



**PRODUCT MANUAL**

**FOR EDIBLE TAPIOCA STARCH**

**ACCORDING TO IS 1319 : 1983**

**This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.**

|    |   |                       |  |
|----|---|-----------------------|--|
| 1. | <b>Product</b>  | :                     | IS 1319 : 1983                                   |
|    | <b>Title</b>  | :                     | Edible Tapioca Starch                            |
|    | <b>No. of Amendments</b>  | :                     | 01   |
| 2. | <b>Sampling Guidelines:</b>   |                       |  |
| a) | <b>Raw material</b>   | :                     | No specific requirements                         |
| b) | <b>Grouping guidelines</b>  | :                     | NA (No varieties of the product mentioned in IS) |
| c) | <b>Sample Size</b>  | :                     | 500 grams of material required                   |
| 3. | <b>List of Test Equipment</b>   | :                     | <b>Please see Annex-A</b>                        |
| 4. | <b>Scheme of Inspection and Testing</b>   | :                     | <b>Please see Annex-B</b>                        |
| 5. | <b>Possible tests in a day:</b>   |                       |  |
|    | i. Description<br>ii. Microscopic Appearance and granule size<br>iii. Particle Size<br>iv. Moisture<br>v. Total Ash (dry basis)<br>vi. Acid Insoluble Ash (dry basis)<br>vii. Starch (dry basis)<br>viii. Crude Fibre (dry basis)<br>ix. pH of Aqueous Extract<br>x. Cold Water Solubles<br>xi. Sulphur Dioxide |                       |  |
| 6. | <b>Scope of the Licence :</b>   |                       |  |
|    | "Licence is granted to use Standard Mark as per <b>IS 1319 : 1983</b> with the following scope:   |                       |  |
|    | Name of the product   | Edible Tapioca Starch |  |

**ANNEX A  
TO PRODUCT MANUAL  
FOR EDIBLE TAPIOCA STARCH ACCORDING TO IS 1319:1983**

**LIST OF TEST EQUIPMENT**

**Major test equipment required to test as per the Indian Standard**

| S.NO | Tests used in with clause Reference  | Test Equipment   |
|------|--|--|
| 1.   | Microscopic Appearance and Granule size<br>Cl. 3.2                               | <i>Microscope</i> - with an eye-piece micrometer calibrated with a slide micrometer and having a magnification of 300 to 500.<br>Microscope Slides, Cover Glass- either circular or square   |
| 2.   | Particle Size<br>Cl. 3.3   | Weighing Balance, 75- micron IS sieve, 150-micron IS sieve, Sieve cover, receiver  |
| 3.   | Hydrocyanic acid<br>Cl 3.4<br>(Annex A of IS 1319)                               | Mechanical Grinding Mill, Sieve with 1 mm aperture, Volumetric flask-250ml, pepitte, Steam distillation apparatus. Sodium Hydroxide Solution, 2.5 percent. Ammonia Solution, Potassium Iodide Solution, 5 percent, Silver Nitrate Standard Solution, 0.02 M, Linamarase Solution. Weighing balance, burette. |
| 3.   | Moisture<br>Routine method<br>Cl 3.6, Table 1<br>{Cl. 4.1 of IS 4706 (Part-2)}   | Hot air oven, wide mouth glass weighting bottle, weighing balance, desiccator  |
| 4.   | Moisture<br>Reference method<br>Cl 3.6, Table 1<br>{Cl. 4.2 of IS 4706 (Part-2)} | Hot air oven, metal dish, desiccator, weighing balance   |
| 5    | Total ash<br>Cl 3.6, Table 1<br>{Cl. 5.0 of IS 4706 (Part2)}                     | Platinum or porcelain or silica dish, burner, muffle furnace, weighing balance, desiccator   |
| 6.   | Acid-insoluble ash<br>Cl 3.6, Table 1<br>{Cl.8.0 of IS 4706 (Part2)}             | Concentrated hydrochloric acid, watch glass, watt men paper number 42, muffle furnace, hot air oven, weighing balance, desiccator  |
| 8.   | Protein<br>Cl 3.6, Table 1<br>{Cl. 10 of IS 4706 (Part 2)}                       | Kjeldahl Flask, Digestion stand, Distillation or steam Distillation apparatus, Burette, mechanical grinder or mortar, 0.6mm mesh opening sieve,  |

