उत्पाद मानुयल
शिशु दुग्ध वैकल्पिक - विशिष्टि
14433: 2022 के अनुसार

PRODUCT MANUAL FOR
INFANT MILK SUBSTITUTES ACCORDING TO IS 14433: 2022

भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम 2018 की स्कीम-I के तहत यह उत्पाद मानुयल प्रमाणीकरणके प्रचलन मे रीति और पारदर्शिता के सुसंगता सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों एवं लाइसेन्स धारियों द्वारा संदर्भ सामग्री के रूप मे उपयोग किया जाएगा। बीआईएस लाइसेन्स/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 14433: 2022
	शीर्षक **Title**	:	**शिशु दुग्ध के वैकल्पिक आहार** Infant Milk Substitutes
	संशोधन संख्या **No. of Amendments**	:	01
2.	**नमुनाकरण दिशा निर्देश** **Sampling Guidelines:**		
a)	**कच्चा माल** **Raw material**	:	a) Manufacturer to submit declaration/ undertaking in compliance to Clauses 5.3, 5.4 and/or 5.5, 5.6 of IS 14433:2022 b) In case the manufacturer opts for addition of any Optional Ingredients as per provisions of Cl. 5.7 of IS 14433:2022, test report/test certificates as per table 1 of IS 14433:2022 to be submitted. However, for addition of DHA/ARA, declaration/ undertaking in compliance to Cl. 5.7.1 of IS 14433:2022 to be submitted.

			c) In case the manufacturer opts for addition of any Food Additives for Type II-Infant Formula, it is required to submit declaration/ undertaking in compliance to Clause 5.8.2 and/or Clause 5.8.3 of IS 14433:2022
b)	**समूहिकरण दिशा निर्देश** **Grouping guidelines**	:	कृपया Annex-A देखें Please refer Annex A
c)	**नमूनेका परिमाण** Sample Size	:	2 x 500gm
3.	**परीक्षण उपकरणो की सूची** **List of Test Equipment**	:	कृपया Annex- B देखें Please see Annex – B
4.	**निरीक्षण व परीक्षण स्कीम** **Scheme of Inspection and Testing**	:	कृपया Annex-C देखें Please see Annex – C
5.	**एक दिन में संभावित परीक्षण** **Possible tests in a day :**		
	i) Description ii) Scorched Particles iii) Moisture iv) Total Protein and Milk Protein v) Total Fat and Milk Fat vi) Carbohydrates vii) Total Ash viii) Acid Insoluble Ash ix) Solubility Index x) Sodium xii) Potassium xiii) Chloride xiv) Calcium xv) Phosphonate xvi) Calcium Phosphonate ratio xvii) Magnesium		
6.	**लाइसेन्स का कार्यक्षेत्र / Scope of the Licence**:		
	IS 14433 : 2022 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेन्स निम्नलिखित कार्यक्षेत्रके लिए प्रदान किया जाता है "Licence is granted to use Standard Mark as per 14433: 2022 with the following scope:		
	उत्पाद का नाम **Name of the product**	**शिशु दुग्ध के वैकल्पिक आहार** Infant Milk Substitutes	
	Type	Type I - Infant milk food and/or Type II – Infant formula	

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New Delhi – 110002

ANNEX – A
TO THE PRODUCT MANUAL FOR INFANT MILK SUBSTITUTES ACCORDING TO IS 14433: 2022
GROUPING GUIDELINES

1. There are two types of the product (Infant Milk Substitutes) (clause 4 of IS 14433:2022):

i.	Type I - Infant milk food
ii.	Type II – Infant formula

2. The manufacturer shall declare the Type of Infant Milk Substitutes, which they intend to cover in their scope of licence. The sample of each Type to be drawn and shall be subjected to testing for considering grant of licence/inclusion of that type.

3. In case it is also intended to cover ECO-Mark, the sample(s) shall also be tested for the additional requirements for ECO-Mark.

4. It shall be ensured that the firm is having all the necessary manufacturing and testing facilities for the types to be included in the licence.

5. During the operation of licence, BO shall ensure that all the types of Infant Milk Substitutes covered in the license are drawn for independent testing on rotation over a period of time.

ANNEX – B
TO THE PRODUCT MANUAL FOR INFANT MILK SUBSTITUTES ACCORDING TO IS 14433: 2022
List of test equipment

Sr. No.	Tests used in with Clause Reference	Test equipment
1.	Moisture Cl. 5.7 and 5.10, Table 2, Sl. No. (i)	Hot Air Oven, Electronic Balance, Desiccator
2.	a) Total Protein b) Milk protein Cl. 5.7 and 5.10, Table 2, Sl. No. (ii)	Potassium sulfate (K2SO4) nitrogen free, Copper (II) sulfate pentahydrate solution, Sulfuric acid (H2SO4), Sodium hydroxide (NaOH) solution, methyl red, ethanol, bromocresol green, Boric acid solution, Hydrochloric acid, Ammonium sulfate, Tryptophan or lysine hydrochloride, Water Bath, Analytical balance, Burette or automatic pipette, Graduated measuring cylinders, Digestion flasks (Kjeldahl), of 500 ml or 800 ml capacities, Boiling aids, e.g. hard pieces of porcelain or high-purity amphoteric alundum (i.e. carbarundum) granules, Digestion apparatus, Distillation apparatus, Digestion block and Digestion tubes, Exhaust manifold, Centrifugal scrubber apparatus or filter pump or aspirator, Distillation unit, Automatic titrator provided with a pHmeter, Filter paper, Illuminated magnetic stirrer plate.
3.	Fat a) Total fat b) Milk fat Cl. 5.7 and 5.10, Table 2, Sl. No. (iii)	**Gravimetric Method (as per IS 11721)** **Reagents** Ammonia solution, Ethanol (C_2H_5OH) or ethanol denatured by methanol, Congo red solution, Diethyl ether ($C_2H_5OC_2H_5$), Light petroleum **Apparatus** Analytical balance, Centrifuge, Distillation or evaporation apparatus, Drying oven, Water bath, Mojonnier-type fat-extraction flasks, Rack, Wash bottle, Fat-collecting vessels, Boiling aids, Measuring cylinders, Pipettes, Tongs, Volumetric flask
4.	a) Linoleic acid, b) α-Linolenic acid, Cl. 5.7 and 5.10, Table 2, Sl. No. (iv)	Spectrophotometer, Glass Boiling Tubes, Oil-bath (180 ± 0.5 °C), Small Tubes, about 20 × 10 mm, closed at one end (iodine value tubes), Thermometer, reading up to 200^0 C, Graduated Flasks(50 ml)
5.	Total ash Cl. 5.7 and 5.10, Table 2, Sl. No. (vi)	Flat Bottom Dish Of stainless steel porcelain silica or platinum, Muffle Furnace, Desiccator, Weighing Balance
6.	Acid insoluble ash Cl. 5.7 and 5.10, Table 2, Sl. No. (vii)	Flat-Bottom Dish of stain less steel porcelain Silica or platinum, Muffle Furnace, Desiccator, Measuring Cylinder, Heating Mantle, Watch-glass, Water bath, Hot Air oven, Weighing Balance. Dil. HCl
7.	Solubility Index Cl. 5.7 and 5.10, Table 2, Sl. No. (viii)	Thermometer, Water bath, Electronic Balance, Centrifuge, Electric Mixer, Mixing Jar, Interval Timer
8.	Vitamin A Cl. 5.7 and 5.10, Table 2, Sl. No. (ix)	Methyl-t-butyl ether, n-Hexane, Ethanol Methanol, Iso-octane (2,2,4-trimethylpentane), Papain (from Carica papaya), Hydroquinone, Glacial acetic acid, Anhydrous sodium acetate, Dilute hydrochloric acid solution,

