



उत्पाद मानुयल
डेयरी व्हाइटनर
IS 12299 : 2021 के अनुसार

PRODUCT MANUAL
FOR DAIRY WHITENER
ACCORDING TO IS 12299 : 2021

भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम की स्कीम-I के तहत यह उत्पाद मानुयल प्रमाणीकरण के प्रचलन में रीति और पारदर्शिता के सुसंगत सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों एवं लाइसेंस धारियों द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस लाइसेंस/प्रमाण पत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज़ का उपयोग किया जा सकता है।

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.	उत्पाद Product	:	IS 12299 : 2021
	शीर्षक Title	:	Dairy Whitener - Specification
	संशोधन संख्या No. of amendments	:	NIL
2.	नमूनाकरण दिशा निर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	NA
b)	समूहिकरण दिशा निर्देश Grouping Guidelines	:	Not Applicable
c)	नमूने का परिमाण Sample Size	:	2 × 500 gm in original packing.
3.	परीक्षण उपकरणों की सूची	:	Please refer ANNEX – A

	List of Test Equipment		
4.	निरीक्षण व परीक्षण स्कीम Scheme of Inspection and Testing	:	Please refer ANNEX – <u>B</u>
5.	एक दिन में संभावित परीक्षण Possible tests in a day		
	i. Description ii. Flavour and Taste iii. Moisture iv. Milk Solids (Non-fat) v. Insolubility Index vi. Total Ash vii. Milk Fat viii. Total added sugar		
6.	लाइसेन्स का कार्यक्षेत्र/Scope of the Licence:		
	“Licence is granted to use Standard Mark as per IS 12299 : 2021 with the following scope:		
	Name of the product		Dairy Whitener
	Types		a) Skimmed milk dairy whitener; b) Low fat dairy whitener; c) Medium fat dairy whitener; and d) High fat dairy whitener.

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ANNEX - A
LIST OF TEST EQUIPMENT

Major test equipment required to test as per the Indian Standard

Sl. No.	Test Equipment	Tests used in with Clause Reference
1	Reference method Analytical balance (0-200 mg, LC-0.01 mg), Drying oven, metal block, copper tubes, constant pressure regulator, polycarbonate tube (filled with silica gel with hydrometric indicator), Desiccator, Columns, synthetic stoppers, Container (suitable for holding the columns), Container (suitable for holding the synthetic stoppers), Polyvinyl chloride (PVC) rod, Tweezers, Soap-film meter, Dry compressed air, Glass container with lid. Routine method Flat-Bottomed moisture dishes with cover (of stainless steel, glass, nickel, aluminium or porcelain), drying oven, Desiccator, bottles (with tight fitting stoppers)	Moisture Cl 6.4, Table 1, Sl. No (i) (IS 11623 for reference purpose and IS 16072 for routine purpose)
2	Ammonia solution, Ethanol, Congo red solution, Diethyl ether, Light petroleum with any boiling range between 30 °C and 60 °C, pentane with a boiling point of 36 °C, Analytical balance, capable of weighing to the nearest 1 mg, with a readability of 0,1 mg, Centrifuge, capable of holding the fat-extraction flasks or tubes and capable of spinning at a rotational frequency of 500 min⁻¹ to 600 min⁻¹ to produce a radial acceleration of 80g to 90g at the outer end of the flasks or tubes, Distillation or evaporation apparatus, Drying oven, electrically heated, with ventilation port(s) fully open, capable of being maintained at a temperature of 102 °C ± 2 °C throughout its working space, Water bath, capable of being maintained at a temperature of 65 °C ± 5 °C, Mojonnier-type fat-extraction flasks, Rack, for holding the fat-extraction flasks, Wash bottle, suitable for use with the mixed solvent, Fat-collecting vessels, such as boiling flasks (flat-bottomed), of capacities 125 ml to 250 ml, conical flasks, of capacity 250 ml, or metal dishes, Boiling aids, fat-free, of non-porous porcelain or silicon carbide, Measuring cylinders, of capacities 5 ml and 25 ml, Pipettes, graduated, of capacity 10 ml, Tongs, Volumetric flask, one-mark, of capacity 100 ml.	Milk Fat Cl 6.4, Table 1, Sl. No (ii) (IS 11721)
3	Potassium sulfate (K₂SO₄) (nitrogen free), copper(II) sulfate pentahydrate, Sulfuric acid, Sodium hydroxide (NaOH) solution (nitrogen-free, containing 50 g of sodium hydroxide per 100 g), methyl red indicator, ethanol,	Milk protein (in solids non-fat) Cl 6.4 Table 1 Sl No (iii)

