



**PRODUCT MANUAL FOR  
SKIMMED MILK POWDER PART 1 STANDARD GRADE  
ACCORDING TO IS13334 (PART 1) : 2014**

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 13334 (Part 1) : 2014
	<b>Title</b>	:	Skimmed Milk Powder Part 1 Standard Grade
	<b>No. of amendments</b>	:	02
2.	<b>Sampling Guidelines</b>		
a)	<b>Raw material</b>	:	Milk intended for production of skimmed milk powder shall be tested for its freedom from Neutralizers, Preservatives and adulterants.
b)	<b>Grouping Guidelines</b>	:	NA
c)	<b>Sample Size</b>	:	2 x 500 g (separate samples for chemical and microbiological tests) packed in air-tight containers.
3.	<b>List of Test Equipment</b>	:	Please see ANNEX - A
4.	<b>Scheme of Inspection and Testing</b>	:	Please see ANNEX - B
5.	<b>Possible tests in a day</b>	:	Please see Annex - C
6.	<b>Scope of the Licence :</b>		
	Licence is granted to use Standard Mark as per IS 13334 Part 1 : 2014 with the following scope:		
	<b>Name of the product</b>	Skimmed Milk Powder-Standard Grade	
	Variety	Skimmed Milk Powder-Standard Grade	
	Process	Spray drying, Roller Drying.	

**ANNEX A**

**TO PRODUCT MANUAL FOR  
SKIMMED MILK POWDER PART 1 STANDARD GRADE  
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**LIST OF TEST EQUIPMENT**

Major test equipment required to test as per requirements of Indian Standard.

Sr. No.	Test Equipment	Tests used in with Clause Reference
1.	-Drying oven capable of being maintained at $87^{\circ}\text{C}\pm 1^{\circ}\text{C}$ throughout the working space, LC $1^{\circ}\text{C}$ . -Metal block -Copper tubes -Constant pressure regulator -Tube, made of polycarbonate -Columns made of hard polypropylene -Synthetic stoppers -Container, suitable for holding columns and synthetic stoppers -Rod made of polyvinyl chloride -Soap-film meter, suitable for measuring a flow of 33 ml/min -Dry compressed air, minimum pressure of 200 kPa, moisture content of 0.01 mg H <sub>2</sub> O per litre at atmospheric pressure, free of any organic material. Use metal tubes only to connect the source of compressed air to the equipment in the drying oven. -Analytical Balance, LC 0.1 mg -Flat bottom moisture dishes with cover -Desiccator Screw capped bottles, Durham tubes, test tubes Sterile blender jar Inoculating loop, platinum-iridium or nickel-chromium or disposable loops Stop watch Volumetric Flask, 100ml, 250 ml & 1000 ml	Moisture, 5.6, Table 1
2.	-Kjeldahl flasks -Heating device -Boiling chips or glass beads -Concentrated Sulphuric acid -Mercuric Oxide or Metallic Mercury -Potassium Sulphate or Anhydrous Sodium Sulphate -Zinc granules -Sulphite or Thiosulphate Solution -Sodium hydroxide -Hydrochloric acid or Sulphuric Acid, Standard Solution -Sodium hydroxide standard solution Methyl Red Indicator Paraffin or Silicon Antifoam Analytical balance distillation assembly and Erlenmeyer flasks	Milk protein in Milk SNF, 5.6, Table 1

