	Crude fibre, Percent, *Max*	0.6	**12** of IS 4706 (Part 2)
v)	*p*H, *Min*	4.5	**13** of IS 4706 (Part 2)
vi)	Free acidity, ml, *Max*	25	**14** of IS 4706 (Part 2)
vii)	Petroleum hydrocarbon extractable matter, Percent, *Max*	0.5	Annex B

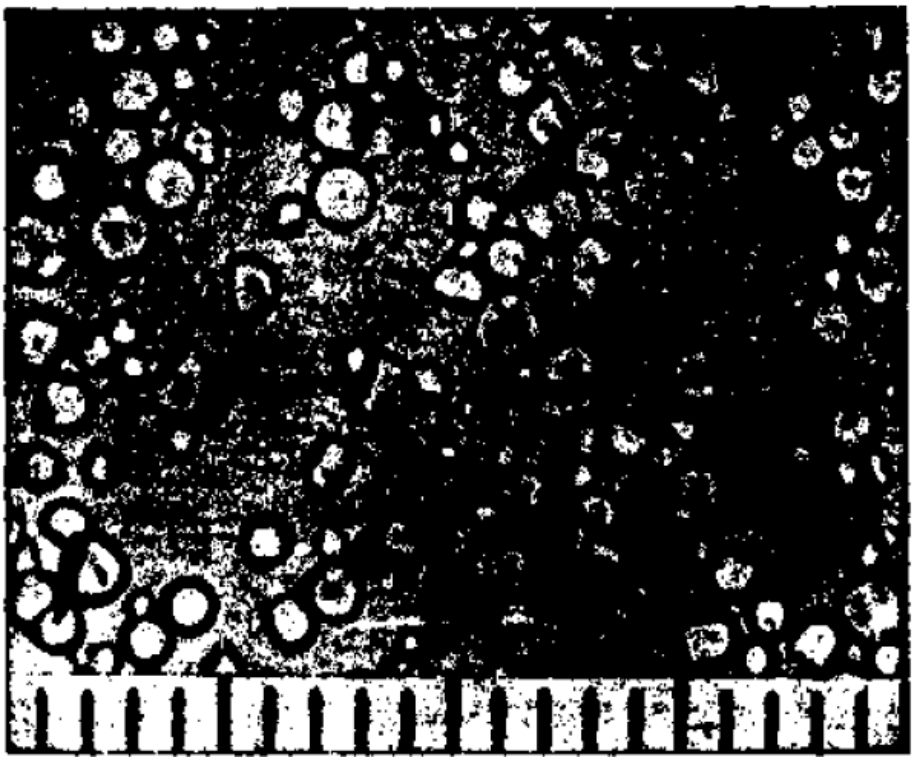

FIG. 1 PHOTOMICROGRAPH OF TAPIOCA STARCH (×325)
(Scale: 1 divison = 10 microns)

4 PACKING

The tapioca starch, being hygroscopic in nature shall be packed in polyethylene lined woven sack conforming to IS 12100 or polypropylene lined nonwoven bags conforming to IS 17279 or any other packing material as agreed between the buyer and seller.

5 MARKING

5.1 Each package shall be legibly marked with the following information:

a) Name and grade of the material;
b) Net weight;
c) Lot and batch number;
d) Month and year of manufacture;
e) Manufacturer's name, initials or trade-mark, if any; and
f) Any other information required by the law in force.

5.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the Bureau of Indian Standards Act, 2016 and the Rules and Regulations framed there under, and the product(s) may be marked with the Standard Mark.

6 SAMPLING

Representative samples of the material for ascertaining conformity to the requirements of this standard shall be drawn according to the method given in **2.1** and **2.2** of IS 4662 unless otherwise specified in the contract.

ANNEX A
(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No	*Title*	*IS No*	*Title*
4662 : 1977	Methods for sampling of starches and starch products (*first revision*)	12100 : 1987	Specification for high density polyethylene (HDPE) woven sacks for packing flour
4706(Part 1) : 1978	Methods of test for edible starches and starch products Physical methods (*first revision*)	17279 : 2019	Textiles – Polypropylene (PP) nonwoven sacks for packing bulk commodities – Specification
(Part 2) : 1978	Chemical methods (*first revision*)		

ANNEX B
(*Clause* 3.2)

ESTIMATION OF PETROLEUM-HYDROCARBON EXTRACTABLE MATTER

B-1 ESTIMATION OF FAT CONTENT

B-1.1 Procedure

Weigh accurately about 5 g of the test sample in a thimble and mix with 5 g of purified coarse sand previously extracted with petroleum-hydrocarbon solvent (60 to 80°C B.P.). Place a piece of absorbent cotton in the top portion of the thimble to distribute the solvent as it drops on the sample. Transfer the thimble to the Soxhlet extractor. Take adequate quantity of petroleum hydrocarbon in a tared Soxhlet extraction flask and assemble the Soxhlet extraction apparatus. Heat on a water-bath or electric hot plate at such a rate that the solvent will drop from the condenser on the centre of the thimble at the rate of at least 150 drops/min. Keep the volume of the solvent fairly constant by adding enough of petroleum-hydrocarbon to make up for any loss due to evaporation. Continue extraction for 2 hours. Remove the thimble from the apparatus after the extraction and distil the excess of solvent leaving about 25 ml of the solution in the flask. Transfer the solution to a tared 100-ml beaker. Evaporate the solvent in the beaker on a steam-bath followed by belong in an oven maintained at 100 ± 3°C for 30 minutes. Dry the extract to a constant mass.

