SRI LANKA STANDARD 958 : 1992

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SPECIFICATION FOR

# CUSTARD POWDER

SRI LANKA STANDARDS INSTITUTION

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SLS 958 : 1992

Gr.9

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This standard does not purport to include all the necessary provisions of a contract.

# SRI LANKA STANDARD
# SPECIFICATION FOR CUSTARD POWDER

## FOREWORD

This standard was approved by the Sectoral Committee on Cereals, Pulses and their products and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 1992-07-29.

This standard permits only edible maize starch and edible tapioca starch as main ingredients. Other edible starches with similar gelling properties may be considered for use. These starches will be considered for inclusion in this standard after proper evaluation of its suitability.

During the formulation of this specification due consideration has been given to the relevant provisions made under the Sri Lanka Food Act No. 26 of 1980. Specific requirements given in this specification, wherever applicable, are in accordance with the relevant regulations. However, general provisions made under the Sri Lanka Food Act have not been included in this specification and therefore, the attention of the user of this specification is drawn to the general provisions made in the regulations framed under the Food Act.

Guidelines for the determination of a compliance of a lot with the requirements of this standard based on statistical sampling and inspection is given in Appendix A.

For the purpose of deciding whether a particular requirement of this specification is complied with, the final value, observed or calculated, expressing the result of a test or an analysis, shall be rounded off in accordance with SLS 102. The number of significant places retained in the rounded off value shall be the same as that of the specified value in this specification.

In the preparation of this standard, the valuable assistance derived from the following publication is gratefully acknowledged:

IS 1007 : 1984 - Specification for custard powder (Second Revision).

## 1 SCOPE

This specification prescribes the requirements and methods of test for custard powder.

## 2 REFERENCES

SLS 79 Edible common salt.
SLS 102 Presentation of numerical values.
CS 143 Code of practice for general principles of food hygiene.
SLS 191 White sugar.
SLS 428 Random sampling methods.
SLS 467 Marking and labelling of pre-packaged foods
SLS 913 Rice flour.

## 3 DEFINITION

For the purpose of this specification the following definition shall apply :

3.1 **custard powder** : Product obtained from edible maize starch (corn flour) or edible tapioca starch or a blend of both, salt, colouring matter, flavouring agents and may contain milk solids, egg solids, sugar and nutrients.

## 4 INGREDIENTS

### 4.1 Basic ingredients

4.1.1 *Edible maize starch (corn flour)*

4.1.2 *Edible tapioca starch.*

4.1.3 *Edible common salt,* conforming to **SLS 79.**

4.1.4 *Permitted food colouring matter and flavouring agents.*

### 4.2 Optional ingredients

4.2.1 *Milk solids.*

4.2.2 *Egg solids.*

4.2.3 *White sugar,* conforming to **SLS 191.**

4.2.4 *Nutrients.*

## 5 PROCESSING REQUIREMENTS

Custard powder shall be processed, packed and handled under hygienic conditions in accordance with CS 143.

## 6 PRODUCT REQUIREMENTS

### 6.2.1 *Physical appearance*

Custard powder shall be in the form of fine powder.

### 6.2.2 *Microscopical appearance*

Custard powder shall show the starch granules characteristic of maize starch and tapioca starch when examined in accordance with the method prescribed in Appendix B.

### 6.2.3 *Flavour*

Custard powder shall be free from fermented, musty and other objectionable odours. It shall have a pleasant flavour.

### 6.2.4 *Foreign matter*

6.2.4.1 Custard powder shall be free from extraneous matter.

6.2.4.2 Custard powder shall be free from insect and/or fungal infestation.

### 6.2.5 *Gel strength*

Custard powder shall satisfy the requirements of the test for gel strength prescribed in Appendix C.

### 6.2.6 *Sulfur dioxide*

Custard powder may contain not more than 100 mg/kg of sulfur dioxide as a preservative.

*NOTE*

*Sulfur dioxide is permitted only if the product contains egg solids and/or milk solids.*

### 6.3 Other requirements

Custard powder shall also conform to the requirements given in Table 1 when tested in accordance with the methods prescribed in Column 4 of the table.