3.	<p>Centrifuge with Centrifuge tubes          Butyrometer, 6 Percent, 8 Percent and 10 Percent Scale with stopper          Pipettes          Analytical Balance, 0-500 g, LC 0.1 g          Water bath, upto 100°C, LC 0.1°C          Sulphuric acid          Amyl alcohol          Stemless -Funnel          Wash bottle          Glass rod          Grater or Pestle and Mortar          Scoop          Camel hair brush</p>	Fat, 5.6, Table 1
4.	<p>Silicon antifoaming agent          Thermometers for measuring 24°C and 50°C, error <math>\pm 0.2^\circ\text{C}</math> max          Water bath, upto 100°C, LC 0.1°C          Scoop          Analytical balance LC 0.01g          Electric mixer          Interval timer          Centrifuge with Centrifuge tubes          Siphon fitting or suction tube attached to water pump          Scoop          Camel hair brush          Stirring rod          Magnifying glass</p>	Insolubility index, 5.6, Table 1
5.	<p>-Flat-Bottom Dish, of stainless steel, porcelain, silica or platinum          -Muffle Furnace upto 1200°C, LC 1°C          - Desiccator          -Air-Oven, capable of maintaining <math>100^\circ\text{C} \pm 2^\circ\text{C}</math>, LC 1°C          -Flame for pre-heating          - Analytical Balance</p>	Total Ash, 5.6, Table 1
6.	<p>-Heater for boiling water          - Analytical balance          -Sodium hydroxide          -Phenolphthalein solution          Porcelain Dishes          -stirring rods</p>	Titratable Acidity, 5.6, Table 1
7.	<p>Scorched particles filtering discs          Scorched particles Discs test cards          Scorched particles tester          Scorched particles standard photo prints for dry milk          Analytical Balance, 0-500 g, L C 0.1 g          Waring blender          Defoaming agent</p>	Scorched particles, 5.6, Table 1
8	<p>Plate count agar          Overlay medium          Oven          Autoclave          Incubator (<math>30^\circ\text{C} + 1^\circ\text{C}</math>)          Petri dishes          Water bath</p>	Bacterial count, 5.6, Table 1

	<p>Colony counter pH meter test tubes, flasks/bottles Filtration assembly and filter paper Laminar Air Flow Bench</p>	
9	<p>Crystal violet neutral red bile lactose (VRBL) agar Brilliant green lactose bile broth Oven or Autoclave Incubator, 30°C+ 10°C or 37°C+10°C Petri dishes Total delivery plates Water bath, 44°C TO 47°C or 100°C Colony counter Test tubes Durham tubes Bottles or flasks pH meter loop Filtration assembly and filter paper Laminar Air Flow Bench</p>	<p>Coliform count, 5.6, Table 1</p>
10	<p>Nutrient broth Nutrient agar MacConkey Agar medium MacConkey broth medium Eosin methylene blue lactose agar medium Tergitol-7 agar medium Nutrient agar medium for motility test Tsi medium for H<sub>2</sub>S test Medium for ureas test Medium for indole production Medium for methyl red and voges Proskauer tests Simmon's citrate agar Peptone water medium for carbohydrate fermentation test Filtration assembly and filter paper Laminar Air Flow Bench BOD Incubator, 5 -50°C, LC 0.1°C</p>	<p>E.coli, 5.6, Table 1</p>
11	<p>Nutrient broth Nutrient agar Blood agar Salt medium Baird parker medium Ethyl violet azide dextrose broth Mac Conkey agar medium Filtration assembly and filter paper Laminar Air Flow Bench</p>	<p>Coagulase positive staphylococcus aureus, 5.6, Table 1</p>
12	<p>Buffered peptone water Rappaport-vassiliadis magnesium chloride/malachidte green medium (RV medium) Selenite/cystine medium Solid selective plating-out media Phenol red/brilliant green agar Nutrient agar Triple sugar/iron agar Urea agar</p>	<p>Salmonella, 5.6, Table 1</p>