	bromocresol green, boric acid, Hydrochloric acid standard volumetric solution, $c(\text{HCl}) = (0,1 \pm 0,0005) \text{ mol/l}$, Ammonium sulfate $[(\text{NH}_4)_2\text{SO}_4]$, Tryptophan $(\text{C}_{11}\text{H}_{12}\text{N}_2\text{O}_2)$ or lysine hydrochloride $(\text{C}_6\text{H}_{15}\text{ClN}_2\text{O}_2)$, Sucrose Analytical balance, capable of weighing to the nearest 0,1 mg, thermometer, borosilicate glass bottle, Water bath, capable of maintaining a water temperature between 38 °C and 40 °C , Burette or automatic pipette, Graduated measuring cylinders, of capacity 25 ml, 50 ml, 100 ml and 500 ml, Conical flasks, of capacity 500 ml, Automatic burette, Grinding device, Digestion flasks (Kjeldahl), Boiling aids, Digestion apparatus, to hold the digestion flasks (6.8) in an inclined position (approximately 45 °), with electric heaters or gas burners, Distillation apparatus (traditional method), Digestion block (block digesting method), Digestion tubes (block digesting method), Exhaust manifold (block digesting method), Centrifugal scrubber apparatus or filter pump or aspirator (block digesting method), Volumetric flasks, one mark of 50 ml, 250 ml and 1 000 ml capacities, Distillation unit (block digesting method), Automatic titrator provided with a pH-meter, Spatula or suitable transfer device, Filter paper, Illuminated magnetic stirrer plate.	(IS 11917)
4	Silicon antifoaming agent Thermometers for measuring 24°C and 50°C, error +0.2°C 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, measuring cylinder, stop watch, pump.	Insolubility Index Cl 6.4, Table 1, Sl No. (iv) (IS 12759)
5	Flat-bottom dish (of stainless steel, porcelain, silica or platinum), muffle furnace, desiccator, drying oven, Analytical balance (0-200 mg, LC-0.01 mg), Heating mantle.	Total ash (on dry basis) Cl 6.4, Table 1, Sl No. (v) (Annex B of IS 14433)
6	Flat-bottom dish (of stainless steel, porcelain, silica or platinum), muffle furnace, desiccator, drying oven, Analytical balance(0-200 mg, LC-0.01 mg), dilute Hydrochloric acid, watch glass, water bath, Whatman filter paper No. 42	Acid insoluble ash Cl 6.4, Table 1, Sl No. (vi) (Annex C of IS 14433)
7	Reference method (Polarimetric method) Polarimeter, mercuric nitrate solution, 0.5 N sodium hydroxide solution, Hydrochloric acid, volumetric flasks of varying capacities, filter paper, pipette, litmus paper	Total added sugar (as sucrose) Cl 6.4, Table 1, Sl No. (vii) (Annex C of IS 4079)