		HPLC mobile phase A, HPLC mobile phase B, Retinyl palmitate reference standard, Retinyl acetate reference standard, α-tocopheryl acetate reference standard, α-tocopherol reference standard, Retinyl palmitate stock standard solution, Retinyl acetate stock standard solution, α-tocopheryl acetate stock standard solution, α-tocopherol stock standard solution, HPLC system, HPLC column, Water bath, Centrifuge, UV-VIS spectrometer, Analytical balance, Amber HPLC vials, Disposable centrifuge tubes, Laboratory mechanical test tube shaker, Sonicator bath, One-mark volumetric flasks, Vacuum filtration apparatus, Laboratory glass bottles
9.	Vitamin D Cl. 5.7 and 5.10, Table 2, Sl. No. (x)	Vitamin D_2(ergocalciferol), Vitamin D_3 (cholecalciferol), *d6*-Vitamin D_2, *d6*-Vitamin D_3, PTAD (4-phenyl-1,2,4-triazoline-3,5-dione), Formic acid, Potassium hydroxide, Pyrogallol, Ethanol, Methanol, Isooctane, Acetone, Acetonitrile, Ultra high performance liquid chromatography (UHPLC) system, consisting of dual pump system, a sample injector unit, a degasser unit, and a column oven, Triple quadrupole mass spectrometer, Solid core silica column, Spectrophotometer, Centrifuge tubes(polypropylene), Boiling tubes(glass), Water bath (range= 20 °C to 70 °C), Disposable syringes, Syringe filters, Centrifuges, Pasteur pipette(glass), Horizontal shaker, Micro centrifuge tubes, Filter membranes(0.45 µm), Cryogenic vials
10.	Vitamin E, α-tocopherol, Cl. 5.7 and 5.10, Table 2, Sl. No. (xi)	Methyl-t-butyl ether, n-Hexane, Ethanol Methanol, Iso-octane (2,2,4-trimethylpentane), Papain (from Carica papaya), Hydroquinone, Glacial acetic acid, Anhydrous sodium acetate, Dilute hydrochloric acid solution, HPLC mobile phase A, HPLC mobile phase B, Retinyl palmitate reference standard, Retinyl acetate reference standard, α-tocopheryl acetate reference standard, α-tocopherol reference standard, Retinyl palmitate stock standard solution, Retinyl acetate stock standard solution, α-tocopheryl acetate stock standard solution, α-tocopherol stock standard solution, HPLC system, HPLC column, Water bath, Centrifuge, UV-VIS spectrometer, Analytical balance, Amber HPLC vials, Disposable centrifuge tubes, Laboratory mechanical test tube shaker, Sonicator bath, One-mark volumetric flasks, Vacuum filtration apparatus, Laboratory glass bottles
11.	Vitamin K, Cl. 5.7 and 5.10, Table 2, Sl. No. (xii)	Acetic acid(glacial), Helium or nitrogen, Hexane(HPLC grade), Iso-octane (2,2,4-trimethylpentane)(HPLC grade), Isopropanol (isopropyl alcohol)(HPLC grade), Methanol(HPLC grade),Phytonadione/ phylloquinone (vitamin K1), primary reference standard, distilled water, Ethanol, Sodium acetate(anhydrous), Zinc, Zinc chloride, HPLC system, Analytical balance(LC= 0.000 01 g),Beakers, Centrifuge, Centrifuge tubes and caps, Gas regulator, compatible with helium or nitrogen, Gas sparge, tubing and filtering assembly, Magnetic stirrer and stir bar, centrifuge tubes, Pipet, Spectrophotometer, Volumetric flasks, Volumetric pipets, Vortex mixers.
12.	Vitamin C, Cl. 5.7 and 5.10, Table 2, Sl. No. (xiii)	**2,6 -Dichlorophenol Indophenol Method as per IS 5838** Trichloracetic Acid, Metaphosphoric Acid, Standard Ascorbic Acid Solution, Standard Indophenol Solution, Analytical Balance, Glass

		Stoppered Graduated Flask, Dessicator, Sodium Bicarbonate, Fluted Filter Paper, Amber Glass Stoppered Bottle, Refrigerator, Erlenmeyer Flasks, Titration Assembly, Mortar, Acid Washed Sand **2,4-Dinitrophenylhydrazine Method as per IS 5838** Photoelectric Colorimeter, Standard Ascorbic Acid Solution, Sulphuric Acid Solution, 2,4 Dinitrophenylhydrazine, Thiourea, Trichloroacetic Acid, Acid Washed Animal Charcoal, Sulphuric Acid, Mortar, Acid Washed Sand, Homogenizing Tube and Rod, Whatman No.42 Filter Paper, General Glasswares, Incubator, Titration Assembly **Determination of Vitamin C by (Ultra) High Performance Liquid Chromatography with Ultraviolet Detection ((U) HPLC-UV) as per IS 17176** Acetonitrile, Ascorbic acid , Decylamine, Phosphoric acid, Ultra-pure water, Sodium acetate trihydrate, Trichloroacetic acid (TCA), Tris [2-carboxyethyl]phosphine (TCEP), Isoascorbic acid, Orotic acid, Balances, Volumetric flasks, Beaker, pH meter, Paper filter, Membrane filters, UHPLC column, HPLC column, LC system, HPLC or UHPLC system
13.	Thiamine, Cl. 5.7 and 5.10, Table 2, Sl.No. (xiv)	Niacinamide (nicotinamide), Niacin (nicotinic acid), Pyridoxine hydrochloride, Riboflavin, Thiamine hydrochloride, Pyridoxamine dihydrochloride, Pyridoxal hydrochloride, 2 H4 -Niacinamide, 2 H4 - Nicotinic acid, 13 C 4 -Pyridoxine: pyridoxine:HCl (4,5-bis(hydroxymethyl)- 13 C 4), 2 H3 -Pyridoxal, 2 H3 -Pyridoxamine, 13 C 4 -Thiamine chloride, 13 C 4 ,15 N 2-Riboflavin, Acid phosphatase, Papain from Carica papaya, α–amylase from aspergillus oryzae, Hydrochloric acid concentrated, Ammonium formate, Glacial acetic acid, Formic acid, Laboratory water, Methanol, Ethylenediaminetetracetic acid, disodium salt dihydrate (EDTA), Potassium phosphate dibasic, meta-Phosphoric acid, Buffer solutions for pH meter calibration, Phosphoric acid, Potassium hydroxide, Waters Acquity BEH C18 column2) or equivalent, UHPLC system, Waters Acquity Classic2), or equivalent, Tandem quadrupole mass spectrometer with ESI probe, Waters Xevo TQ-S2), or equivalent, Analytical balances, Water purifier, Water bath shaker, Bottle-top dispenser, pH meter, Vortex mixer, Multi-position magnetic stir plate, Room light shields, Graduated cylinders, Beakers, Volumetric flasks, Mobile phase bottles, Disposable plastic Pasteur pipettes, Amber bottles, Weighing vessels, Positive displacement pipettes, Positive displacement pipette tips, Plastic syringe, Syringe filters, Plastic centrifuge tubes, Autosampler vials, PTFE coated magnetic stir bars.
14.	Riboflavin, Cl. 5.7 and 5.10, Table 2, Sl.No. (xv)	Niacinamide (nicotinamide), Niacin (nicotinic acid), Pyridoxine hydrochloride, Riboflavin, Thiamine hydrochloride, Pyridoxamine dihydrochloride, Pyridoxal hydrochloride, 2 H4 -Niacinamide, 2 H4 - Nicotinic acid, 13 C 4 -Pyridoxine: pyridoxine:HCl (4,5-bis(hydroxymethyl)- 13 C 4), 2 H3 -Pyridoxal, 2 H3 -Pyridoxamine, 13 C 4 -Thiamine chloride, 13 C 4 ,15 N 2-Riboflavin, Acid phosphatase, Papain from Carica papaya, α–amylase from aspergillus oryzae, Hydrochloric acid concentrated, Ammonium formate, Glacial acetic acid,

		Formic acid, Laboratory water, Methanol, Ethylenediaminetetracetic acid, disodium salt dihydrate (EDTA), Potassium phosphate dibasic, meta-Phosphoric acid, Buffer solutions for pH meter calibration, Phosphoric acid, Potassium hydroxide, Waters Acquity BEH C18 column2) or equivalent, UHPLC system, Waters Acquity Classic2), or equivalent, Tandem quadrupole mass spectrometer with ESI probe, Waters Xevo TQ-S2), or equivalent, Analytical balances, Water purifier, Water bath shaker, Bottle-top dispenser, pH meter, Vortex mixer, Multi-position magnetic stir plate, Room light shields, Graduated cylinders, Beakers, Volumetric flasks, Mobile phase bottles, Disposable plastic Pasteur pipettes, Amber bottles, Weighing vessels, Positive displacement pipettes, Positive displacement pipette tips, Plastic syringe, Syringe filters, Plastic centrifuge tubes, Autosampler vials, PTFE coated magnetic stir bars.
15.	Niacin equivalent, Cl. 5.7 and 5.10, Table 2, Sl.No. (xvi)	Niacinamide (nicotinamide), Niacin (nicotinic acid), Pyridoxine hydrochloride, Riboflavin, Thiamine hydrochloride, Pyridoxamine dihydrochloride, Pyridoxal hydrochloride, 2 H4 -Niacinamide, 2 H4 - Nicotinic acid, 13 C 4 -Pyridoxine: pyridoxine:HCl (4,5-bis(hydroxymethyl)- 13 C 4), 2 H3 -Pyridoxal, 2 H3 -Pyridoxamine, 13 C 4 -Thiamine chloride, 13 C 4 ,15 N 2-Riboflavin, Acid phosphatase, Papain from Carica papaya, α–amylase from aspergillus oryzae, Hydrochloric acid concentrated, Ammonium formate, Glacial acetic acid, Formic acid, Laboratory water, Methanol, Ethylenediaminetetracetic acid, disodium salt dihydrate (EDTA), Potassium phosphate dibasic, meta-Phosphoric acid, Buffer solutions for pH meter calibration, Phosphoric acid, Potassium hydroxide, Waters Acquity BEH C18 column2) or equivalent, UHPLC system, Waters Acquity Classic2), or equivalent, Tandem quadrupole mass spectrometer with ESI probe, Waters Xevo TQ-S2), or equivalent, Analytical balances, Water purifier, Water bath shaker, Bottle-top dispenser, pH meter, Vortex mixer, Multi-position magnetic stir plate, Room light shields, Graduated cylinders, Beakers, Volumetric flasks, Mobile phase bottles, Disposable plastic Pasteur pipettes, Amber bottles, Weighing vessels, Positive displacement pipettes, Positive displacement pipette tips, Plastic syringe, Syringe filters, Plastic centrifuge tubes, Autosampler vials, PTFE coated magnetic stir bars.
16.	Vitamin B_6 (pyridoxine), Cl. 5.7 and 5.10, Table 2, Sl. No. (xvii)	Niacinamide (nicotinamide), Niacin (nicotinic acid), Pyridoxine hydrochloride, Riboflavin, Thiamine hydrochloride, Pyridoxamine dihydrochloride, Pyridoxal hydrochloride, 2 H4 -Niacinamide, 2 H4 - Nicotinic acid, 13 C 4 -Pyridoxine: pyridoxine:HCl (4,5-bis(hydroxymethyl)- 13 C 4), 2 H3 -Pyridoxal, 2 H3 -Pyridoxamine, 13 C 4 -Thiamine chloride, 13 C 4 ,15 N 2-Riboflavin, Acid phosphatase, Papain from Carica papaya, α–amylase from aspergillus oryzae, Hydrochloric acid concentrated, Ammonium formate, Glacial acetic acid, Formic acid, Laboratory water, Methanol, Ethylenediaminetetracetic acid, disodium salt dihydrate (EDTA), Potassium phosphate dibasic, meta-Phosphoric acid, Buffer solutions for pH meter calibration, Phosphoric acid, Potassium hydroxide, Waters Acquity BEH C18 column2) or equivalent, UHPLC system, Waters Acquity Classic2), or equivalent,