	<p>L-Lysine decarboxylation medium  Reagent for detection of <math>\beta</math>-galactosidase  Reagents for Voges-Proskauer (VP reaction)  -VP medium  -creatine solution  -1-Naphthol  -Potassium hydroxide solution  -Reagents for indole reaction  Water bath  Loops  pH meter  culture bottles and flasks  culture tubes  measuring cylinders  graduated pipettes  petri dishes  Filtration assembly and filter paper  Laminar Air Flow Bench</p>	
13	<p>Dilution fluid  Agar medium  Base medium  Polymyxin B solution  Egg yolk emulsion  Sheep blood agar  Oven or autoclave for sterilization  Drying cabinet or incubator capable of operating between 37 °C <math>\pm</math> 1 °C and 55 °C <math>\pm</math> 1 °C.  Incubator, capable of operating at 30 °C <math>\pm</math> 1 °C. 6.4 Water baths, capable of being maintained at 44 °C to 47 °C.  pH-meter, accurate to within <math>\pm</math> 0,1 pH units at 25 °C.  Petri dishes  Graduated pipettes  Spreaders  Colony counter Filtration assembly and filter paper  Laminar Air Flow Bench</p>	<p>Aerobic (<i>Bacillus cereus</i>),  5.6, Table 1</p>
14	<p>Plate count medium  Saline peptone diluent  Incubator - capable of being maintained at 37<math>\pm</math>1°C.  Volumetric pipettes  Test tubes  Water bath (thermostatically controlled)</p>	<p>Anaerobic (sulfite  reducing clostridia), 5.6,  Table 1</p>
15	<p>Lithium chloride  acriflavine and nalidixic acid(half fraser broth)  Fraser broth  Oxford agar  PALCAM agar  Selective solid plating-out media  Tryptone soya yeast extract agar (TSYEA)  Tryptone soya yeast extract broth (TSYEB)  Sheep blood agar  Carbohydrate utilization broth (rhamnose and xylose)  Motility agar  Laminar Air Flow Bench  CAMP (Christie, Atkins, Munch Petersen) medium and test strains  Hydrogen peroxide solution  Phosphate-buffered saline (PBS)</p>	<p><i>Listeria monocytogenes</i>,  5.6, Table 1</p>

<p>Oven or autoclave for sterilization BOD Incubator, 5 -50°C, LC 0.1°C Water bath, capable of being maintained at 47 °C t 2 °C. Loops pH meter test tubes or flasks measuring cylinder Filtration assembly and filter paper</p>	
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**Note: The above is an indicative list and may not be treated as exhaustive.**

## ANNEX B

### TO PRODUCT MANUAL FOR SKIMMED MILK POWDER PART 1 STANDARD GRADE ACCORDING TO IS 13334 (PART 1) : 2014

#### SCHEME OF INSPECTION AND TESTING

**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 equipment.

**2. TEST RECORDS** – The manufacturer shall maintain test records in various formats, Form 1 for the tests carried out to establish conformity.

**3. LABELLING, PACKING AND MARKING**— Labelling and marking shall be as given below:

**3.1 STANDARD MARK:** The Standard Mark, as specified in the Schedule of licence, shall be stencilled with indelible ink or printed on labels applied to the container of skimmed milk powder provided always that the material in each container to which this mark is applied conforms to every requirement of the specification.

**3.2 MARKING** – The package shall bear legibly and indelibly the information as given under clause 6.2 of IS 13334 (Part 1). In addition to above, following marking shall also be marked:

- a) Name of original manufacturer of SMP with BIS licence number in case of repacking unit.
- b) Any other marking required under provisions of Legal Metrology Act, 2009 and Legal Metrology (Packaged Commodities) Rules, 2011 framed thereunder.
- c) In case of flexible pack, the following information shall be marked on the label: ‘Once opened, the entire product content should immediately be placed in a clean air-tight container’.
- d) BIS Licence No. CM/L.....
- e) BIS website details i.e –“For details of BIS certification please visit [www.bis.gov.in](http://www.bis.gov.in)”

**3.3 PACKING:** The material shall be packed as per cl. 6.1 of IS 13334 (Part 1).

**3.3.1** For Repacking units, the packing material used in repacking shall be of desired quality so as to avoid any change in the original properties and preclude contamination of the contents. Each package/container of the repacking shall be visually examined for soundness of packing and correctness of labels.

#### **4. CONTROL UNIT–**

**4.1** For manufacturing units of Skimmed Milk Powder: For the purpose of this Scheme, the entire quantity of milk powder manufactured continuously at a time in a period of 24 hours or a part thereof shall constitute a control unit.