	Routine method [Volumetric (Lane-Eynon) method] 0.1 N sodium hydroxide, sucrose, watch glass, concentrated Hydrochloric acid, litmus paper, methylene blue indicator solution, copper sulphate, concentrated sulphuric acid, potassium sodium tartarate (Rochelle salt), zinc acetate solution, potassium ferrocyanide solution, concentrated ammonia solution, acetic acid solution	
8	Burette, Porcelain Dishes, glass stirring rods, pipettes, Analytical balance, laboratory glassware and reagents Sodium hydroxide (Sticks or pellets), phenolphthalein, rectified spirit, sodium hydroxide solution, distilled water	Titratable acidity (as lactic acid) Cl 6.4, Table 1, Sl No. (vii) (Annex B of IS 1165 or ISO 6091 or ISO 6092)
9	Scorched particles standard photprints for dry milks, balance (torsion or similar type approx. 500 g capacity and 0.1 g or better sensitivity), mixer (Waring blender or similar type), scorched particles filtering discs, scorched particles discs test cards, scorched particle tester. Defoaming agents (diglycol laurate S or Antifoam B emulsion, A 5757 Sigma), Distilled water (sediment free)	Scorched Particle Cl 6.4, Table 1 Sl No (ix) (IS 13500)
10.	Bacteriological Incubator capable of operating at $30^{\circ}\text{C} \pm 1^{\circ}\text{C}$, Petri dishes, Thermostatic Water Bath- capable of operating at 44°C to 47°C , pH meter-having an accuracy of calibration of $\pm 0,1$ pH unit at 25°C , Autoclave capable of maintaining 121°C , Hot air oven, Plate Count Agar, colony counter, Refrigerator, Test tubes, flasks or bottles, of appropriate capacity and not greater than 500 ml, Plate Count Agar.	Aerobic Plate Count Cl 6.4, Table 2, Sl. No. (i) (IS 5402 (Part 1))
11.	Incubator, capable of operating at $30^{\circ}\text{C} \pm 1^{\circ}\text{C}$ or $37^{\circ}\text{C} \pm 1^{\circ}\text{C}$, Petri dishes, Total-delivery pipettes, Water bath- capable of operating at 44°C to 47°C , Colony-counting equipment, Test tubes, Durham Tubes, Bottles or Flasks for boiling and storage of culture media, pH meter- having an accuracy of calibration of $\pm 0,1$ pH unit at 25°C , Apparatus for dry sterilization (oven) or wet sterilization (autoclave), Loop, VRBL Agar, Brilliant green lactose bile broth.	Coliform Count Cl 6.4, Table 2, Sl. No. (ii) {IS 5401 (Part 1)}
12	Peptone, meat extract, sodium chloride, water(for nutrient broth), Agar (for preparation of nutrient agar), Sterile blood of horse, sheep, rabbit or human (For blood agar), fresh beef heart, alkaline water, sodium hydroxide solution, conc. Hydrochloric acid, sterile paraffin (optional), yeast extract, sodium pyruvate, glycine, lithium chloride, Bacto-E γ tellurite enrichment, tryptose, dextrose, dipotassium phosphate, monopotassium phosphate, sodium azide, ethyl violet, taurocholate or bile salts, ethanol (50%). pH meter, filtration apparatus, filter paper, autoclave	Staphylococcus aureus (coagulase positive) Cl 6.4, Table 2, Sl. No. (iii) (IS 5887 (Part 2))

	(Capable of 12 °C), hot plate, test tubes/30 ml screw capped bottles, sterilized flasks, petridishes, incubator (50°C)	
13	Distilled or deionized water, , yeast extract, dextrose, chloramphenicol, agar Apparatus for dry sterilization (oven) or wet sterilization (autoclave), incubator, water bath, temperature compensated pH meter, culture bottles or flasks, graduated pipettes, petri dishes	Yeast and Mould count Cl 6.4, Table 2, Sl No. (iv) (IS 5403)
14	Buffered peptone water, Rappaport- Vassiliadis magnesium chloride/malachite green medium, selenite/cystine medium, phenol red/brilliant green agar, nutrient agar, triple sugar, iron agar, urea agar, L-lysine decarboxylation medium, reagent for detection of β-galactosidase (or prepared paper discs), reagents for Voges-Proskauer (VP Reaction), VP medium, creatine solution (<i>N</i>-amidinosarcosine), 1-Naphthol, potassium hydroxide solution, reagents for indole reaction, tryptone-tryptophan medium, Kovacs reagent, semisolid nutrient agar, saline solution, Sera (See Annex B of IS 5887 (Part 3):1999/ISO 6579:1993 for detailed composition of culture media and reagents) Apparatus for dry sterilization (oven) or wet sterilization (autoclave),drying cabinet or oven, incubator, water baths Pt/Ir or Ni/Cr Loops, pH meter, culture bottles or flasks, culture tubes, measuring cylinders, graduated pipettes, petri dishes	Salmonella sp, Cl. 6.4, Table 2, Sl. No. (v) (IS 5887 (Part3))
15	Composition and performance testing of culture media and reagents and their preparation are described in Annex B of IS 14988 (Part 1):2020 Apparatus for dry sterilization (oven) or wet sterilization (autoclave), Drying cabinet or incubator, Incubators, Water bath, Sterile loops approximately 3 mm in diameter or 10 μl, and inoculating needle or wire, pH meter, Graduated pipettes or automatic pipettes, Petri dishes, Microscope, (preferably with phase-contrast, and with slides and cover slips), Refrigerator	Listeria monocytogenes Cl 6.4 , Table 2, Sl No. (vi) (IS 14988 (Part 1))