TABLE 1 - Requirements for custard powder

| Sl No. (1) | Characteristic (2) | Requirement (3) | Method of test Ref. to (4) |
|---|---|---|---|
| i | Moisture, per cent by mass, max. | 12 | Appendix C of SLS 913 : 1991 |
| ii | Starch, per cent by mass, min. | 80 | Appendix D of SLS 913 : 1991 |
| iii | Total ash excluding sodium chloride (on dry basis), per cent by mass, max. | 0.6 | Appendix D |
| iv | Acid insoluble ash (on dry basis), per cent by mass, max. | 0.2 | Appendix G of SLS 913 : 1991 |

## 7 PACKAGING AND MARKING

### 7.1 Packaging

Custard powder shall be packed in clean, airtight and moisture proof packaging material.

### 7.2 Marking

7.2.1 Each package shall be legibly and indelibly marked or labelled with the following:

a) Name of the product as "Custard powder";
b) Brand name or trade mark, if any;
c) Net mass, in grams;
d) Name and address of the manufacturer or packer (including the country of origin);
e) Batch or code number;
f) Date of expiry;
g) List of ingredients;
h) The statement " Contains permitted colours and flavours", if applicable ; and
j) Directions for preparation.

7.2.2 Marking and labelling shall be in accordance with the SLS 467.

*NOTE*

*Attention is drawn to certification marking facilities offered by the Sri Lanka Standards Institution. See the inside back cover of the standard.*

## 8 METHODS OF TEST

Tests shall be carried out as prescribed in Column 4 of Table 1 and relevant Appendices of this standard.

## APPENDIX A
## COMPLIANCE OF A LOT

The sampling scheme given in this Appendix should be applied where compliance of a lot to the requirements of this standard is to be assessed based on statistical sampling and inspection.

Where compliance with this standard is to be assured based on manufacturer's control systems coupled with type testing and check tests or any other procedure, appropriate scheme of sampling and inspection should be adopted.

### A.1 LOT

In any consignment custard powder containing packages of the same size, belonging to one batch of manufacture or supply shall constitute a lot.

### A.2 SCALE OF SAMPLING

A.2.1 Samples shall be tested from each lot for ascertaining its conformity to the requirements of this standard.

A.2.2 The number of packages to be selected from a lot shall be in accordance with the following table.

TABLE 2 - Scale of sampling

| Number of packages in the lot | Number of packages to be selected |
|---|---|
| Up to 250 | 4 |
| 251 to 500 | 5 |
| 501 to 1200 | 6 |
| 1201 and above | 7 |

A.2.3 Packages shall be selected at random. In order to ensure randomness of selection, tables of random numbers as given in SLS 428 shall be used.

## A.3 NUMBER OF TESTS

A.3.1 Each package selected as in A.2.2 shall be inspected for packaging and marking requirements.

A.3.2 Each package inspected as in A.3.1 shall be tested/examined for physical appearance, flavour, foreign matter and moisture content.

A.3.3 Approximately an equal quantity of material shall be drawn from each package tested as above using clean dry sampling tools and mixed to form a composite sample. The composite sample thus obtained shall be tested for microscopical appearance, gel strength, starch content, total ash content and acid insoluble ash content.

## A.4 CRITERIA FOR CONFORMITY

A lot shall be declared as conforming to the requirements of this standrad, if the following conditions are satisfied.

A.4.1 Each package inspected as in A.3.1 satisfies the relevant requirements.

A.4.2 Each package tested/examined as in A.3.2 satisfies the requirements for physical appearance, flavour, foreign matter and moisture content.

A.4.3 The test results on the composite sample when tested as in A.3.3 satisfy the relevant requirements.

## APPENDIX B
## MICROSCOPICAL EXAMINATION

### B.1 APPARATUS

B.1.1 *Microscope*, with a magnification of x 660.

B.1.2 *Microscope slides*

B.1.3 *Cover slips*

### B.2 PROCEDURE

Weigh about 1 g of the sample, place it in a test tube, add distilled water to wet, crush and add 50 ml of distilled water and mix. Shake the test tube thoroughly and take 1 to 2 drops of the suspension on a slide, by means of a glass rod (see Note 1). Place a cover slip on the glass slide so that no air bubble is present between the cover slip and the slide (see Note 2).

*NOTES*

1. *The quantity of material taken should be such that while the fluid of view under the microscope shows numerous granules, they are not so crowded as to overlap.*
2. *When placing the cover slip in position, care should be taken not to exert excessive pressure in order to avoid breaking of clusters.*

Examine, at least 5 slides prepared as above under the microscope (B.1.1) and compare the starch granules with Plate 1, Plate 2. Figure 1 and Figure 2.