		Tandem quadrupole mass spectrometer with ESI probe, Waters Xevo TQ-S2), or equivalent, Analytical balances, Water purifier, Water bath shaker, Bottle-top dispenser, pH meter, Vortex mixer, Multi-position magnetic stir plate, Room light shields, Graduated cylinders, Beakers, Volumetric flasks, Mobile phase bottles, Disposable plastic Pasteur pipettes, Amber bottles, Weighing vessels, Positive displacement pipettes, Positive displacement pipette tips, Plastic syringe, Syringe filters, Plastic centrifuge tubes, Autosampler vials, PTFE coated magnetic stir bars.
17.	Dietary Folate equivalent, Cl. 5.7 and 5.10, Table 2, Sl. No. (xviii)	**UHPLC-MS/MS method as per AOAC 2013.13** UHPLC Column, liquid chromatograph, Detector, Amber glassware, Analytical balance, Homogeniser, pH meter, Water Bath, Whatman filer paper, Solid-phase extraction cartridges, Amber vials, L-ascorbic acid, Ammonium acetate, Disodium hydrogen phosphate powder, a-Amylase from porcine pancreas, α-Amylase from Bacillus subtilis, Protease from Streptomyces griseus, Ethanol, Methanol, Isopropanol, Acetonitrile, Formic acid, Acetic acid glacial, Sodium hydroxide solution, Hydrochloric acid, Ortho-phosphoric acid
18.	Pantothenic acid, Cl. 5.7 and 5.10, Table 2, Sl. No. (xix)	Calcium d-pantothenate, Calcium pantothenate- [13 C 6, 15 N 2], α-Amylase, Acetonitrile, Ammonium acetate, Acetic acid, Formic acid, 1 % Formic acid in water, Balances, pH-meter, Homogenizer, Stir plate with magnetic stirrers, Filters, UHPLC-MS/MS system
19.	Vitamin B_{12}, Cl. 5.7 and 5.10, Table 2, Sl. No. (xxvii)	**Determination by Reversed Phase High Performance Liquid Chromatography (RP-HPLC) as per IS 16640:2018** **Reagents** Glacial acetic acid, Acetonitrile(HPLC grade), Drierite (anhydrous calcium sulfate), Ethanol, Formic acid, Potassium cyanide, Riboflavin, Sodium acetate anhydrous or sodium acetate trihydrate, Taka-Diastase, Triethylamine(HPLC grade), Vitamin B12 (cyanocobalamin) primary reference standard **Apparatus** HPLC system, Oven(capable of maintaining temperatures of 95 °C ± 5 °C and 105 °C ± 5 °C), pH-meter, Analytical balance(LC= 0.00001 g), Beakers, glass, Bottle top dispenser, Cylinders, Desiccator, Filter paper, Whatman $2V^2$) or equivalent
20.	Biotin, Cl. 5.7 and 5.10, Table 2, Sl. No. (xxi)	Laboratory reagent grade water, Sodium dihydrogen phosphate dihydrate (CAS # 13472-35-0), Disodium hydrogen phosphate dihydrate, Sodium hydroxide, Methanol, HPLC grade, Acetonitrile, HPLC grade, Ortho-phosphoric acid, PBS, Biotin, Biocytin, Sodium hydroxide, Sodium phosphate buffer, Phosphoric acid, HPLC system, Column,Kinetex Phenyl-Hexyl Glass microfibre filters, Immunoaffinity column pack, SPE manifold, Autoclave, Centrifuge, analytical balance, Amber glass screw-cap bottle, Horizontal shaker, Volumetric flasks, Pipettors, Measuring cylinder, Reaction vial, Heating block, Ultrasonic bath, Centrifuge tubes, Vortex mixer, Syringe filter, Disposable syringes, HPLC vials, HPLC System
21.	Choline, Cl. 5.7 and 5.10, Table 2, Sl. No. (xxii)	Water, purified, MS grade or equivalent purity, Acetonitrile, Ammonium formate, Formic acid, Nitric acid, Isopropanol, Desiccant L-carnitine, inner salt, Choline bitartrate, L-carnitine-d3 HCL,Choline-1,1,2,2-d 4 chloride,

		HPLC system MS/MS system, Microwave, Microwave turntable, Vortex mixer, Analytical balance, Horizontal shaker, Magnetic stir plate, Positive displacement pipets, Repeater positive displacement pipette, Polypropylene tubes, Digestion vessels for microwave digestion, Graduated polypropylene tube, Glass containers, Syringe filters, Disposable syringes, Graduated cylinders, Magnetic stir bars, Autosampler vials and caps, Microcentrifuge tubes, Bottle top dispenser, Desiccator
22.	Iron, Cl. 5.7 and 5.10, Table 2, Sl. No. (xxiii)	**Inductively coupled plasma atomic emission spectrometry (ICP-AES) method as per ISO 15151:2018** Water, Nitric acid (HNO3), Nitric acid solution (HNO3), Element stock solutions of Ca, P, K, Standard working solution of Fe, Internal standard solution H2O2, Analytical balance, One-mark volumetric flasks, One-mark pipettes, Micropipettes, Dispenser, High-density polyethylene bottles, Pressurized microwave assisted wet digestion system, ICP-AES instrument, Water bath, Appropriate grinding device, Sampler tubes, Cyclonic spray chamber, Concentric nebulizer **Inductively coupled plasma mass spectrometry (ICP-MS) method as per ISO 21424** Methanol, Nitric acid (HNO3) concentrated ultrapure reagent grade, Nitric acid (HNO3), trace metal grade H2O2, Laboratory water, Surfactant, Argon gas, Helium gas, Hydrogen gas, Iron Standard Stock Solution, Standard Reference Material (SRM)of cereal with certified values of Fe, inductively coupled plasma mass spectrometer, Microwave oven, Hydrogen generator, Magnetic stir plate and PTFE-coated magnetic stir bars, Analytical balance, Fume hood, Common laboratory glassware/plasticware, Repipetter, Bottle top dispenser, Volumetric pipettes, Digital pipettes **Method as per AOAC 985.35** Glassware, Evaporating dish, Atomic absorption spectrophotometer, Furnace, Water, Standard stock solution of Fe, Nitric acid, Lanthanum oxide, Lanthanum chloride solution, Cesium chloride solution, Filter pulp, Microwave Oven, Analytical Balance, Hot Plate, Steam Bath
23.	Sodium, Cl. 5.7 and 5.10, Table 2, Sl. No. (xxiv)	**Atomic Absorption Spectrometric Method as per IS 12760:2012** **Reagents:-** Nitric acid (HNO 3), concentrated, with a mass fraction of 65 %,Nitric acid (HNO 3) solution, with a volume fraction of 25 %,Lanthanum trichloride solution, with c(LaCl3.7H 2O) = 27 g/l, , Calcium ion stock solution, Sodium ion stock solution, Potassium ion stock solution, Magnesium ion stock solution, Standard working solution, containing 100 mg/l calcium, 20 mg/l sodium, 20 mg/l potassium and 10 mg/l magnesium ions, Light petroleum (petroleum ether), Hydrogen peroxide (H_2O_2), with a volume fraction of 30 %.

		Equipment:- Analytical balance, capable of weighing to the nearest 1 mg, with a readability of 0,1 mg, One-mark volumetric flasks, of nominal capacities 20 ml, 50 ml, 100 ml, 250 ml and 1000 ml, complying with the requirements of ISO 1042, One-mark pipettes, of nominal capacities 1 ml, 2 ml, 5 ml and 10 ml, complying with the requirements of ISO 648, Micropipette, capable of adjusting to between 1 ml and 5 ml, with plastic pipette tips, Graduated measuring cylinder, of capacity 10 ml, High-density polyethylene (PE-HD) bottles, Silica crucibles, of capacity between 25 ml and 50 ml, Programmable furnace oven, capable of attaining a minimum temperature of 550 °C ± 25 °C and of programming with a heating rate of 50 °C/h, Open focused microwave-assisted wet digestion system, delivering 200 W microwave power, equipped with appropriate vessels of capacity 50 ml, with an adapted cooling system, Pressurized microwave-assisted wet digestion system, with operator selectable output of between 0 W and 1 000 W microwave power, provided with temperature and pressure controllers and an air cooling device, equipped with appropriate vessels of capacity 50 ml, commercially available or equivalent, Decomposition vessels, made of stainless steel, with adapted PTFE inner vessels of capacity 23 L with screw caps(pressurized wet decomposition PTFE vessel), commercially available or equivalent, Oven, capable of attaining a temperature of 150 °C (for digestion bombs), Flame atomic absorption spectrometer, with an air–acetylene burner, suitable for measuring at different wavelengths: at 422,7 nm for calcium, at 589,6 nm for sodium, at 766,5 nm for potassium and285.2 nm for magnesium ion content-determination procedures; equipped with hollow cathode lamps of single element type or combined type, Water baths, capable of maintaining temperatures of 20 °C ± 2 °C, at 40 °C ± 1 °C, at 45 °C ± 1 °C and at 65 °C ± 1°C, Centrifuge, capable of producing a radial acceleration of 2500g, with tubes of capacity at least 150 ml, Appropriate grinding device, Sieve, free of contaminated material, with nominal size of aperture 0.5 mm. **Inductively coupled plasma atomic emission spectrometry (ICP-AES) method as per ISO 15151:2018** Water, Nitric acid (HNO3), Nitric acid solution (HNO3), Element stock solutions of Ca, P, K, Standard working solution of Fe, Internal standard solution H2O2, Analytical balance, One-mark volumetric flasks, One-mark pipettes, Micropipettes, Dispenser, High-density polyethylene bottles, Pressurized microwave assisted wet digestion system, ICP-AES instrument, Water bath, Appropriate grinding device, Sampler tubes, Cyclonic spray chamber, Concentric nebulizer **Inductively coupled plasma mass spectrometry (ICP-MS) method as per ISO 21424**

