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IS 13334-2 (1992): Skim Milk Powder, Part 2: Extra Grade
[FAD 19: Dairy Products and Equipment]



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भारतीय मानक

मलाई रहित दूध — विशिष्ट

भाग 2 अतिरिक्त ग्रेड

Indian Standard

SKIM MILK POWDER — SPECIFICATION

PART 2 EXTRA GRADE

(Second Reprint NOVEMBER 2000)

UDC 637.143

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
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INS

**AMENDMENT NO. 1 MAY 1993
TO
IS 13334 (Part 2) : 1992 SKIM MILK POWDER —
SPECIFICATION
PART 2 EXTRA GRADE**

[*Page 2, Table 1, Sl No. (v), col 3*] — Substitute '8.2' for '7.3'.

(FAD 18)

**AMENDMENT NO. 2 NOVEMBER 1995
TO
IS 13334 (Part 2) : 1992 SKIM MILK POWDER —
SPECIFICATION**

PART 2 EXTRA GRADE

(Page 1, clause 3.7) — Add the following new clause after 3.7:

‘3.8 The product may contain added calcium chloride, citric acid and sodium citrate, sodium salts of orthophosphoric acid and polyphosphoric acid (as linear phosphate), not exceeding 0.3 percent by mass of the finished product.’

(Page 1, clause 4.1, line 2) — Substitute ‘IS 11078 : 1984’ for ‘IS 11078 : 1978’.

(Page 2, Table 1) — Substitute the following for the existing table:

**Table 1 Compositional Specification for Skim Milk Powder Extra Grade
(Clause 3.7)**

SI No.	Characteristic	Requirement	Method of Test Ref to
(1)	(2)	(3)	(4)
i)	Moisture, percent by mass, <i>Max</i>	3.5	IS 11623 : 1986
ii)	Total solids (milk solids and added salts), percent by mass, <i>Min</i>	96.5	See Note 1
iii)	Fat, percent by mass, <i>Max</i>	1.25	IS 11721 : 1986
iv)	Insolubility index, ml, <i>Max</i>	0.5	IS 12759 : 1989
v)	Total ash (on dry basis), percent by mass, <i>Max</i>	8.2	Appendix C of IS 1547 : 1985
vi)	Titrate acidity (as lactic acid), percent by mass, <i>Max</i>	1.5	IS 11766 : 1986
vii)	Lactate content, mg/g, <i>Max</i>	1.5	See Note 2
viii)	Scorched particles, mg, <i>Max</i>	15.0	IS 13500 : 1992

[equivalent to Disc B]

NOTES

1 From the mass of residue, as obtained in the method prescribed in IS 11623 : 1986, calculate the percentage of total solids.

2 Till such time IS 11202 : 1984 is being reviewed and a method of test for lactate content determination is identified which is reproducible and repeatable and for which the testing facilities are readily available, the lactate requirement at SI No. (vii) is kept in abeyance.

Amend No. 2 to IS 13334 (Part 2) : 1992

(*Page 2, clause 6.2, line 3*) — Substitute 'IS 1070 : 1992' for 'IS 1070 : 1977'.

(*Page 2, Annex A*) — Substitute 'IS 1070 : 1992 Reagent grade water (*third revision*)' for 'IS 1070 : 1977 Water for general laboratory use (*second revision*)' and 'IS 5401 : 1969' for 'IS 5401 : 1959' .

(*Page 3, Annex A*) — Add the following at the end:

'IS 13500 : 1992 Spray dried milk powders — Scorched particles — Determination'.

**AMENDMENT NO. 3 NOVEMBER 2012
TO
IS 13334 (PART 2) : 1992 SKIM MILK
POWDER — SPECIFICATION**

PART 2 EXTRA GRADE

[Page 2, Table 1, Sl No. (i), col 4 (see also Amendment No. 2)] — Substitute 'IS 11623 : 2008 for reference purpose and IS 16072 : 2012 for routine purpose' for 'IS 11623 : 1986'.

[Page 2, Table 1, Note 1 (see also Amendment No. 2)] — Substitute the following in place of the existing note 1:

'NOTE 1 – From the mass of residue, as obtained in the method prescribed in IS 11623 : 2008 or IS 16072 : 2012, calculate the percentage of total solids.'

(Page 3, Annex A) — Substitute the following entry for the corresponding Indian Standard at the appropriate place:

<i>'IS No.</i>	<i>Title</i>
11623 : 2008	Dried milk — Determination of moisture content (Reference method) (first revision).'

(Page 3, Annex A) — Insert the following at the end:

<i>'IS No.</i>	<i>Title</i>
16072 : 2012	Determination of moisture content in milk powder and similar products (Routine method).'

