SRI LANKA STANDARD 884 : 1990

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SPECIFICATION FOR

SEMOLINA (FARINA)

SRI LANKA STANDARDS INSTITUTION

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SLS 884 : 1990

Gr. 7

SRI LANKA STANDARDS INSTITUTION
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This standard does not purport to include all the necessary provisions of a contract.

SRI LANKA STANDARD
SPECIFICATION FOR SEMOLINA (FARINA)

FOREWORD

This Sri Lanka Standard was authorized for adoption and publication by the Council of the Sri Lanka Standards Institution on 1990-08-13, after the draft, finalized by the Drafting Committee on Semolina, had been approved by the Agricultural and Food Products Divisional Committee.

This specification is subject to the provisions of the Food Act No.26 of 1980 and the regulations framed thereunder.

Semolina is made by grinding and bolting cleaned wheat to a certain degree of fineness and freeing it from bran, germ etc. to the desired extent.

All standard values given in this specification are in SI units.

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 CS 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 specification the assistance obtained from the publications of the Bureau of Indian Standards is gratefully acknowledged.

1 SCOPE

This specification prescribes the requirements and methods of sampling and test for semolina.

2 REFERENCES

CS 102 Presentation of numerical values.
CS 124 Test sieves.
CS 143 Code of practice for general principles of food hygiene.
SLS 428 Random sampling methods.
SLS 700 Jute bags.

3 DEFINITIONS

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

semolina (farina) : The inner grannular starchy endosperm of wheat derived as an intermediate in the milling of whole wheat grain to flour, which is free from bran, germ and flour particles.

4 REQUIREMENTS

4.1 Hygienic requirements

Semolina shall be processed, packed and distributed in accordance with **CS 143.**

4.2 General requirements

Semolina shall be obtained from clean wheat. It shall be free from musty or other off odour, insect or fungus infestation, rodent contamination, dirt and/ or other extraneous matter.

4.3 Other requirements

Semolina shall also comply with the requirements given in Table 1 when tested by the methods prescribed in Column 4 of the table.

TABLE 1 - Requirements for semolina

Sl. No. (1)	Characteristic (2)	Requirement (3)	Method of test (4)
i)	Particle size		
	a) Particles retaining on 1.18 mm sieve, per cent by mass	Nil	) Appendix A
	b) Particles retaining on 710 µm sieve, per cent by mass, max.	10	)
	c) Particles retaining on 250 µm sieve, per cent by mass, min.	97	)
ii)	Moisture, per cent by mass, max.	14.0	Appendix B
iii)	Total ash (on dry basis), per cent by mass, max.	1.0	Appendix C
iv)	Acid insoluble ash (on dry basis), per cent by mass, max.	0.05	Appendix D
v)	Gluten (on dry basis), per cent by mass, min.	6.0	Appendix E
vi)	Acidity (as H_2SO_4) with 90 per cent alcohol, per cent by mass, max.	0.1	Appendix F

5 PACKAGING AND MARKING

5.1 Packaging

5.1.1 *Bulk packages*

Semolina shall be packed in clean jute bags conforming to SLS 700 or bags made from any other suitable material. The mouth of each bag shall be securely stitched.

5.1.2 *Retail packages*

Semolina shall be packed in suitable bags. Each bag shall be securely sealed.

5.2 Marking

5.2.1 *Bulk packages*

The following information shall be legibly and indelibly marked on each bag or on a label securely attached:

a) Name of the product;
b) Name and address of the manufacturer (including the country of origin);
c) Net mass, in kilograms;
d) Batch or code number; and
e) Date of expiry.

5.2.2 *Retail packages*

The following information shall be legibly and indelibly marked on each package :

a) Name of the product;
b) Name and address of the distributor and/or retailer;
c) Net mass, in grams;
d) Batch or code number; and
e) Date of expiry.

NOTE

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

6 SAMPLING

6.1 Lot

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

6.2 Scale of sampling

6.2.1 Samples shall be tested from each lot for ascertaining its conformity to the requirements of this specification.

6.2.2 The number of retail packages to be selected from a lot shall be in accordance with Table 2.

TABLE 2 - Scale of sampling for retail packages

Number of packages in the lot	Number of packages to be selected
Up to 500	5
501 to 3 200	8
3 201 to 10 000	13
10 001 and above	20

6.2.3 The number of bulk packages to be selected from a lot shall be in accordance with Table 3.

TABLE 3 - Scale of sampling for bulk packages

Number of packages in the lot	Number of packages to be selected
Up to 100	4
101 to 300	5
301 to 1 000	7
1 001 to 3 000	10
3 001 and above	15

6.2.4 The 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.

6.3 Preparation of test samples

6.3.1 *Preparation of samples for the determination of moisture*

Approximately equal quantities of material shall be drawn from each package selected as in 6.2.1 or 6.2.2 using an appropriate sampling instrument. The material obtained from each package shall be transferred to separate sample containers and sealed air-tight.