PLATE 1 : Photomicrograph of maize starch granules x 660

FIGURE 1 : Maize starch granules x 600

Maize starch granules are usually concentric, polygonal or rounded in shape. Hilum is prominent, splitting of starch grain into three or four parts is common. Striae are not visible.

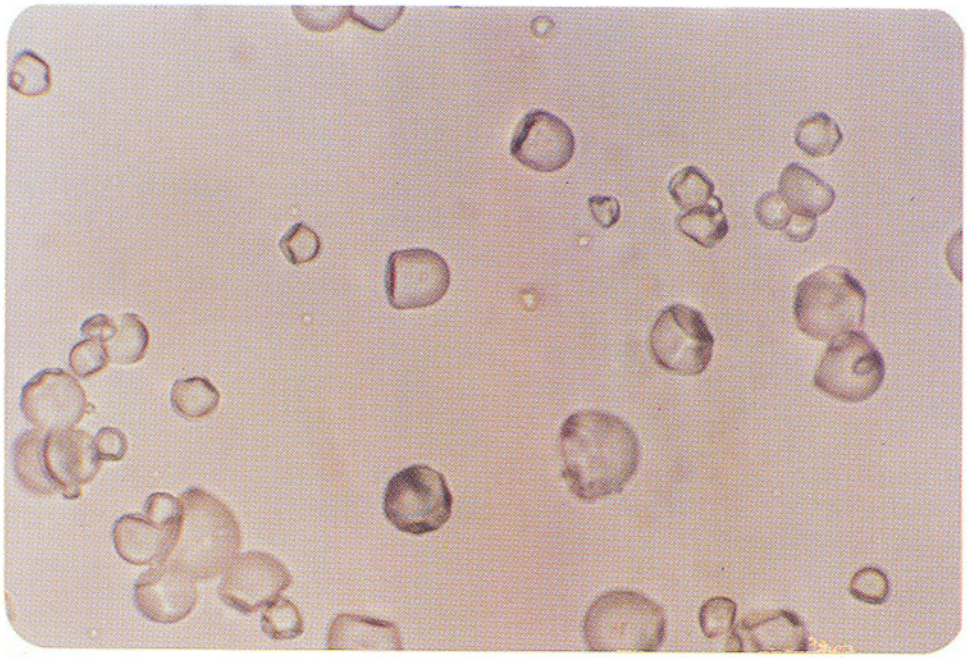

PLATE 2 : Photomicrograph of tapioca starch granules x 660

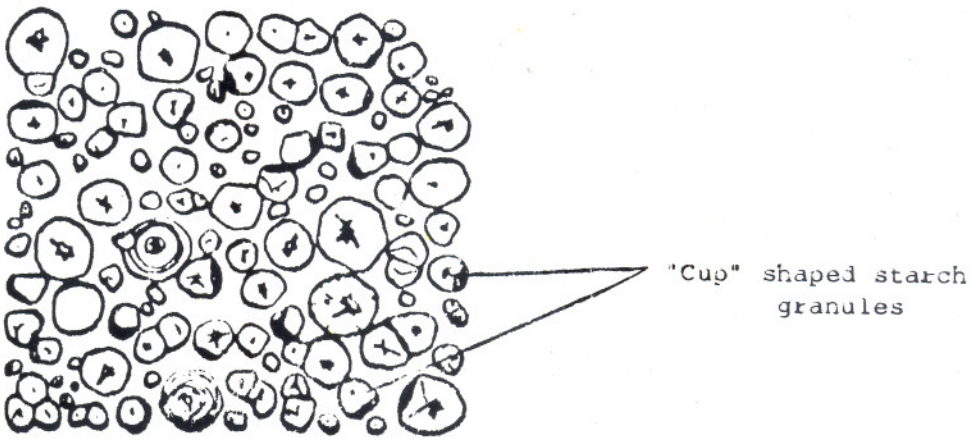


FIGURE 2 : Tapioca starch granules x 600

Starch grains are of different sizes mostly large starch granules and hilum is clear. Polygonal in shape "Cup" shaped starch granules are characterisites of tapioca starch.

## APPENDIX C
## DETERMINATION OF GEL STRENGTH

### C.1 PROCEDURE

Weigh, to the nearest milligram, about 4 g of custard powder in a porcelain dish. Add 50 ml of cold water and mix. Heat to boil over a bunsen burner with constant stirring. Boiling should not exceed one minute. Remove the flame when the paste is transparent and begins to froth. Cool to room temperature.