|    |  |  |
|----|--|--|
|    |  | Conc. Sulphuric Acid, Boric acid, Sodium Hydroxide, Potassium sulphate, Anhydrous Copper II Sulphate, neutral methyl Red indicator, ethyl alcohol, Methylene Blue, Brown Glass bottle, weighing Balance  |
| 8  | Sulphur dioxide<br>Cl 3.6, Table 1<br>( Referee method)<br>{Cl.11 of IS 4706 (Part 2)} | Hydrogen peroxide, sulphuric acid, sodium hydroxide solution, sulphur dioxide apparatus, boiling flask, gas inlet tube, dropping funnel, delivery tube, receiver, gas-washing bottle, burette, carbon dioxide, concentrated hydrochloric acid, sodium carbonate solution, hydrogen peroxide, standard sodium hydroxide solution, bromophenol blue indicator, |
| 9  | Sulphur dioxide<br>Cl 3.6, Table 1<br>( Routine method)<br>{Cl.11 of IS 4706 (Part 2)} | Sulphuric acid, sodium hydroxide, iodine solution, starch solution indicator, distilled water  |
| 10 | Crude fibre<br>Cl 3.6, Table 1<br>{Cl. 12 of IS 4706 (Part 2)}                         | Dilute sulphuric acid, sodium hydroxide solution, Petroleum ether, soxhlet apparatus, reflux condenser, filtering cloth, gooch crucible, ignited asbestos  |
| 11 | pH of aqueous extract<br>Cl 3.6, Table 1<br>{Cl. 13 of IS 4706 (Part 2)}               | Electrodes and potentiometric equipment, conical flask, buffer solutions (4.5 to 7)  |
| 12 | Cold-water solubles<br>Cl 3.6, Table 1<br>{Cl. 12 of IS 4706 (Part 1)}                 | Weighing balance, whatmann 42 filter paper, steam bath, hot air oven   |

*The above list is indicative only and may not be treated as exhaustive.*

## ANNEX B

### SCHEME OF INSPECTION AND TESTING

#### FOR EDIBLE TAPIOCA STARCH ACCORDING TO IS 1319 : 1983

**1. LABORATORY** – A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

**1.1** The manufacturer shall prepare a calibration plan for the test equipments.

**2. TEST RECORDS** - The manufacturer shall maintain test records for the tests carried out to establish conformity.

**3. PACKING AND MARKING** – The Standard Mark, as given in the Schedule of the licence, shall be stenciled/printed on each container of Edible Tapioca Starch or printed on the label applied to it, as the case may be, provided always that the material in each container to which this mark is thus applied, conform to every requirement of the specification.

3.1 Packing and marking shall be done as per the provision of the Indian Standard. In addition, the following details shall be mentioned on each container legibly and indelibly:

a) BIS Licence No. CM/L\_\_\_\_\_.

b) BIS website details i.e –“For details of BIS certification please visit [www.bis.gov.in](http://www.bis.gov.in)”.

**4. CONTROL UNIT** - For the purpose of this Scheme, the entire quantity of Edible Tapioca Starch manufactured in a day shall constitute a control unit.

**5. LEVELS OF CONTROL** - The analysis and tests, as indicated in Table 1 and at the levels of control specified therein, shall be carried out on the whole production of the factory covered by the scheme and appropriate records and charts maintained in accordance with paragraph 2 above. All the production, which conforms to the Indian Standard and covered by this licence shall be marked with the Standard Mark.

**5.1** All the production which conforms to the Indian Standards and covered by the license should be marked with Standard Mark.

**5.2** On the basis of test results, decision regarding conformity or otherwise of control unit of the material as a whole to the requirements of the specification shall be taken as follows:

**5.2.1** A sample shall be drawn every hour and checked visually for appearance, colour, freedom from adulterants, dirt other extraneous matter, fungal contamination and insect infestation; examined by organoleptic methods for fermented or musty or any other undesirable odour; examined under microscope for granule size and sieved for particle size. The sample shall satisfy the requirements given in 3.1, 3.2 and 3.4 of IS 1319. If the sample fails in any one or more of these requirements, the material manufactured during one hour prior to the drawal of the sample

shall not be marked and be either rejected or re-processed for conformity to these requirements of the specification.