**4.1.1 Raw Milk:** The raw milk received in factory shall be tested for fat, SNF, COB, Neutralizers, Additives, etc, and appropriate records maintained. Milk intended for production for skimmed milk powder shall be tested for freedom from Neutralizers, Preservatives, Adulterants and necessary records maintained.

4.2 For repacking units of Skimmed Milk Powder: For the purpose of this Scheme, each control unit of BIS certified Skimmed Milk Powder, Standard Grade accompanied by the manufacturer Test Certificate and repacked continuously up to a period of 24 hrs, shall constitute a control unit.

4.2.1 Test certificates of each control unit of the product shall be received from the manufacture holding valid BIS licence for Skimmed Milk Powder, Standard Grade according to IS 13334 (Part 1) in accordance with the relevant Indian Standard.

4.2.2 The re-packer shall maintain appropriate controls and checks to ensure that there is no chance of mixing of two different materials or two different batches of the same material.

4.3. On the basis of test and analysis results decision regarding the conformity or otherwise of a control unit of skimmed milk powder to the requirements of the specification shall be made as follows:

4.3.1 A sample shall be taken at the packing/repacking stage after every half an hour which shall be examined visually for appearance, colour, absence of lump and extraneous matter; examined by organoleptic methods for flavour and taste, absence of added colour & added flavour. If the sample does not conform to the specification in any one or more of these requirements, the material manufactured during the half an hour prior to the drawl of sample shall either be rejected or reprocessed and the defect(s) rectified. Such reprocessed material when tested again shall conform to all the requirements of the specification.

In case of repacking units, if the sample does not conform to the specification in any one or more of these requirements, the material shall be rejected.

4.3.2 Two samples shall be drawn from every control unit – one during the first half of the packing period and other during the second half of the packing period. These samples shall be individually tested for Moisture, Milk Protein in Milk Solids not fat, Insolubility index, Milk fat, Titratable acidity, Scorched particles, Bacterial count, Coliform count & Escherichia coli. If any one or both the samples fail to conform to anyone or more of these requirement(s) as given in the specification, the entire material in the control unit shall not be marked. In case of manufacturers, the material may, however, be reprocessed and the defect(s) rectified. Such reprocessed material when tested again shall conform to all the requirements of the specification.

4.3.3 Two samples from every seventh control unit (starting from a control unit chosen at random) shall be tested for total ash. If any one or both the samples fail to satisfy the requirement, the corresponding control unit shall not be marked. The material in the control unit may, however, be reprocessed and the defect rectified. Such reprocessed material when tested again shall conform to all the requirements of the specification. Two samples from every subsequent control unit shall be tested for the characteristic where failure has occurred till seven consecutive control units are found meeting the specification requirement, whereupon the original frequency of testing may be resumed.

4.3.4 Two samples once in a week shall be tested for total ash. If the sample fails to satisfy the requirement, the corresponding control unit shall not be marked. Two samples from every subsequent control unit shall be tested for the characteristic where failure has occurred till seven consecutive control units are found meeting the specification requirement, whereupon the original frequency of testing may be resumed.



4.3.5 A sample shall be drawn every month for the testing of Coagulase positive Staphylococcus aureus, Salmonella, Spore Count a) Aerobic (Bacillus cereus) b) Anaerobic (Sulfite reducing clostridia) and Listeria monocytogenes. In case of failure of the sample in any one or more of these characteristics the corresponding control unit shall not be marked and two samples from every subsequent control unit shall be tested for the characteristic(s) where failure has occurred, till five consecutive control units are found meeting the specification requirement(s) whereupon the original frequency of testing may be resumed.

4.3.6 Skimmed Milk Powder shall be the material prepared by spray/Roller drying of fresh skimmed milk of cow or buffalo or a combination thereof.

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

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

4.3.10 Undertaking w.r.t clause 5.7 of ISS to be submitted by the manufacturer/repacking unit stating that it shall be the responsibility of the manufacturer/repacking unit to comply with the relevant requirements as per Food Safety and Standards (Contaminants, toxins and residue) Regulations, 2011 and maintain records of the conformance.