		Methanol, Nitric acid (HNO3) concentrated ultrapure reagent grade, Nitric acid (HNO3), trace metal grade H2O2, Laboratory water, Surfactant, Argon gas, Helium gas, Hydrogen gas, Iron Standard Stock Solution, Standard Reference Material (SRM)of cereal with certified values of Fe, inductively coupled plasma mass spectrometer, Microwave oven, Hydrogen generator, Magnetic stir plate and PTFE-coated magnetic stir bars, Analytical balance, Fume hood, Common laboratory glassware/plasticware, Repipetter, Bottle top dispenser, Volumetric pipettes, Digital pipettes
24.	Potassium, Cl. 5.7 and 5.10, Table 2, Sl. No. (xxv)	**Atomic Absorption Spectrometric Method as per IS 12760:2012** **Reagents:-** Nitric acid (HNO_3), concentrated, with a mass fraction of 65 %,Nitric acid (HNO_3) solution, with a volume fraction of 25 %,Lanthanum trichloride solution, Calcium ion stock solution, Sodium ion stock solution, Potassium ion stock solution, Magnesium ion stock solution, Standard working solution, containing 100 mg/l calcium, 20 mg/l sodium, 20 mg/l potassium and 10 mg/l magnesium ions, Light petroleum (petroleum ether), Hydrogen peroxide (H_2O_2), with a volume fraction of 30 %. **Equipment:-** Analytical balance, capable of weighing to the nearest 1 mg, with a readability of 0,1 mg, One-mark volumetric flasks, of nominal capacities 20 ml, 50 ml, 100 ml, 250 ml and 1000 ml, complying with the requirements of ISO 1042, One-mark pipettes, of nominal capacities 1 ml, 2 ml, 5 ml and 10 ml, complying with the requirements of ISO 648, Micropipette, capable of adjusting to between 1 ml and 5 ml, with plastic pipette tips, Graduated measuring cylinder, of capacity 10 ml, High-density polyethylene (PE-HD) bottles, Silica crucibles, of capacity between 25 ml and 50 ml, Programmable furnace oven, capable of attaining a minimum temperature of 550 °C ± 25 °C and of programming with a heating rate of 50 °C/h, Open focused microwave-assisted wet digestion system, delivering 200 W microwave power, equipped with appropriate vessels of capacity 50 ml, with an adapted cooling system, Pressurized microwave-assisted wet digestion system, with operator selectable output of between 0 W and 1 000 W microwave power, provided with temperature and pressure controllers and an air cooling device, equipped with appropriate vessels of capacity 50 ml, commercially available or equivalent, Decomposition vessels, made of stainless steel, with adapted PTFE inner vessels of capacity 23 L with screw caps (pressurized wet decomposition PTFE vessel), commercially available or equivalent, Oven, capable of attaining a temperature of 150 °C (for digestion bombs), Flame atomic absorption spectrometer, with an air–acetylene burner, suitable for measuring at different wavelengths: at 422,7 nm for calcium, at 589,6 nm for sodium, at 766,5 nm for potassium and285.2 nm for magnesium ion content-determination procedures; equipped with hollow cathode lamps of single element type or combined type, Water baths, capable of

		maintaining temperatures of 20 °C ± 2 °C, at 40 °C ± 1 °C, at 45 °C ± 1 °C and at 65 °C ± 1°C, Centrifuge, capable of producing a radial acceleration of 2500g, with tubes of capacity at least 150 ml, Appropriate grinding device, Sieve, free of contaminated material, with nominal size of aperture 0.5 mm. **Inductively coupled plasma atomic emission spectrometry (ICP-AES) method as per ISO 15151:2018** Water, Nitric acid (HNO3), Nitric acid solution (HNO_3), Element stock solutions of Ca, P, K, Standard working solution of Fe, Internal standard solution H_2O_2, Analytical balance, One-mark volumetric flasks, One-mark pipettes, Micropipettes, Dispenser, High-density polyethylene bottles, Pressurized microwave assisted wet digestion system, ICP-AES instrument, Water bath, Appropriate grinding device, Sampler tubes, Cyclonic spray chamber, Concentric nebulizer **Inductively coupled plasma mass spectrometry (ICP-MS) method as per ISO 21424** Methanol, Nitric acid (HNO_3) concentrated ultrapure reagent grade, Nitric acid (HNO_3), trace metal grade H_2O_2, Laboratory water, Surfactant, Argon gas, Helium gas, Hydrogen gas, Iron Standard Stock Solution, Standard Reference Material (SRM)of cereal with certified values of Fe, inductively coupled plasma mass spectrometer, Microwave oven, Hydrogen generator, Magnetic stir plate and PTFE-coated magnetic stir bars, Analytical balance, Fume hood, Common laboratory glassware/plasticware, Repipetter, Bottle top dispenser, Volumetric pipettes, Digital pipettes
25.	Chloride, Cl. 5.7 and 5.10, Table 2, Sl. No. (xxvi)	**Potentiometric Titration Method as per IS 11763:2011** Device for grinding, Analytical balance(LC= 0.1 mg), Blender, Stirrer, Potentiometer, Vessel, Graduated cylinders, Burette
26.	Calcium, Cl. 5.7 and 5.10, Table 2, Sl. No. (xxvii)	**Atomic Absorption Spectrometric Method as per IS 12760:2012** **Reagents:-** Nitric acid (HNO_3), concentrated, with a mass fraction of 65 %,Nitric acid (HNO_3) solution, with a volume fraction of 25 %,Lanthanum trichloride solution, Calcium ion stock solution, Sodium ion stock solution, Potassium ion stock solution, Magnesium ion stock solution, Standard working solution, containing 100 mg/l calcium, 20 mg/l sodium, 20 mg/l potassium and 10 mg/l magnesium ions, Light petroleum (petroleum ether), Hydrogen peroxide (H_2O_2), with a volume fraction of 30 %. **Equipment:-** Analytical balance, capable of weighing to the nearest 1 mg, with a readability of 0,1 mg, One-mark volumetric flasks, of nominal capacities 20 ml, 50 ml, 100 ml, 250 ml and 1000 ml, complying with the requirements of

		ISO 1042, One-mark pipettes, of nominal capacities 1 ml, 2 ml, 5 ml and 10 ml, complying with the requirements of ISO 648, Micropipette, capable of adjusting to between 1 ml and 5 ml, with plastic pipette tips, Graduated measuring cylinder, of capacity 10 ml, High-density polyethylene (PE-HD) bottles, Silica crucibles, of capacity between 25 ml and 50 ml, Programmable furnace oven, capable of attaining a minimum temperature of 550 °C ± 25 °C and of programming with a heating rate of 50 °C/h, Open focused microwave-assisted wet digestion system, delivering 200 W microwave power, equipped with appropriate vessels of capacity 50 ml, with an adapted cooling system, Pressurized microwave-assisted wet digestion system, with operator selectable output of between 0 W and 1 000 W microwave power, provided with temperature and pressure controllers and an air cooling device, equipped with appropriate vessels of capacity 50 ml, commercially available or equivalent, Decomposition vessels, made of stainless steel, with adapted PTFE inner vessels of capacity 23 L with screw caps(pressurized wet decomposition PTFE vessel), commercially available or equivalent, Oven, capable of attaining a temperature of 150 °C (for digestion bombs), Flame atomic absorption spectrometer, with an air–acetylene burner, suitable for measuring at different wavelengths: at 422,7 nm for calcium, at 589,6 nm for sodium, at 766,5 nm for potassium and285.2 nm for magnesium ion content-determination procedures; equipped with hollow cathode lamps of single element type or combined type, Water baths, capable of maintaining temperatures of 20 °C ± 2 °C, at 40 °C ± 1 °C, at 45 °C ± 1 °C and at 65 °C ± 1°C, Centrifuge, capable of producing a radial acceleration of 2500g, with tubes of capacity at least 150 ml, Appropriate grinding device, Sieve, free of contaminated material, with nominal size of aperture 0.5mm. **<u>Inductively coupled plasma atomic emission spectrometry (ICP-AES) method as per ISO 15151:2018</u>** Water, Nitric acid (HNO3), Nitric acid solution (HNO_3), Element stock solutions of Ca, P, K, Standard working solution of Fe, Internal standard solution H_2O_2, Analytical balance, One-mark volumetric flasks, One-mark pipettes, Micropipettes, Dispenser, High-density polyethylene bottles, Pressurized microwave assisted wet digestion system, ICP-AES instrument, Water bath, Appropriate grinding device, Sampler tubes, Cyclonic spray chamber, Concentric nebulizer **<u>Inductively coupled plasma mass spectrometry (ICP-MS) method as per ISO 21424</u>** Methanol, Nitric acid (HNO_3) concentrated ultrapure reagent grade, Nitric acid (HNO_3), trace metal grade H_2O_2, Laboratory water, Surfactant, Argon gas, Helium gas, Hydrogen gas, Iron Standard Stock Solution, Standard Reference Material (SRM)of cereal with certified values of Fe, inductively