### C.2 OBSERVATIONS

The product obtained after cooling should be smooth with uniform consistency and free from lumps. This product should be in the form of a gel and it should not flow.

## APPENDIX D
## DETERMINATION OF TOTAL ASH EXCLUDING SODIUM CHLORIDE

### D.1 APPARATUS AND REAGENTS

D.1.1 *Muffle furnace,* maintained at 550 °C ± 10 °C.

D.1.2 *Dish,* platinum, porcelain or silica.

D.1.3 *Silver nitrate solution,* standardized, $c(AgNO_3)$ = 0.1 mol/l.

D.1.4 *Ammonium thiocynate,* approximately 0.1 mol/l solution, calculate the exact concentration by titrating with standard silver nitrate solution (D.1.3).

D.1.5 *Nitric acid*

Mix 100 ml of concentrated nitric acid (rel.den = 1.42) with 900 ml of water.

D.1.6 *Nitric acid*

Mix 400 ml of concentratd nitric acid (rel.den = 1.42) with 100 ml of water and boil until a colourless solution is obtained.

D.1.7 *Ferric alum indicator solution*

Prepare a saturated solution of ferric alum in water and filter.

## D.2 PROCEDURE

Weigh, to the nearest milligram, about 5 g to 10 g of custard powder in to the dish (D.1.2). Ignite the material in the dish with the flame of a suitable burner till all the starch is carbonized. Complete the ignition in the muffle furnace (D.1.1) for 3 h. Cool in a desiccator and weigh. Repeat the process of ignition in the furnace, cooling and weighing at 30-minute intervals until the difference between the two successive weighings is less than one milligram. Note the lowest mass.

Dissolve the ash in 25 ml of nitric acid (D.1.5). Filter through a qualitative, medium fast filter paper, collecting the filtrate in a 100-ml graduated flask. Wash the residue thoroughly with three 100-ml portions of hot water collecting the washings in the flask. Make the volume to 100 ml. Pipette 25 ml of this solution, add in excess (about 20 ml) of silver nitrate solution (D.1.3) , stirring well to flocculate the precipitate of silver chloride. Filter and wash the precipitate thoroughly with water. Add 5 ml of ferric alum indicator solution (D.1.7) and 5 ml of nitric acid (D.1.6) to the combined filtrate. Titrate excess silver nitrate with the ammonium thiocynate solution (D.1.4) to a stable light brown colour end point.

## D.3 Calculation

Total ash excluding sodium chloride (on dry basis), per cent by mass

$$= \frac{(m_2 - m_0) \times 10\,000}{(m_1 - m_0) \times (100 - M)} - \frac{5.85\,(V_1 c_1 - V_2 c_2)\ 100 \times V_3}{(m_1 - m_0)\ (100 - M) \times V_4}$$

where,

$m_0$ is the mass, in g, of the empty dish;

$m_1$ is the mass, in g, of the dish with the sample;

$m_2$ is the mass, in g, of the dish with the ash;

$V_1$ is the volume, in ml, of the standard silver nitrate solution;

$c_1$ is the concentration, in mol/l, of the silver nitrate solution;

$V_2$ is the volume, in ml, of the ammonium thiocyanate solution required for the titration;

$c_2$ is the concentration, in mol/l, of the ammonium thiocyanate solution;

$M$ is the percentage of moisture;

$V_3$ is the volume, in ml, to which the filtrate was made up; and

$V_4$ is the volume, in ml, of the filtrate taken for the determination.

## *SLS CERTIFICATION MARK*

*The Sri Lanka Standards Institution is the owner of the registered certification mark shown below. Beneath the mark, the number of the Sri Lanka Standard relevant to the product is indicated. This mark may be used only by those who have obtained permits under the SLS certification marks scheme. The presence of this mark on or in relation to a product conveys the assurance that they have been produced to comply with the requirements of the relevant Sri Lanka Standard under a well designed system of quality control inspection and testing operated by the manufacturer and supervised by the* SLSI *which includes surveillance inspection of the factory, testing of both factory and market samples.*

*Further particulars of the terms and conditions of the permit may be obtained from the* Sri *Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.*


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## SRI LANKA STANDARDS INSTITUTION

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