16	Dilution fluid, Base medium: Beef extract, Enzymatic digest of casein, D-Mannitol, Sodium chloride, Phenol red, Agar, Water, Polymyxin B solution: Polymyxin B sulfate, Water, Egg yolk emulsion (fresh hens' eggs with their shells intact, liquid detergent, 95 % (by volume) ethanol) Sheep blood agar : Proteose peptone or equivalent peptone, Liver hydrolysate, Yeast extract, Sodium chloride, Agar, Water, Defibrinated sheep blood Drying cabinet or incubator, Incubator, Water baths, pH-meter, Petri dishes, Graduated pipettes, Spreaders (hockey-stick type), made of glass or plastic rod	Bacillus Cereus Cl 6.4 , Table 2, Sl No. (vii) (IS 5887 (Part 6))
17	Culture medium and diluents and apparatus and glassware as per ISO 15213:2003	Sulphite Reducing Clostridia, Cl. 6.4, Table 2, Sl No. (viii) (ISO 15213)
18.	Sterile blender jar or mortar, Bacteriological Incubator - capable of operating at $30^{\circ}\text{C} \pm 1^{\circ}\text{C}$, Nutrient broth, nutrient agar, MacConkey broth, MacConkey agar, Eosin Methylene Blue Lactose Agar, peptone, Tergitol-7 Agar, Gram's Stain, Nutrient agar, TSI medium, Methyl Red, Reagents for Voges-Proskauer reaction, Simmon's Citrate Agar, peptone water, Kovac's reagent, sodium chloride, Water Bath (44 to 47°C), pH Meter, Colony Counter, Laminar Air Flow, Analytical Balance, Refrigerator.	E. coli Cl. 6.4, Table 2, Sl No. (ix) {IS 5887 (Part 1)}

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

ANNEX - B

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 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 marked on the containers of Dairy Whitener provided always that the product in each container to which this mark is thus applied, conform to every requirements of the specification.

3.1 Marking – The material shall be marked as per the provisions of the Indian Standard. In addition, the following details shall be mentioned on each container legibly and indelibly:

- a) 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.”
- b) BIS Licence No.CM/L_____
- c) BIS website details i.e-“For details of BIS certification please visit www.bis.gov.in”.

3.2 Packing and Storage – The material shall be packed and stored as specified in IS 12299.

4. CONTROL UNIT – For the purpose of this Scheme, the entire quantity of dairy whitener manufactured continuously at a time in a period of 24 hours shall constitute a control unit.

5. LEVELS OF CONTROL - The tests as indicated in column 1 of Table 1 and the levels of control 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.

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

6. HYGIENIC CONDITIONS - The material shall be manufactured, packed, stored and distributed under hygienic conditions (See IS 2491). All the processing equipments should be properly cleaned and care should be taken to prevent infestation.