		coupled plasma mass spectrometer, Microwave oven, Hydrogen generator, Magnetic stir plate and PTFE-coated magnetic stir bars, Analytical balance, Fume hood, Common laboratory glassware/plasticware, Repipetter, Bottle top dispenser, Volumetric pipettes, Digital pipettes
27.	Phosphorus, Cl. 5.7 and 5.10, Table2, Sl. No. (xxviii)	**Atomic Absorption Spectrometric Method as per IS 12760:2012** **Reagents:-** Nitric acid (HNO_3), concentrated, with a mass fraction of 65 %,Nitric acid (HNO_3) solution, with a volume fraction of 25 %,Lanthanum trichloride solution, Calcium ion stock solution, Sodium ion stock solution, Potassium ion stock solution, Magnesium ion stock solution, Standard working solution, containing 100 mg/l calcium, 20 mg/l sodium, 20 mg/l potassium and 10 mg/l magnesium ions, Light petroleum (petroleum ether), Hydrogen peroxide (H_2O_2), with a volume fraction of 30 %. **Equipment:-** Analytical balance, capable of weighing to the nearest 1 mg, with a readability of 0,1 mg, One-mark volumetric flasks, of nominal capacities 20 ml, 50 ml, 100 ml, 250 ml and 1000 ml, complying with the requirements of ISO 1042, One-mark pipettes, of nominal capacities 1 ml, 2 ml, 5 ml and 10 ml, complying with the requirements of ISO 648, Micropipette, capable of adjusting to between 1 ml and 5 ml, with plastic pipette tips, Graduated measuring cylinder, of capacity 10 ml, High-density polyethylene (PE-HD) bottles, Silica crucibles, of capacity between 25 ml and 50 ml, Programmable furnace oven, capable of attaining a minimum temperature of 550 °C ± 25 °C and of programming with a heating rate of 50 °C/h, Open focused microwave-assisted wet digestion system, delivering 200 W microwave power, equipped with appropriate vessels of capacity 50 ml, with an adapted cooling system, Pressurized microwave-assisted wet digestion system, with operator selectable output of between 0 W and 1 000 W microwave power, provided with temperature and pressure controllers and an air cooling device, equipped with appropriate vessels of capacity 50 ml, commercially available or equivalent, Decomposition vessels, made of stainless steel, with adapted PTFE inner vessels of capacity 23 L with screw caps(pressurized wet decomposition PTFE vessel), commercially available or equivalent, Oven, capable of attaining a temperature of 150 °C (for digestion bombs), Flame atomic absorption spectrometer, with an air–acetylene burner, suitable for measuring at different wavelengths: at 422,7 nm for calcium, at 589,6 nm for sodium, at 766,5 nm for potassium and285.2 nm for magnesium ion content-determination procedures; equipped with hollow cathode lamps of single element type or combined type, Water baths, capable of maintaining temperatures of 20 °C ± 2 °C, at 40 °C ± 1 °C, at 45 °C ± 1 °C and at 65 °C ± 1°C, Centrifuge, capable of producing a radial acceleration of 2500g, with tubes of capacity at least 150 ml, Appropriate grinding device, Sieve, free of contaminated material, with nominal size of aperture 0.5mm.

		Inductively coupled plasma atomic emission spectrometry (ICP-AES) method as per ISO 15151:2018 Water, Nitric acid (HNO3), Nitric acid solution (HNO_3), Element stock solutions of Ca, P, K, Standard working solution of Fe, Internal standard solution H_2O_2, Analytical balance, One-mark volumetric flasks, One-mark pipettes, Micropipettes, Dispenser, High-density polyethylene bottles, Pressurized microwave assisted wet digestion system, ICP-AES instrument, Water bath, Appropriate grinding device, Sampler tubes, Cyclonic spray chamber, Concentric nebulizer **Inductively coupled plasma mass spectrometry (ICP-MS) method as per ISO 21424** Methanol, Nitric acid (HNO_3) concentrated ultrapure reagent grade, Nitric acid (HNO_3), trace metal grade H_2O_2, Laboratory water, Surfactant, Argon gas, Helium gas, Hydrogen gas, Iron Standard Stock Solution, Standard Reference Material (SRM)of cereal with certified values of Fe, inductively coupled plasma mass spectrometer, Microwave oven, Hydrogen generator, Magnetic stir plate and PTFE-coated magnetic stir bars, Analytical balance, Fume hood, Common laboratory glassware/plasticware, Repipetter, Bottle top dispenser, Volumetric pipettes, Digital pipettes
28.	Magnesium, Cl. 5.7 and 5.10, Table 2, Sl. No. (xxx)	**Atomic Absorption Spectrometric Method as per IS 12760:2012** **Reagents:-** Nitric acid (HNO_3), concentrated, with a mass fraction of 65 %,Nitric acid (HNO_3) solution, with a volume fraction of 25 %,Lanthanum trichloride solution, Calcium ion stock solution, Sodium ion stock solution, Potassium ion stock solution, Magnesium ion stock solution, Standard working solution, containing 100 mg/l calcium, 20 mg/l sodium, 20 mg/l potassium and 10 mg/l magnesium ions, Light petroleum (petroleum ether), Hydrogen peroxide (H_2O_2), with a volume fraction of 30 %. **Equipment:-** Analytical balance, capable of weighing to the nearest 1 mg, with a readability of 0,1 mg, One-mark volumetric flasks, of nominal capacities 20 ml, 50 ml, 100 ml, 250 ml and 1000 ml, complying with the requirements of ISO 1042, One-mark pipettes, of nominal capacities 1 ml, 2 ml, 5 ml and 10 ml, complying with the requirements of ISO 648, Micropipette, capable of adjusting to between 1 ml and 5 ml, with plastic pipette tips, Graduated measuring cylinder, of capacity 10 ml, High-density polyethylene (PE-HD) bottles, Silica crucibles, of capacity between 25 ml and 50 ml, Programmable furnace oven, capable of attaining a minimum temperature of 550 °C ± 25 °C and of programming with a heating rate of 50 °C/h, Open focused microwave-assisted wet digestion system, delivering 200 W microwave power, equipped with appropriate vessels of capacity 50 ml, with an adapted cooling system, Pressurized microwave-assisted wet digestion system, with operator selectable output of between 0 W and

		1 000 W microwave power, provided with temperature and pressure controllers and an air cooling device, equipped with appropriate vessels of capacity 50 ml, commercially available or equivalent, Decomposition vessels, made of stainless steel, with adapted PTFE inner vessels of capacity 23 L with screw caps(pressurized wet decomposition PTFE vessel), commercially available or equivalent, Oven, capable of attaining a temperature of 150 °C (for digestion bombs), Flame atomic absorption spectrometer, with an air–acetylene burner, suitable for measuring at different wavelengths: at 422,7 nm for calcium, at 589,6 nm for sodium, at 766,5 nm for potassium and285.2 nm for magnesium ion content-determination procedures; equipped with hollow cathode lamps of single element type or combined type, Water baths, capable of maintaining temperatures of 20 °C ± 2 °C, at 40 °C ± 1 °C, at 45 °C ± 1 °C and at 65 °C ± 1°C, Centrifuge, capable of producing a radial acceleration of 2500g, with tubes of capacity at least 150 ml, Appropriate grinding device, Sieve, free of contaminated material, with nominal size of aperture 0.5mm. **Inductively coupled plasma atomic emission spectrometry (ICP-AES) method as per ISO 15151:2018** Water, Nitric acid (HNO3), Nitric acid solution (HNO_3), Element stock solutions of Ca, P, K, Standard working solution of Fe, Internal standard solution H_2O_2, Analytical balance, One-mark volumetric flasks, One-mark pipettes, Micropipettes, Dispenser, High-density polyethylene bottles, Pressurized microwave assisted wet digestion system, ICP-AES instrument, Water bath, Appropriate grinding device, Sampler tubes, Cyclonic spray chamber, Concentric nebulizer **Inductively coupled plasma mass spectrometry (ICP-MS) method as per ISO 21424** Methanol, Nitric acid (HNO_3) concentrated ultrapure reagent grade, Nitric acid (HNO_3), trace metal grade H_2O_2, Laboratory water, Surfactant, Argon gas, Helium gas, Hydrogen gas, Iron Standard Stock Solution, Standard Reference Material (SRM)of cereal with certified values of Fe, inductively coupled plasma mass spectrometer, Microwave oven, Hydrogen generator, Magnetic stir plate and PTFE-coated magnetic stir bars, Analytical balance, Fume hood, Common laboratory glassware/plasticware, Repipetter, Bottle top dispenser, Volumetric pipettes, Digital pipettes
29.	Iodine, Cl. 5.7 and 5.10, Table 2, Sl. No. (xxxi)	KOH pellets, Ammonium hydroxide, Sodium thiosulfate, Surfactant, Concentrated nitric acid, Perchloric acid, Purified water, Iodide standard solution, Praseodymium (Pr) standard solution, Oven, Polypropylene tubes, capacity 50 ml and 100 ml, ICP-MS system, Analytical balance, Top-loader balance, Open-vessel microwave digestion unit(optional)