B-1.2 Calculation

Petroleum-hydrocarbon extractable matter,
Percent by mass (on oven-dry basis) =

$$\frac{10\,000\,a}{b\,(100 - M)}$$

Where,
a = mass of the extract in grams,
b = mass of the sample taken in grams, and
M = moisture content, percent by mass of the sample.

ANNEX C
(*Foreword*)

COMMITTEE COMPOSITION

Textile Speciality Chemicals and Dyestuffs Sectional Committee,
TXD 07

Organization	*Representative(s)*
Department for Jute and Fibre Technology Institute of Jute Technology, University of Calcutta, Kolkata	PROF A K SAMANTA (***Chairman***)
Ahmedabad Textile Industry's Research Association,	SHRIMATI DEEPALI PLAWAT SHRIMATI FAHIMUNNISA KHATIB (*Alternate*)
Ama Herbals Laboratories Pvt Ltd, Lucknow	SHRI Y A SHAH
Archroma India Pvt Limited, Mumbai	SHRI RAJESH RAMAMURTHY SHRI ASHIM GHOSH (*Alternate*)
Atul Limited (Colors Business), Valsad	SHRI V R SAI GANESH SHRI ARINDAM CHAKRABORTY (*Alternate*)
Bio Dyes India Pvt Ltd, Goa	DR BOSCO HENRIQUES
Central Coir Research Institute, Alappuzha	SHRIMATI ANITA JACOB SHRIMATI SUMI SABESTIAN (*Alternate*)
ICAR – Central Institute for Research on Cotton Technology, Mumbai	DR SUJATA SAXENA DR A S M RAJA (*Alternate*)
Department for Jute and Fibre Technology Institute of Jute Technology, University of Calcutta, Kolkata	DR D DAS
Global Organic Textile Standard, (GOTS), Thane	SHRI RAHUL BHAJEKAR MS PRACHI GUPTA (*Alternate*)
Indian Jute Industries Research Association, Kolkata	DR S K CHAKRABARTI SHRI SANDIP BASU (*Alternate*)
Northern India Textile Research Association, Ghaziabad	DR M S PARMAR
Office of the Textile Commissioner, Mumbai	SHRI GAURAV GUPTA SHRI SANJAY CHARAK (*Alternate*)
SGS India Pvt Ltd, Mumbai	SHRI KARTHIKEYAN K SHRI GAURAV SARASWAT (*Alternate*)
Shree Pushkar Chemicals & Fertilizers Ltd, Mumbai	DR N N MAHAPATRA
Textiles Committee, Mumbai	SHRI KARTIKEYA DHANDA SHRIMATI SHILPI CHAUHAN (*Alternate*)

Organization	*Representative(s)*
The Arvind Mills Limited, Ahmedabad	SHRI RAJARSHI GHOSH SHRI UMASANKAR MAHAPATRA (*Alternate*)
The Bombay Textile Research Association, Mumbai	DR PADMA S VANKAR SHRI M P SATHIANARAYANAN (*Alternate*)
The South India Textile Research Association, Coimbatore	DR PRAKASH VASUDEVAN SHRI S SIVAKUMAR (*Alternate*)
The Synthetic and Art Silk Mills Research Association, Mumbai	SHRIMATI (DR) MANISHA MATHUR SHRIMATI ASHWINI SUDAM (*Alternate*)
U P Textile Technology Institute, Kanpur	DR ARUN PATRA
Wool Research Association, Thane	SHRIMATI SMITA BAIT SHRIMATI (DR) MRINAL CHOUDHARI (*Alternate*)
BIS Directorate General	SHRI J K GUPTA, Scientist E and Head (Textiles) [Representing Director General (*Ex-officio*)]

Member Secretary
SHRI HIMANSHU SHUKLA
Scientist B (Textiles), BIS

Bureau of Indian Standards

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Review of Indian Standards

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website-www.bis.gov.in or www.standardsbis.in.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 *Website*: www.bis.gov.in

Regional Offices:		*Telephones*
Central:	601/A Konnectus Tower-I, 6th Floor DMRC Building, Bhavbhuti Marg, New Delhi 110 002	2323 7617
Eastern:	8th Floor, Plot No. 7/7 & 7/8, CP Block, Sector V Salt Lake, Kolata 700091	236 7012, 2320 9474
Northern:	Plot No. 4A, Sector 27-B, Madhya Marg Chandigarh 160 019	265 0206, 265 0290
Southern:	C I T Campus, IV Cross Road, Taramani Chennai 600 113	2254 1442, 2254 1216
Western:	Plot No. E-9, Road No. 8, MIDC, Andheri (East) Mumbai 400 093	28218093

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Publication Unit, BIS, New Delhi, India