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Dairy Products Sectional Committee had been approved by the Food and Agriculture Division Council.

A standard specification (IS 1165) covering the provisions of skim milk powder and whole milk powder was formulated in 1957 and was subsequently revised in 1967, 1975 and 1986 to incorporate a number of modifications due to technological developments in the field from time to time. The Government of India, through the PFA Rules; 1955, has made the stipulation that milk powder shall be sold only under the BIS Certification Mark making a part of the standard obligatory in nature.

There is a potential for export of skim milk powder and foreign buyers insist on extra grade specifications of milk powder of the American Dairy Products Institute (ADPI). Keeping this in view, the Technology Mission for Dairy Development, Government of India, has requested BIS to formulate a standard on 'Extra Grade Skim Milk Powder' to incorporate, the requirements of skim milk powder which would meet the requirements of foreign buyers.

Keeping above in view, it has been decided to formulate a new standard covering the requirements for the skim milk powder both for standard grade and extra grade, in two parts. This part covers extra grade skim milk powder, while Part 1 covers standard grade skim milk powder. The earlier standard, namely IS 1165 will cover the requirements of milk powder only.

While formulating this standard, due consideration has been given to the relevant Rules prescribed by the Government of India under the Prevention of Food Adulteration Act, 1954 and the Standards of Weights and Measures (Packaged Commodities) Rules, 1977. This standard is however, subject to the restrictions imposed under these Acts, wherever applicable.

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 : 1960 'Rules for rounding off numerical values (revised)'. 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***SKIM MILK POWDER — SPECIFICATION****PART 2 EXTRA GRADE****1 SCOPE**

1.1 This standard prescribes the requirements and methods of sampling and test for skim milk powder, extra grade.

2 REFERENCES

The standards listed in Annex A are necessary adjuncts to this standard.

3 REQUIREMENTS**3.1 Skim Milk Powder**

Skim milk powder, extra grade, shall be the material prepared by spray drying of fresh skimmed milk of cow or buffalo or a mixture thereof. The skimmed milk shall be free from additives.

3.2 Description

The material shall be white or white with greenish tinge or light cream in colour. It shall be free from lumps except those that break up readily under slight pressure. It shall also be free from extraneous matter. The product shall also be free from whey and butter milk.

3.3 Flavour and Taste

The flavour of the product or of the reconstituted milk shall be pleasant and clean. It shall be free from off flavours (may have slightly cooked but not the burnt flavour). It is recommended that the flavour and taste may be judged on the basis of their sensory characteristics (*see* IS 10030 : 1981).

3.4 All processing and drying should be carried out in a manner that minimizes the loss of nutritive value, particularly protein quality.

3.5 Hygienic Conditions

The material shall be manufactured and packed under hygienic conditions in licenced premises (*see* IS 2491 : 1972). The basic principles of hygiene should be applied with appropriate modifications.

3.6 Bacteriological Specifications**3.6.1 Bacterial Count**

The bacterial count per gram of the product shall not be more than 40 000 when determined according to the method prescribed in IS 5402 : 1969. The time-temperature combination of incubation shall be 30°C for 72 hours.

3.6.2 Coliform Count

The coliform count shall be nil in 0.1 g of the product when determined according to the method prescribed in IS 5401 : 1969.

3.6.3 Staphylococcus aureus

The coagulase positive *Staphylococcus aureus* shall be absent in 0.1 g of the product when tested as per the procedure described in IS 5887 (Part 2) : 1976.

3.6.4 Salmonella

Salmonella shall be absent in 25 g of the product when tested as per the procedure described in IS 5887 (Part 3) : 1976.

3.6.5 Shigella

Shigella shall be absent in 25 g of the product when tested as per the procedure described in IS 5887 (Part 3) : 1976.

NOTE — The requirements of *salmonella* and *shigella* shall not be tested in the factory premises but shall be got tested from an outside recognized laboratory.

3.7 The product shall also comply with the compositional specifications given in Table 1.

4 PACKING AND MARKING**4.1 Packing**

The skim milk powder shall be packed in clean and sound containers (*see* IS 11078 : 1978) or in a food grade flexible pack made from a film or combination of any of the substrates made of board, paper, polyethylene, polyester metalized film or aluminium foil in such a way as to protect it from deterioration. The packages shall be properly sealed. The product shall be packed in quantites of 100, 200, 500 g or 1 kg and thereafter in multiples of 500 g.