6.3.2 *Preparation of the composite sample*

Sufficient quantity of material shall be drawn from each package selected as in 6.2.1 or 6.2.2 and mixed to form a composite sample of at least 500 g. The sample thus obtained shall be transferred to a sample container and sealed air-tight.

6.4 Reference sample

If a reference sample is required the size of the sample to be taken shall be three times the size given in 6.3.2 and the sample to obtained shall be divided into three equal parts. These samples shall be transferred into three sample containers and sealed air-tight. One such sample shall be marked for the purchaser, one for the supplier and the third shall be kept at a place agreed to between the purchaser and the supplier to be used in case of dispute.

6.5 Number of tests

6.5.1 Each package selected as in 6.2.1 or 6.2.2 shall be inspected for packaging and marking requirements.

6.5.2 Each package selected as in 6.2.1 or 6.2.2 shall be examined for the requirements given in 4.2.

6.5.3 Each sample obtained as in 6.3.1. shall be tested individually for moisture content.

6.5.4 The composite sample obtained as in 6.3.2 shall be tested for requirements given in 4.3 except for moisture content.

7 METHODS OF TEST

7.1 Tests shall be carried out as prescribed in Appendices A to F of this specification.

7.2 During the analysis, unless otherwise stated, reagents of recognized analytical grade and distilled water or water of equivalent purity shall be used.

8 CRITERIA FOR CONFORMITY

A lot shall be declared as conforming to the requirements of this specification if the following conditions are satisfied:

8.1 Each package inspected as in 6.5.1 satisfies the relevant requirements.

8.2 Each package examined as in 6.5.2 satisfies the relevant requirements.

8.3 The value of the expression $\bar{x} + 1.1s$ (see Notes) calculated using the test results on moisture content is less than or equal to the relevant specification limit.

NOTES

1 *Mean* $(\bar{x})$ = *The sum of the observations divided by the number of observations.*

2 *Standard deviation (s)* = *The positive square root of the quotient obtained by dividing the sum of squares of deviations of the observations from their mean by one less than the number of observations in the sample.*

8.4 The test results on composite sample when tested as in 5.4 satisfy the relevant requirements.

APPENDIX A
DETERMINATION OF PARTICLE SIZE

A.1 APPARATUS

Test sieves, of aperture size 1.18 mm, 710 μm and 250 μm, conforming to CS 124.

A.2 PROCEDURE

Make a nest of three sieves, the upper most sieve of aperture size 1.18 mm, the middle sieve of aperture size 710 μm and the lower sieve of aperture size 250 μm. Weigh to the nearest 0.1 g, about 100 g of the sample and place it in the upper sieve. Shake the nest of sieves thoroughly until all the material on the uppermost sieve passes through. Transfer the residues on the lower sieves separately to two tared weighing dishes using a brush and weigh each dish.

A.3 CALCULATION

Material retaining on the sieve of aperture size 710 μm, per cent by mass $= \frac{m_1}{m_0} \times 100$

Material not passing through the sieve of aperture size 250 μm, per cent by mass $= \frac{(m_1 + m_2)}{m_0} \times 100$

Where,

m_0 is the mass, in g, of the sample taken for the test;
m_1 is the mass, in g, of the particles retained on the sieve of aperture size 710 μm; and
m_2 is the mass, in g, of the particles retained on the sieve of aperture size 250 μm.

APPENDIX B
DETERMINATION OF MOISTURE

B.1 APPARATUS

B.1.1 *Dish, with lid,* made of porcelain, silica or platinum.

B.1.2 *Drying oven,* capable of being controlled at 105 + 1 °C.

B.2 PROCEDURE

Weigh, to the nearest milligram, about 5 g of semolina in a dish (B.1.1), previously dried in an electric oven and weighed. Place the dish in the drying oven maintained at 105 + 1 °C for five hours. Cool the dish in a desiccator and weigh. Repeat the process of heating, cooling and weighing at half-hour intervals until the difference in mass between two successive weighings is less than one milligram. Note the lowest mass.

NOTE

Preserve the dish containing this dried material for the determination of total ash.

B.3 CALCULATION

$$\text{Moisture, per cent by mass} = \frac{m_1 - m_2}{m_1 - m_0} \times 100$$

where,

m_0 is the mass, in g, of the empty dish with the lid;
m_1 is the mass, in g, of the dish with the material before drying; and
m_2 is the mass, in g, of the dish with the material after drying.

APPENDIX C
DETERMINATION OF TOTAL ASH

C.1 APPARATUS

Muffle furnace, capable of being controlled at 550 °C to 600 °C.

C.2 PROCEDURE

Ignite the dried material in the dish (see B.2) with the flame of a suitable burner for about one hour. Complete the ignition by keeping in a muffle furnace at 550 °C to 600 °C until grey ash results. Cool in a desiccator and weigh. Repeat the process of igniting, cooling and weighing at half-hour intervals until the difference in mass between two successive weighings is less than one milligram. Note the lowest mass.

NOTE

Preserve the dish containing this ash for the determination of acid insoluble ash.