**5.2.2** One sample shall be tested from each control unit before packing and tested for Moisture, Total ash, Acid-insoluble ash, Starch, Protein, Sulphur dioxide, Crude fibre, pH of aqueous extract and Cold-water solubles. If the sample fails in any one or more of these requirements as given in the specification, the entire material in the control unit shall not be marked. The material may, however, be reprocessed and the defect(s) rectified. Such re-processed material when tested again shall conform to all the requirements of the specification.

Note :- The moisture content of the product shall be governed by good manufacturing practices and shall be kept at such a level that there is a minimum loss of nutritive value and at which micro-organisms cannot multiply.

**5.2.3** One sample in a month shall be tested for Hydrocyanic acid. In case of failure of any sample, the corresponding control unit shall not be marked, the same may however be reprocessed and the defect(s) rectified. Two samples from subsequent two batches shall be tested. The original frequency shall be resumed in case they are found meeting the requirements.

**6. HYGIENIC CONDITIONS** – Edible Tapioca Starch shall be manufactured, packed and stored under hygienic conditions (See IS 2491). All the processing equipment shall be properly cleaned and care shall be taken to prevent contamination.

**7. REJECTIONS** - Disposal of non- conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.



**TABLE 1**  
**LEVELS OF CONTROL**

| (1)          |   |                      |                  | (2)  | (3)               |                   |                     |
|--------------|---|----------------------|------------------|--|-------------------|-------------------|---------------------|
| Test Details |   |                      |                  | Test equipment requirement<br>R: required (or)<br>S: Sub-contracting permitted | Levels of control |                   |                     |
| Cl.          | Requirement                             | Test Method Cl. Ref. | Test Method IS   |  | No. of sample     | Frequency         | Remarks             |
| 3.1          | Description                             | 3.1                  | IS 1319          | R  | One               | Every Hour        | See cl 5.2.1 of SIT |
| 3.2          | Microscopic Appearance and Granule Size | 4                    | IS 4706 (Pt-1)   | R  | One               | -do-              | -do-                |
| 3.3          | Particle Size                           | 3                    | IS 4706 (Pt-1)   | R  | One               | -do-              | -do-                |
| 3.4          | Hydrocyanic Acid                        | Annex A              | IS 1319          | S  | One               | Once in a month   | See cl 5.2.3 of SIT |
| 3.6 & Table1 | Moisture                                | 4                    | IS 4706 (Pt-2)   | R  | One               | Each Control unit | See cl 5.2.2 of SIT |
| -do-         | Total Ash (dry basis)                   | 5                    | -do-             | R  | One               | -do-              | -do-                |
| -do-         | Acid Insoluble Ash (dry basis)          | 8                    | -do-             | R  | One               | -do-              | -do-                |
| -do-         | Starch (dry basis)                      | --                   | By Difference    | R  | One               | -do-              | -do-                |
| -do-         | Protein                                 | 10                   | IS 4706 (Part 2) | R  | One               | -do-              | -do-                |

|      |                                 |    |                |   |     |      |      |
|------|---------------------------------|----|----------------|---|-----|------|------|
| -do- | Sulphur Dioxide                 | 11 | -do-           | R | One | -do- | -do- |
| -do- | Crude Fibre (dry basis)         | 12 | -do-           | R | One | -do- | -do- |
| -do- | pH of Aqueous Extract           | 13 | -do-           | R | One | -do- | -do- |
| -do- | Cold-Water Solubles (dry Basis) | 12 | IS 4706 (Pt-1) | R | One | -do- | -do- |

Note-1: Whether test equipment is required or sub-contracting is permitted in column 2 shall be decided by the Bureau and shall be mandatory. Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empaneled by the Bureau.

Note-2: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval to BO head.

Note-3: In case the production is started after the shutdown of the plant, for more than a week time for any reason, it shall be ensured, before packing and dispatching the material with Standard Mark, that the material is tested and found conforming to all the requirements of the specification.