Table 1 Compositional Specification for Skim Milk Powder Extra Grade

(Clause 3.7)

Sl No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Moisture, percent by mass, <i>Max</i>	3.5	IS 11623 : 1986
ii)	Total solids (milk solids and added salts) percent by mass, <i>Min</i>	96.5	See Note
iii)	Fat, percent by mass <i>Max</i>	1.25	IS 11721 : 1986
iv)	Insolubility index, <i>Max</i>	0.5 ml	IS 12759 : 1989
v)	Total ash (on dry basis) percent by mass, <i>Max</i>	7.3	Appendix C of IS 1547 : 1985
vi)	Titratable acidity in ml of N/10 NaOH, <i>Max</i>	19.5	IS 11766 : 1986
vii)	Lactate content, mg/g, <i>Max</i>	1.5	IS 11202 : 1984
viii)	Scorched particles, <i>Max</i>	15 mg [equivalent to Disc B]	*

NOTE — From the mass of residue, as obtained in the method prescribed in IS 11623 : 1986, calculate the percentage of total solids.

*Under preparation

4.1.1 For sale to industrial users, the material may also be packed in bags of food grade flexible packing material of suitable thickness (see IS 11824 : 1986). The bag shall be properly closed by tying with a string or a rubber band and shall be subsequently encased in a pack of adequate strength.

4.2 Marking

The following particulars shall be marked or labelled on each container:

- a) Name and type of the material;

b) Name and address of the manufacturer;

c) Batch or code number;

d) Net mass;

e) The contents of this container on reconstitution as per the directions havelitre(s) skim milk;

f) Date of manufacture to be given as 'Month and Year of manufacture';

g) Any other requirements under the Standards of Weights and Measures (Packaged Commodities) Rules, 1977 and the Prevention of Food Adulteration Act, 1954 and Rules framed thereunder.

4.2.1 Standard Mark

Details available with the Bureau of Indian Standards.

5 SAMPLING

5.1 The method of drawing representative samples of the material and criteria for conformity shall be as prescribed in Appendix B.

6 TESTS

6.1 Tests shall be carried out as prescribed in 3.6 and under col 4 of Table 1.

6.2 Quality of Reagents

Unless specified otherwise, pure chemicals shall be employed in tests and distilled water (see IS 1070 : 1977) shall be used where the use of water as reagent is intended.

NOTE — 'Pure Chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

ANNEX A

(Clause 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	Title	IS No.	Title
1070 : 1977	Water for general laboratory use (<i>second revision</i>)	4905 : 1968	Methods for random sampling.
1547 : 1985	Infant milk foods (<i>second revision</i>)	5401 : 1959	Methods for detection and estimation of coliform bacteria in foodstuffs
2491 : 1972	Code for hygienic conditions for food processing units (<i>first revision</i>)	5402 : 1969	Method for plate count of bacteria in foodstuffs

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
5887 (Part 2) : 1976	Methods for detection of bacteria responsible for food poisoning : Part 2 Isolation, identification and enumeration of <i>Staphylococcus aureus</i> and faecal streptococci (<i>first revision</i>)	11546 : 1985	Methods of sampling for milk and milk products
5887 (Part 3) : 1976	Methods for detection of bacteria responsible for food poisoning : Part 3 Isolation and identification of <i>Salmonella</i> and <i>Shigella</i> (<i>first revision</i>)	11623 : 1986	Method for determination of moisture content in milk powder and similar products
10030 : 1981	Method for sensory evaluation of milk powder	11721 : 1986	Determination of fat content in milk powder and similar products
11078 : 1984	Round metal cans for milk powder	11766 : 1986	Method for determination of titratable acidity in milk powder and similar products (Routine method)
11202 : 1984	Method for determination of lactic acid and lactates content in milk powder and similar products	11824 : 1986	Paper coated high density polyethylene woven sacks for packing skim milk powder
		12759 : 1989	Dried milk and dried milk products — Determination of insolubility index

ANNEX B

(Clause 5.1)

SAMPLING OF SKIM MILK POWDER

B-1 GENERAL REQUIREMENTS

B-1.0 In drawing, preparing, storing and handling samples, in addition to the following precautions and directions, those given in Section 1 and 13 of IS 11546 : 1985 should, as far as possible, be observed.

B-1.1 Precautions shall be taken to protect the samples, the material being sampled, the sampling instrument and the containers for samples from adventitious contamination.

B-1.2 The samples shall be placed in clean and dry glass containers. The sample containers shall be of such a size that they are almost completely filled by the sample. The sample containers shall in addition be sterile when they are used for samples for bacteriological examination.

B-1.3 Each container shall be sealed air-tight after filling and marked with full details of sampling, batch or code number, name of the manufacturer and other important particulars of the consignment.

B-1.4 Samples shall be stored in such a manner that the temperature of the material does not vary unduly from the normal temperature.