C.3 CALCULATION

Total ash (on dry basis), per cent by mass $= \frac{m_3 - m_0}{m_2 - m_0} \times 100$

where,

m_0 is the mass, in g, of the empty dish with the lid;
m_2 is the mass, in g, of the dish with dried material taken for the test; and
m_3 is the mass, in g, of the dish with the ash.

APPENDIX D
DETERMINATION OF ACID INSOLUBLE ASH

D.1 REAGENT

Hydrochloric acid, 5 mol/l solution, prepared by using concentrated hydrochloric acid (rel. den. = 1.18).

D.2 PROCEDURE

To the ash contained in the dish (see **C.2**), add 25 ml of hydrochloric acid (**D.1**), cover with a watch-glass and heat on a water-bath for 10 minutes. Allow to cool and filter the contents of the dish through a Whatman filter paper No.42 or its equivalent. Wash the filter paper with water until the washings are free from the acid. Return the filter paper and the residue to the dish. Keep it in an electric air-oven maintained at 135 +2 °C for about 3 h. Ignite in a muffle furnace at 500 °C to 600 °C for one hour. Cool the dish in a desiccator and weigh. Repeat the process of igniting, cooling and weighing at half-hour intervals until the difference in mass between two successive weighings is less than one milligram. Note the lowest mass.

D.3 CALCULATION

$$\text{Acid insoluble ash (on dry basis), per cent by mass} = \frac{m_4 - m_0}{m_2 - m_0} \times 100$$

where,

m_0 is the mass, in g, of the empty dish with the lid;
m_2 is the mass, in g, of the dish with the dried material taken for the determination of total ash; and
m_4 is the mass, in g, of the dish with the acid insoluble ash.

APPENDIX E
DETERMINATION OF GLUTEN

E.1 APPARATUS

E.1.1 *Sieve,* of aperture size 150 µm conforming to **CS 124.**

E.1.2 *Dish,* with a lid, tared procelain.

E.1.3 *Air oven,* maintained at 135 + 2 °C.

E.2 PROCEDURE

E.2.1 Grind about 100 g of semolina in a mortar with a pestle or in a suitable mechanical pulverizer. Sieve (**E.1.1**) and collect the material that passes through.

E.2.2 Weigh, to the nearest milligram, about 25 g of the material (**E.2.1**) into a dish. Add about 15 ml of water to the material and knead it into a stiff dough, taking care to see that all the material is taken into the dough. Keep the dough gently in a beaker filled with water and let it stand for one hour. Remove the dough and place it in a sieve of aperture size 150 µm (**E.1.1**). Wash it with a gentle stream of tap water till water passing through does not turn blue when a drop of iodine solution is added to it. Transfer the residue by means of a spatula, to a dish (**E.1.2**). Spread the wet gluten into a thin layer and cut into small pieces. Transfer any residue sticking to the spatula into the porcelain dish. Place it in an air-oven maintained at 135 + 2 °C. Dry for two hours. Cool in a desiccator and weigh.

E.3 CALCULATION

Gluten (on dry basis), per cent by mass $= \frac{10,000\ (m_2 - m_1)}{m_0\ (100 - M)}$

Where,

m_0 is the mass, in g, of the material taken;
m_1 is the mass, in g, of the empty dish with the lid;
m_2 is the mass, in g, of the dish with dry gluten; and
M is the per cent of the moisture in the sample (see Appendix B)

APPENDIX F
DETERMINATION OF ALCOHOLIC ACIDITY

F.1 REAGENTS

F.1.1 *Neutral ethyl alcohol,* 90 per cent (V/V) solution.

F.1.2 *Sodium hydroxide solution,* standard volumetric solution, c(NaOH) = 0.05 mol/l.

F.1.3 *Phenolphthalein indicator solution,* dissolve 0.50g of phenolphthalein in 100 ml of 95 per cent (V/V) ethyl alcohol.

F.2 PROCEDURE

Weigh, to the nearest milligram about 5 g of semolina into a stoppered conical flask and add 50 ml of neutral, ethyl alcohol (**F.1.1**). Stopper, shake and allow to stand for 24 h, with occasional shaking. Filter the alcoholic extract through a dry filter paper. Titrate 10 ml of the combined alcoholic extract against the sodium hydroxide solution (**F.1.2**) using phenolphthalein as indicator.

F.3 CALCULATION

Acidity (as H_2SO_4) with 90 per cent alcohol, per cent by mass $= \frac{V \times c \times 24.52}{m}$

where,

V is the volume, in ml, of standard sodium hydroxide required for the titration;
c is the concentration, in mol/l, of standard sodium hydroxide solution; and
m is the mass, in g, of the sample.

SRI LANKA STANDARDS INSTITUTION

The Sri Lanka Standards Institution (SLSI) is the National Standards Organization of Sri Lanka established under the Sri Lanka Standards Institution Act No. 6 of 1984 which repealed and replaced the Bureau of Ceylon Standards Act No. 38 of 1964. The Institution functions under the Ministry of Science & Technology.

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