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 R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
4	Description	4	IS 12299	R	One	Every half an hour	See Note 3
6.1	Freedom from extraneous matter and added colours Flavour and Taste	6.1	IS 12299	R	One	-do-	-do-
6.2	Maximum limits of added calcium chloride, citric acid and sodium citrate, sodium salt of orthophosphoric acid and polyphosphoric acid (a linear phosphate), Butylated hydroxyanisole (BHA) and Lecithin	6.2	IS 12299	R	One	Each control unit	
6.4, Table 1	Requirements of dairy whitener						
i)	Moisture	-	IS 16072 (Routine purpose) & IS 11623 (Reference purpose)	R	One	Every half an hour	See Note 3
ii)	Milk Fat	-	IS 11721	R	Two	Each control unit	See Note 7
iii)	Milk protein (in solids, non-fat)	-	IS 11917	R	Two	-do-	See Note 7
iv)	Insolubility Index	-	IS 12759	R	Two	-do-	-do-
v)	Total Ash (on moisture, added sugar and fat free basis)	Annex B	IS 14433	R	One	4th Control Unit	See Note 6
vi)	Acid Insoluble ash	Annex C	IS 14433	R	One	4th Control Unit	-do-
vii)	Total added sugar	Annex C	IS 4079	R	Two	Each control unit	See Note 7
viii)	Titrateable acidity (as		Annex B of IS 1165 or ISO	R	Two	Each control unit	-do-

	lactic acid)		6091 or ISO 6092				
ix)	Scorched particle		IS 13500	R	Two	Each control unit	-do-
6.4, Table 2	Microbiological Requirements for dairy whitener						
i)	Aerobic Plate Count	-	IS 5402 (Part 1)	R	One	Each control unit	See Note 4
ii)	Coliform Count	-	IS 5401 (Part 1)	R	One	-do-	-do-
iii)	Staphylococcus aureus	-	IS 5887 (Part 2)	S	One	Once in a month	See Note 5
iv)	Yeast and Mould Count		IS 5403	R	One	Each control unit	See Note 4
v)	Salmonella sp	-	IS 5887 (Part 3)	S	One	Once in a month	See Note 5
vi)	Listeria monocytogenes		14988 (Part 1)	S	One	Once in a month	-do-
vii)	Bacillus cereus		IS 5887 (Part 6)	S	One	Once in a month	-do-
viii)	Sulphite reducing clostridia		ISO 15213	S	One	Once in a month	-do-
ix)	E Coli	-	IS 5887 (Part 1)	R	One	Each control unit	See Note 4

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 empanelled 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 by BO Head.

Note 3: Sample shall be taken at the packing stage after every half an hour which shall be examined visually for appearance, colour, scorched particles, absence of lumps and extraneous matter; added colours and examined by organoleptic methods for flavour and taste; and analyzed for moisture content. 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 drawal of sample shall either be rejected or reprocessed for its conformity to these requirements of the specification.

Note 4: One sample from every control unit shall be tested for the requirements of bacterial count, coliform count, E. coli, Yeast and Mould Count as laid down in the specification. If it fails, the entire quantity of the material in the control unit shall be considered unfit for the purpose of marking and the material shall be rejected.

Note 5: A sample shall be tested once a month for the absence of Staphylococcus aureus, Salmonella, Listeria monocytogenes, Bacillus cereus and Sulphite reducing clostridia . In case of failure of the sample in any once 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 control units are found to meet specified requirements whereupon the original frequency of testing may be resumed. The requirement for salmonella may be tested in an independent laboratory.

Note 6: One sample from every fourth control unit shall be tested for Total ash and acid insoluble ash. In case of failure of the sample in either of these requirements the control unit shall be considered unfit for the purpose of marking. The control unit may however be reprocessed and the defect(s) rectified. Such reprocessed material when tested again, shall conform to all these requirements before it is considered fit for marking. All subsequent control units shall be tested for these requirements till five consecutive control units tested conform to these requirements of the specification, whereupon the original frequency of testing may be resumed.

Note 7: 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 total solids, insolubility index, milk fat, total added sugar, Titratable acidity and Scorched particle. If any one or both the samples fail to conform to any one or more of these requirements (s) 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 reprocessed material when tested again shall conform to all the requirements of the specification.