30.	Copper, Cl. 5.7 and 5.10, Table1, Sl. No. (xxxii)	**Method as per IS 1699** Kjeldahl flask, Atomic absorption spectrophotometer, hydride generation vessel accessory, potentiometric recorder, Nitric acid, Perchloric acid, Sulphuric acid, Hydrochloric acid, Metal free water, Sodium sulphate, Sodium borohydride pellets, Potassium chloride Standard zinc solution, Weighing Balance, General Glasswares, Burner/ Heating Element/ Hot Plate **Inductively coupled plasma atomic emission spectrometry (ICP-AES) method as per ISO 15151:2018** Water, Nitric acid (HNO_3), Nitric acid solution (HNO_3), Element stock solutions of Ca, P, K, Standard working solution of Zn, Cu, Internal standard solution H_2O_2, Analytical balance, One-mark volumetric flasks, One-mark pipettes, Micropipettes, Dispenser, High-density polyethylene bottles, Pressurized microwave assisted wet digestion system, ICP-AES instrument, Water baths, Appropriate grinding device, Sampler tubes, Cyclonic spray chamber, Concentric nebulizer **Inductively coupled plasma mass spectrometry (ICP-MS) method as per ISO 21424** Methanol, Nitric acid (HNO_3) concentrated ultrapure reagent grade, Nitric acid (HNO_3), trace metal grade H_2O_2, Laboratory water, Surfactant, Argon gas, Helium gas, Hydrogen gas, Iron Standard Stock Solution, Standard Reference Material (SRM)of cereal with certified values of Fe, inductively coupled plasma mass spectrometer, Microwave oven, Hydrogen generator, Magnetic stir plate and PTFE-coated magnetic stir bars, Analytical balance, Fume hood, Common laboratory glassware/plasticware, Repipetter, Bottle top dispenser, Volumetric pipettes, Digital pipettes
31.	Zinc, Cl. 5.7 and 5.10, Table 2, Sl. No. (xxxiii)	**Method as per IS 1699** Kjeldahl flask, Atomic absorption spectrophotometer, hydride generation vessel accessory, potentiometric recorder, Nitric acid, Perchloric acid, Sulphuric acid, Hydrochloric acid, Metal free water, Sodium sulphate, Sodium borohydride pellets, Potassium chloride Standard zinc solution, Weighing Balance, General Glasswares, Burner/ Heating Element/ Hot Plate **Inductively coupled plasma atomic emission spectrometry (ICP-AES) method as per ISO 15151:2018** Water, Nitric acid (HNO_3), Nitric acid solution (HNO_3), Element stock solutions of Ca, P, K, Standard working solution of Zn, Cu, Internal standard solution H_2O_2, Analytical balance, One-mark volumetric flasks, One-mark pipettes, Micropipettes, Dispenser, High-density polyethylene bottles, Pressurized microwave assisted wet digestion system, ICP-AES instrument, Water baths, Appropriate grinding device, Sampler tubes,

		Cyclonic spray chamber, Concentric nebulizer **<u>Inductively coupled plasma mass spectrometry (ICP-MS) method as per ISO 21424</u>** Methanol, Nitric acid (HNO3) concentrated ultrapure reagent grade, Nitric acid (HNO3), trace metal grade H2O2, Laboratory water, Surfactant, Argon gas, Helium gas, Hydrogen gas, Iron Standard Stock Solution, Standard Reference Material (SRM)of cereal with certified values of Fe, inductively coupled plasma mass spectrometer, Microwave oven, Hydrogen generator, Magnetic stir plate and PTFE-coated magnetic stir bars, Analytical balance, Fume hood, Common laboratory glassware/plasticware, Repipetter, Bottle top dispenser, Volumetric pipettes, Digital pipettes
32.	Manganese, Cl. 5.7 and 5.10, Table 2, Sl. No. (xxxiv)	**<u>Inductively coupled plasma atomic emission spectrometry (ICP-AES) method as per ISO 15151:2018</u>** Water, Nitric acid (HNO3), Nitric acid solution (HNO3), Element stock solutions of Ca, P, K, Standard working solution of Zn, Cu, Internal standard solution H2O2, Analytical balance, One-mark volumetric flasks, One-mark pipettes, Micropipettes, Dispenser, High-density polyethylene bottles, Pressurized microwave assisted wet digestion system, ICP-AES instrument, Water baths, Appropriate grinding device, Sampler tubes, Cyclonic spray chamber, Concentric nebulizer **<u>Inductively coupled plasma mass spectrometry (ICP-MS) method as per ISO 21424</u>** Methanol, Nitric acid (HNO3) concentrated ultrapure reagent grade, Nitric acid (HNO3), trace metal grade H2O2, Laboratory water, Surfactant, Argon gas, Helium gas, Hydrogen gas, Iron Standard Stock Solution, Standard Reference Material (SRM)of cereal with certified values of Fe, inductively coupled plasma mass spectrometer, Microwave oven, Hydrogen generator, Magnetic stir plate and PTFE-coated magnetic stir bars, Analytical balance, Fume hood, Common laboratory glassware/plasticware, Repipetter, Bottle top dispenser, Volumetric pipettes, Digital pipettes
33.	Selenium, Cl. 5.7 and 5.10, Table 2, Sl. No. (xxxv)	**<u>Method as per IS 15303</u>** Atomic Absorption Spectrometer, Source Lamps, Graphite Furnace, Readout Sample Dispensers, Vent, Cooling Water Supply, Membrane Filter Apparatus, Metal-Free-Water, Hydrochloric Acid, Nitric Acid, Magneisum Nitrate, Nickel, Nitrate, Phosphoric Acid, Palladium Nitrate, Citric Acid, Stock Selenium Solution, Chelating Resin, General Glasswares, Hot Plate **<u>Inductively coupled plasma atomic emission spectrometry (ICP-AES) method as per ISO 15151:2018</u>** Water, Nitric acid (HNO3), Nitric acid solution (HNO3), Element stock solutions of Ca, P, K, Standard working solution of Se, Internal standard

		solution H2O2, Analytical balance, One-mark volumetric flasks, One-mark pipettes, Micropipettes, Dispenser, High-density polyethylene bottles, Pressurized microwave assisted wet digestion system, ICP-AES instrument, Water baths, Appropriate grinding device, Sampler tubes, Cyclonic spray chamber, Concentric nebulizer **Determination by Inductively coupled plasma mass spectrometry (ICP-MS) method as per ISO 20649** Purified water, Concentrated nitric acid (HNO 3), Hydrogen peroxide (H2O2), Methanol, Potassium solution, Standard Solutions and Reference Materials, Microwave oven, ICP-MS, Various plasticware and pipettes, Analytical balance
34.	Aerobic Plate count, Cl. 5.10, Table 3, Sl. No. (i)	Diluents, Agar Medium, Oven, Incubator, Water bath, pH-meter, Petri dishes, Total delivery graduated pipettes, Colony-counting equipment, Tubes, flasks or bottles
35.	Staphylococcus aureus (Coagulase Positive), Cl. 5.10, Table 3, Sl. No. (ii)	Diluent, Baird-parker Agar Medium, Potassoum Tellurite solution, Egg Yolk Emulsion, Sulfamethazine, Brain-heart infusion broth, Rabbit Plasma, Apparatus for dry sterilization (oven) or wet sterilization (autoclave), Incubator, Drying cabinet or incubator, Water bath, Test tubes, flasks or bottles with screw caps, Petri dishes, Straight wire, Pasteur pipette, Total-delivery graduated pipettes, Spreaders, pH-meter
36.	Yeast and Mould count, Cl. 5.10, Table 3, Sl. No. (iii)	**Method as per IS 5403** pH meter, Diluents and Culture Medium, Yeast Extract-Destmse-Chloramphenicol-Agar, Medium Apparatus for Dry Sterilization (Oven) or Wet Sterilization (Autoclave), Incubator, Water-Bath, Temperature Compensated pH Meter, Culture Bottles or Flasks, Graduated Pipettes, Petri Dishes **HORIZONTAL METHOD FOR THE ENUMERATION OF YEASTS AND MOULDS as per IS 16069(Part 1) and IS 16069(Part 2)** Diluent, Dichloran-rose bengal chloramphenicol agar (DRBC), Incubator, Total delivery pipettes, Water bath, pH meter, Bottles, flasks and tubes, Petri dishes, Microscope, Spreaders, Binocular magnifier
37.	Salmonella sp., Cl. 5.10, Table 3, Sl. No. (iv)	Buffered peptone water, Rappaport-Vassiliadis medium with soya (RVS broth) or Modified Semi-solid Rappaport-Vassiliadis (MSRV) agar and Muller-Kauffmann tetrathionate-novobiocin broth (MKTTn broth, Xylose Lysine Deoxycholate agar (XLD agar), Apparatus for dry sterilization (oven) or wet sterilization (autoclave), Drying cabinet or oven, Incubator, Water bath, Refrigerator, Freezer Sterile loops, pH-meter, Sterile tubes, bottles, or flasks, Sterile Petri dishes
38.	Listeria monocytogenes, Cl. 5.10, Table 3, Sl. No. (v)	Acriflavine and nalidixic acid, Fraser broth, Listeria Agar, Apparatus for dry sterilization (oven) or wet sterilization (autoclave), Drying cabinet, Incubators, Water bath, Sterile loops, pH meter, Graduated pipettes or automatic pipettes, Petri dishes, Microscope, Refrigerator