B-2 SCALE OF SAMPLING

B-2.1 Lot

All the containers in a single consignment of same type of material, drawn from a single batch of manufacture and of same size shall constitute a lot. If the consignment is declared to consist of different batches of manufacture, the batches shall be marked separately and the group of containers in each batch shall constitute separate lots.

B-2.1.1 For ascertaining the conformity of material to the requirements of this specification, samples shall be tested from each lot separately.

B-2.2 The number of containers to be selected from the lot shall depend on the size of the lot, quantity of material in the container and shall be as given in Table 2.

Table 2 Number of Containers to be Selected for Sampling

(Clauses B-2.2 and B-2.3)

For Containers of 500 g and Up to 5 kg			For Containers of More than 5 kg		
Number of Containers in the Lot	Sample Size		Number of Containers in the Lot	Sample Size	
	For tests other than microbio- logical	For Micro- biological tests		For tests other than microbio- logical	For Micro- biological tests
(1)	(2)	(3)	(4)	(5)	(6)
Up to 100	3	1	Up to 50	2	1
101 to 300	5	2	51 to 100	3	1
301 to 500	7	3	101 to 300	4	2
501 and above	9	4	301 and above	5	3

NOTE — The scale of sampling for containers of 100 g and 200 g shall be as agreed to between the purchaser and the supplier.

B-2.3 These containers shall be selected at random from the lot. In order to ensure the randomness of selection, procedure given in IS 4905 : 1968 may be followed.

B-3 TEST SAMPLES AND REFEREE SAMPLES

B-3.1 Preparation of Individual Sample

Draw with a suitable sampling instrument approximately equal quantities of material from different parts of the same container till about 150 g of material is obtained. This shall be divided into three equal parts. Each part so obtained, shall constitute an individual sample representing the container and shall be transferred immediately to thoroughly clean and dry containers sealed air-tight with the particulars given in B-1.3. The individual sample so obtained shall be divided into three sets in such a way that each set have a sample representing each selected container. One of these sets shall be marked for the purchaser, another for the vendor and the third for the referee.

B-3.2 Preparation of Composite Sample

From the material from each selected container, remaining after the individual sample has been taken, approximately equal quantities of material shall be taken and mixed thoroughly so as to form a composite sample weighing about 200 g. This composite sample shall be divided into three equal parts and transferred to clean and dry containers, sealed air-tight and labelled with the particulars given in B-1.3. One of these composite samples shall be for the purchaser, another for the vendor and the third for the referee.

B-3.3 From the selected containers, select a sub-sample according to col 3 or 6 of Table 2, as the case may be. Draw with a suitable sampling instrument which is sterile, at least 100 g of material and mix thoroughly under aseptic conditions to form sample of container for microbiological examination [for guidance and details (see 13.3.2 of IS 11546 : 1985)]. Divide sample (taking care not to bring any microbiological contamination in the material) into three equal parts. Each part so obtained shall constitute a sample representing the container and shall be transferred to a sterile glass containers, sealed air-tight and labelled with particulars given in B-1.3. They shall be marked, in addition, with the words 'For Microbiological Examination. The samples so obtained shall be divided into three sets in such a way that each set has a sample representing each selected container. One of these sets shall be marked for the purchaser, another for the vendor and the third for the referee.

B-3.4 Referee Samples

Referee samples shall consist of a set of individual samples (B-2.1), composite sample (B-3.2) and a set of samples for microbiological examination (B-3.3) marked for this purpose and shall bear the seals of the purchaser and the vendor. These shall be kept at a place as agreed to between the purchaser and the vendor so as to be used in case of a dispute between the two.

B-4 NUMBER OF TESTS

B-4.1 Tests for the determination of moisture, total solids, insolubility index, total ash and fat shall be conducted on each of the samples constituting a set of the samples.

B-4.2 Tests for flavour, odour and titratable acidity shall be conducted on the composite sample.

B-4.3 Tests for bacteriological requirements shall be conducted on each of the samples constituting a set of test samples labelled with the words 'For Microbiological Examination'.

B-5 CRITERIA FOR CONFORMITY

B-5.1 The lot shall be declared as conforming to all the requirements of the specification if **B-5.1.1** and **B-5.1.3** are satisfied.

B-5.1.1 The test results on each of the individual samples for determination of requirements given in **B-4.1** shall satisfy the corresponding specification requirements.

B-5.1.2 The test results on the composite samples for flavour and odour and titratable acidity shall satisfy the corresponding specification requirements.

B-5.1.3 The test results for bacteriological specifications shall satisfy the corresponding requirements.

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Amendments Issued Since Publication

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