**6. LEVELS OF CONTROL** - The tests as indicated in column 1 of Table 1 and the levels of control submitted by the manufacturer in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

**7. HYGIENIC CONDITIONS** – The material shall be manufactured packed, stored and distributed under hygienic conditions (see IS 2491). All the processing equipment should be properly cleaned and care should be taken to prevent infestation.

7.1 Repacking Units: The process of opening of bulk packing of the product and retail packing as per 6.1 of IS 13334(Part 1) shall be done under hygienic conditions as per IS 2491. There should not be any ingress of foreign matter while opening/transfer of material.

**8. 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 R: required (or) S: Sub-contracting permitted	Levels of Control		
Clause	Requirement	Test Methods			No. of Sample	Frequency	Remarks
		Clause	Reference				
4	Description	4	IS 13334 (Part 1)	R	One	Every half an hour	See Clause 4.3.1 of SIT
5.2	Absence of extraneous matter, added colour & added flavour	5.2	-do-	R	One	-do-	-do-
5.4	Flavour and Taste	5.4	-do-	R	One	-do-	-do-
5.6& Table 1	Moisture	5.6	IS 11623 or IS 16072	R	Two	Each Control Unit	See Clause 4.3.2 of SIT
-do-	Milk Protein in milk solids not fat	-do-	IS 7219	R	Two	-do-	-do-
-do-	Milk Fat	-do-	IS 11721 or Annex B	R	Two	-do-	-do-
-do-	Insolubility Index	-do-	IS 12759	R	Two	-do-	-do-
-do-	Total Ash (On dry basis)	-do-	Annex B of IS 14433	R	i) Two  ii) Two	i) Every 7 <sup>th</sup> control unit  ii) Every Week	i. Applicable for SMP manufacturers. Also See Clause 4.3.3 of SIT  ii. Applicable for repacking units. Also See Clause 4.3.4 of SIT

-do-	Titrateable Acidity	-do-	IS 11766	R	Two	Each Control Unit	See Clause 4.3.2 of SIT
-do-	Scorched Particles	-do-	IS 13500	R	Two	-do-	-do-
-do-	Bacterial Count	-do-	IS 5402	R	Two	-do-	-do-
-do-	Coliform Count	-do-	IS 5401 (Part 1)	R	Two	-do-	-do-
-do-	<i>Escherichia coli</i>	-do-	IS 5887 (Part 1)	R	Two	-do-	-do-
-do-	Coagulase positive <i>Staphylococcus aureus</i>	-do-	IS 5887 (Part 2)	S	One	Once in a month	See Clause 4.3.5 of SIT
-do-	Salmonella	-do-	IS 5887 (Part 3)	S	One	-do-	-do-
-do-	Spore Count a) Aerobic ( <i>Bacillus cereus</i> )	-do-	IS 5887 (Part 6)	S	One	-do-	-do-
	b) Anaerobic (Sulfite reducing Clostridia)	-do-	ISO 15213	S	One	-do-	-do-
-do-	<i>Listeria monocystogenes</i>	-do-	IS 14988 (Part 1)	S	One	-do-	-do-

**Notes:**

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 empanelled by the Bureau.
2. The control unit and levels of control as decided by the Bureau are obligatory to which the licensee shall comply with.
3. The requirement for pathogens (like Salmonella, etc.) shall be tested in a laboratory situated away from the production area following the established procedures of disposal of bio-hazards.
4. In case the production is started after shutdown of the plant for more than a week's time, for any reason, it shall be ensured before packing and dispatching the material with the Standard Mark, that the material is tested for all the requirements of the specification.



**ANNEX – C**

**POSSIBLE TESTS IN A DAY**

- i. Description
- ii. Absence of extraneous matter, added colour and added flavour
- iii. Flavour and taste
- iv. Moisture
- v. Milk protein in milk solids not fat
- vi. Milk fat
- vii. Insolubility Index
- viii. Total ash
- ix. Titratable acidity
- x. Scorched particles