39.	Bacillus cereus, Cl. 5.10, Table 3, Sl. No. (vi)	Dilution fluid, Agar medium, Polymyxin B solution, Egg yolk emulsion, Complete medium (MYP agar), Sheep blood agar, Defibrinated sheep blood, Apparatus for dry sterilization (oven) or wet sterilization (autoclave), Drying cabinet, Incubator, Water baths, pH-meter, Petri dishes, Graduated pipettes, Spreaders
40.	Sulphite reducing clostridia, Cl. 5.10, Table 3, Sl. No. (vii)	**Horizontal method for enumeration of sulfite-reducing bacteria growing under anaerobic conditions as per ISO 15213** Iron sulfite agar, Saline peptone diluents, Homogenization equipment, Water bath, Anaerobic jars, Incubator, Test tubes
41.	Enterobacteriaceae, Cl. 5.10, Table 3, Sl. No. (viii)	Oven, Incubator, Water bath, Tubes, flasks or bottles pH-meter, Petri dishes, Graduated pipettes or automatic pipettes, Homogenizer, Buffered peptone water, Violet red bile glucose agar, Nutrient agar, Oxidase discs/Oxidase reagent, Glucose OF medium
42.	Enterobacter sakazakii (Cronobacter sp.), Cl. 5.10, Table 3, Sl. No. (ix)	Apparatus for dry sterilization (oven) or wet sterilization (autoclave), Incubators, pH meter, Tubes (plugged or with caps) or culture bottles, Spectrophotometer, Pestle and mortar, Water baths, Refrigerators, Drying cabinet (or oven ventilated by convection), Oxidase, Hydrolysis of 4-Nitrophenyl α-D-glucopyranoside substrate, L-Lysine decarboxylase, L-Ornithine decarboxylase, Methyl Red (optional), Voges-Proskauer (optional), D-Arabitol, D-Sorbitol, D-Sucrose, α-Methyl-D-glucoside(optional)
43.	Lead, Cl. 5.12, Table 4, Sl. No. (i)	**Method as per IS 12074** Atomic Absorption Spectrophotometer, Pure Lead Metal, Concentrated Nitric Acid, Concentrated Hydrochloric Acid, Standard Lead Solution, Drying Oven, Filter Papers, General Glasswares **Inductively Coupled Plasma-Mass Spectrometry Method as per AOAC 2015.01** ICP-MS instrument, High-purity grade liquid argon 99 .996%, Analytical Balance, Clean Room Gloves, Microwave Digestion System, Autosampler Vials and Cups, Spatulas, Nitric acid (HNO_3), Hydrogen peroxide (H_2O_2), Stock standard solution, Single-element standards, Second source standard, Multi Element Stock Standard Solution, Internal Standard Solution, Certified Reference Materials, Analytical Balance
44.	Arsenic, Cl. 5.12, Table 4, Sl. No. (ii)	**Method as per IS 11124** Atomic Absorption Spectrophotometer, Vapour Generation Kit, Concentrated Hydrochloric Acid, Concentrated Nitric Acid, Concentrated Sulphuric Acid, Potassium Iodide, Sodium Borohydride, Standard Arsenic Solution, Quartz Tube, Burner, Inert Gas Supply, Reaction Vessel, Stopper Assembly, Stirrer, Laboratory Glasswares **Inductively Coupled Plasma-Mass Spectrometry Method as per AOAC 2015.01** ICP-MS instrument, High-purity grade liquid argon 99 .996%, Analytical Balance, Clean Room Gloves, Microwave Digestion System, Autosampler Vials and Cups, Spatulas, Nitric acid (HNO_3), Hydrogen peroxide (H_2O_2), Stock standard solution, Single-element standards,

		Second source standard, Multi Element Stock Standard Solution, Certified Reference Materials, Analytical Balance
45.	Tin, Cl. 5.12, Table 4, Sl. No. (iii)	Water, Hydrochloric acid, Tin stock solution, Tin standard working solution, Tin standard working solution in diluted (evaporated) milk, Matrix modifier solutions, Balance, Water bath, One-mark volumetric flasks, Dosing pipettes, Atomic absorption spectrometer
46.	Cadmium, Cl. 5.12, Table 4, Sl. No. (iv)	**Method as per IS 1699** Kjeldahl flask, Atomic absorption spectrophotometer, hydride generation vessel accessory, potentiometric recorder, Nitric acid, Perchloric acid, Sulphuric acid, Hydrochloric acid, Metal free water, Sodium sulphate, Sodium borohydride pellets, Potassium chloride Standard zinc solution, Weighing Balance, General Glasswares, Burner/ Heating Element/ Hot Plate **Inductively Coupled Plasma-Mass Spectrometry Method as per AOAC 2015.01** ICP-MS instrument, High-purity grade liquid argon 99 .996%, Analytical Balance, Clean Room Gloves, Microwave Digestion System, Autosampler Vials and Cups, Spatulas, Nitric acid (HNO_3), Hydrogen peroxide (H_2O_2), Stock standard solution, Single-element standards, Second source standard, Multi Element Stock Standard Solution, Certified Reference Materials, Analytical Balance
47.	Melamine, Cl. 5.12, Table 4, Sl. No. (v)	**Simultaneous quantitative determination of melamine by liquid chromatography electrospray ionization tandem mass spectrometry** Water, Acetonitrile, Ammonium acetate, Melamine and its standard solutions, Conical tubes, Centrifuge, Volumetric pipettes, Automatic micropipette, Nylon syringe filter, Degassing system, Analytical balance, Sonification device, Vials, LC-MS/MS equipment, HPLC Column, One-mark volumetric flasks **Quantitative analysis melamine in milk-based infant formula and cow milk by liquid chromatography using linear ion-trap mass spectrometry** Water, Acetonitrile, Ammonium acetate, Formic acid, Melamine and its standard solutions, Centrifuge tubes, Centrifuge, HPLC Column, Plastic syringes, Syringe filters, HPLC Surveyor MS pump, Analytical balance, One-mark volumetric flasks
48.	Bisphenol A(BPA), Cl. 6.1.1	**Gas chromatographic-mass spectrometric determination of Bisphenol A by ISO 18857-2** Hydrochloric acid or sulfuric acid, Acetone, Internal standard solutions, 2,2,2-Trifluoro-N-methyl-N-(trimethylsilyl)acetamide, Solid-phase material, on styrene-divinylbenzene polymer basis, Sand, Nitrogen, Sodium thiosulfate pentahydrate, Narrow-neck flat bottomed glass bottles, Solid-phase extraction cartridges, Vacuum or pressure assembly, Quartz wool, Pear-shaped flask, Evaporation assembly, e.g. rotary evaporator with vacuum stabiliser and water bath, Vials, brown glass with PTFE-lined septa, Stainless steel cocks, with stainless steel cone. Gas chromatograph

		OR **Method as per EN 13130-1:2004** Cruciform specimen supports, Tubes, Glass rods and beads, food cells, thermostatically controlled ovens or incubators

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

ANNEX- C
TO THE PRODUCT MANUAL FOR INFANT MILK SUBSTITUTES ACCORDING TO IS 14433: 2022
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 and implement 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 Infant Milk Substitute, provided always that the product in each container to which this mark is thus applied, conform to every requirements of the specification.

3.1 Packing – The material shall be packed in quantities as per provisions of Clause 6.1.1 and 6.1.2 of IS 14433:2022.

3.2 Marking – The containers of the product shall bear legibly and indelibly the information as mentioned under clause 6.2.1 of IS 14433:2022. In addition, the following details shall be mentioned on each container:

a) BIS Licence No. CM/L _____
b) BIS website details i.e – "For details of BIS Certification please visit www.bis.gov.in".

3.2.1 In case of flexible packs, the following information as per provisions of Clause 6.2.1.1 of IS 14433:2022 shall be printed on the container:
"On opening, transfer the contents of the pack to a clear air tight container. After each use, replace the lid tightly and store in a cool dry place."

4. CONTROL UNIT –For the purpose of this scheme the quantity of containers of the same type of Infant Milk Substitute manufactured and filled continuously in a day 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 product shall be processed, packed, stored and distributed under hygienic conditions as per provisions of clause 5.13 of IS 14433:2022.

7. REJECTIONS – Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of the provisions of BIS Act, 2016.

TABLE 1 (Levels of Control)
(Para 5 of Scheme of Inspection and Testing)

(1)				(2)	(3)		
Test Details				**Test equipment requirement R: required (or) S: Sub-contracting permitted**	**Levels of Control**		
Cl. no.	**Requirement**	**Test Method**			**No. of Sample**	**Frequency**	**Remarks**
		Clause	**Reference**				
5.1	Description:	--	--	--	--	--	--
	a) Shall be white/white with a greenish tinge to light cream in colour, Free from lumps and coarse particles, uniform in appearance, free from dirt and extraneous matter	5.1	IS 14433	---	One	Every half an hour	See Note 3 below
	b) free from rancid taste and musty odour	---	IS 10641	R	One	Every half an hour	See Note 3 below
	c) Free from preservatives, added colour and flavour and from any material which are harmful to infant's health	5.1	IS 14433	---	One	Every half an hour	Manufacturer to submit declaration / undertaking
5.2	Scorched particles	-	IS 13500	R	Two	Each control unit	See Note 4 below
5.7 and 5.10, Table 2 (i)	Moisture	-	IS 16072 (Routine purpose) & IS 11623 (Reference purpose)	R	Two	Each control unit	See Note 4 below
5.7 and 5.10, Table 2 (ii)(a)	(a) Total protein (b) Milk Protein	-	IS 11917	R	Two	Every control unit	See Note 4 below
5.7 and 5.10, Table 2 (iii)	Fat (i) Total fat (ii) Milk fat	-	IS 11721	R	Two	Each control unit	See Note 4 below

5.7 and 5.10, Table 2, Sl. No. (iv)	(i) Linoleic acid, (ii) α-Linolenic acid (iii) Ratio of Linoleic acid and α-Linolenic acid (only for Type-II)	Annex-B of IS 14433	IS 14433 or ISO 16958	S	One	Once in a month	See note 5 below
5.7 and 5.10, Table 2, Sl. No. (vi)	Carbohydrates	Annex-C	IS 1656	R	Two	Each control unit	See Note 4 below
5.7 and 5.10, Table 2, Sl. No. (vi)	Total ash	Annex-C	IS 14433	R	Two	Each control unit	See Note 4 below
5.7 and 5.10, Table 2, Sl. No. (vii)	Acid insoluble ash	Annex-D	IS 14433	R	Two	Each control unit	See Note 4 below
5.7 and 5.10, Table 2, Sl. No. (viii)	Solubility Index	--	IS 12759	R	Two	Each control unit	See Note 4 below
5.7 and 5.10, Table 2, Sl.No. (ix)	Vitamin A	--	IS 16639	S	One	Once in a month	See note 5 below
5.7 and 5.10, Table 2, Sl. No. (x)	Vitamin D	--	IS 17177	S	One	Once in a month	See note 5 below
5.7 and 5.10, Table 2, Sl. No. (xi)	Vitamin E, α-tocopherol	--	IS 16639	S	One	Once in a month	See note 5 below

5.7 and 5.10, Table 2, Sl. No. (xii)	Vitamin K	----	IS 21446	S	One	Once in a month	See note 5 below
5.7 and 5.10, Table 2, Sl. No. (xiii)	Vitamin C	--	IS 5838 or IS 17176	S	One	Once in a month	See note 5 below
5.7 and 5.10, Table 2, Sl. No. (xiv)	Thiamine	----	IS 17669	S	One	Once in a month	See note 5 below
5.7 and 5.10, Table 2, Sl. No. (xv)	Riboflavin	----	IS 17669	S	One	Once in a month	See note 5 below
5.7 and 5.10, Table 2, Sl. No. (xvi)	Niacin equivalent	----	IS 17669	S	One	Once in a month	See note 5 below
5.7 and 5.10, Table 2, Sl. No. (xvii)	Vitamin B_6 (pyridoxine)	----	IS 17669	S	One	Once in a month	See note 5 below
5.7 and 5.10, Table 2, Sl. No. (xviii)	Dietary Folate equivalent (DFE)	--	AOAC 2013.13	S	One	Once in a month	See note 5 below
5.7 and 5.10, Table 2, Sl. No. (xix)	Pantothenic acid	---	IS 16642	S	One	Once in a month	See note 5 below

5.7 and 5.10, Table 2, Sl. No. (xxvii)	Vitamin B_{12}	---	IS 16640 or AOAC 2014.02	S	One	Once in a month	See note 5 below
5.7 and 5.10, Table 2, Sl. No. (xxi)	Biotin	---	IS 17670	S	One	Once in a month	See note 5 below
5.7 and 5.10, Table 2, Sl. No. (xxii)	Choline	----	IS 17668	S	One	Once in a month	See note 5 below
5.7 and 5.10, Table 2, Sl. No. (xxiii)	Iron	-----	AOAC 985.35 or ISO 15151 or ISO 21424	R	One	Each control unit	See Note 6 below
5.7 and 5.10, Table 2, Sl. No. (xxiv)	Sodium	----	IS 12760 or ISO 15151 or ISO 21424	R	One	Each control unit	See Note 6 below
5.7 and 5.10, Table 2, Sl. No. (xxv)	Potassium	----	IS 12760 or ISO 15151 or ISO 21424	R	One	Each control unit	See Note 6 below
5.7 and 5.10, Table 2, Sl. No. (xxvi)	Chloride	----	IS 11763 or AOAC 2016.03	R	One	Each control unit	See Note 6 below
5.7 and 5.10, Table 2, Sl. No. (xxvii)	Calcium	----	IS 12760 or ISO 15151 or ISO 21424	R	One	Each control unit	See Note 6 below

5.7 and 5.10, Table2, Sl. No. (xxviii)	Phosphorus	----	IS 12756 or ISO 15151 or ISO 21424	R	One	Each control unit	See Note 6 below
5.7 and 5.10, Table 2, Sl. No. (xxix)	Calcium Phosphorus ratio	--	----	R	One	Each control unit	See Note 6 below
5.7 and 5.10, Table 2, Sl. No. (xxx)	Magnesium	----	IS 12760 or ISO 15151 or ISO 21424	R	One	Each control unit	See Note 6 below
5.7 and 5.10, Table 2, Sl. No. (xxxi)	Iodine	----	IS 17379	S	One	Once in a month	See note 5 below
5.7 and 5.10, Table1, Sl. No. (xxxii)	Copper	15 of IS 1699	IS 1699 or ISO 15151 or ISO 21424	S	One	Once in a month	See note 5 below
5.7 and 5.10, Table 2, Sl. No. (xxxiv)	Manganese	----	ISO 15151 or ISO 21424	S	One	Once in a month	See note 5 below
5.7 and 5.10, Table 2, Sl. No. (xxxv)	Selenium	----	IS 15303 or ISO 15151 or ISO 20649	S	One	Once in a month	See note 5 below
5.10, Table 3, Sl. No. (i)	Aerobic Plate Count	--	IS 5402(Part-1)	R	One	Each control unit	See Note 6 below

5.10, Table 3, Sl. No. (ii)	Staphylococcus aureus (coagulase positive)	--	IS 5887(Part 8/ Sec 1 or 2)	S	One	Once in a month	See note 5 below
5.10, Table 3, Sl. No. (iii)	Yeast and Mould Count	--	IS 5403 or IS 16609-1 for liquid product or IS 16609-2 for powdered product	R	One	Each control unit	See Note 6 below
5.10, Table 3, Sl. No. (iv)	Salmonella sp.	--	IS 5887 (Part 3/ Sec 1)	S	One	Once in a month	See note 5 below
5.10, Table 3, Sl. No. (v)	*Listeria monocytogenes*	--	IS 14988 (Part 1)	S	One	Once in a month	See note 5 below
5.10, Table 3, Sl. No. (vi)	*Bacillus cereus*		IS 5887(Part-6)	S	One	Once in a month	See note 5 below
5.10, Table 3, Sl. No. (vii)	Sulphite reducing *Clostridia*	---	ISO 15213	S	One	Once in a month	See note 5 below
5.10, Table 3, Sl. No. (viii)	Enterobacteriaceae	--	IS 17112(Part-1)	S	One	Once in a month	See note 5 below
5.10, Table 3, Sl. No. (ix)	*Enterobacter sakazakii (Cronobacter sp.)*	---	ISO 22964	S	One	Once in a month	See note 5 below
5.12, Table 4, Sl. No. (i)	Lead	--	IS 12074 or AOAC 2015.01	S	One	Once in a month	See note 5 below
5.12, Table 4, Sl. No. (ii)	Arsenic	---	IS 11124 or AOAC 2015.01	S	One	Once in a month	See note 5 below

5.12, Table 4, Sl. No. (iii)	Tin	---	ISO 14377	S	One	Once in a month	See note 5 below
5.12, Table 4, Sl. No. (iv)	Cadmium	15 of IS 1699	IS 1699 or AOAC 2015.01	S	One	Once in a month	See note 5 below
5.12, Table 4, Sl. No. (v)	Melamine	---	IS 16195	S	One	Once in a month	See note 5 below
6.1	Bisphenol A(BPA)	--	ISO 18857-2: 2009 or EN 13130-13	S	One	Each consignment of raw material received	Manufacturer to obtain test report/ test certificate from raw material supplier

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 empaneled 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: A sample shall be taken at the packing/repacking stage after every half an hour which shall be examined visually for colour, Free from lumps and coarse particles, uniform in appearance, free from dirt and extraneous matter; examined by organoleptic methods for freedom from rancid taste and musty odour; Freedom from preservatives, added colour and flavour and from any material which are harmful to infant's health. 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 be rejected for its conformity to these requirements of the specification.

Note 4: Two sample 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 Scorched Particle, moisture, Total Protein, Milk Protein, Fat, Carbohydrates, Total ash, Acid Insoluble Ash, Solubility Index, aerobic plate count, and coliform count. 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 control unit shall either be rejected or reprocessed for its conformity to these requirements.

Note-5: A sample shall be tested every month for Linoleic Acid, α-Linolenic acid, Vitamin A, Vitamin D, Vitamin E, Vitamin K, Vitamin C, , Thiamine, Riboflavin, Niacin equivalent, Vitamin B_6 (pyridoxine), Dietary Folate equivalent (DFE), Pantothenic acid, Vitamin B_{12}, Biotin, Choline, Iodine, Copper, Manganese, Selenium, *Staphylococcus aureus*, *Salmonella*, *Listeria monocytogenes*, *Bacillus cereus*, Sulphite reducing *Clostridia*, Enterobacteriaceae, *Enterobacter sakazakii (Cronobacter sp*.), Lead, Arsenic, Tin, Cadmium, Melamine In case of failure of the sample in any one or more of these parameter(s), the root cause of failure shall be investigated, Corrective actions/Preventive be taken and dispatch to be kept on hold. Thereafter, the samples from two consecutive control units shall be tested for the parameter(s) where failure has occurred and once the same has been found to be conforming, original frequency of testing be restored and dispatch resumed.

Note-6: One sample from every control unit shall be tested for the requirements of Iron, Sodium, Potassium, Chloride, Calcium, Phosphorus, Calcium Phosphorus ratio, Magnesium, Aerobic Plate Count, Yeast & Mould count as laid down in the Indian Standard. If any one or both of these samples fail to conform to any one or more of these requirements as laid down in the Indian Standard, the entire control unit shall either be rejected or reprocessed for its conformity to these requirements.