



उत्पाद मैनुअल
चिकन आहार - विशिष्टि
IS 1374:2024 के अनुसार

PRODUCT MANUAL
FOR Chicken Feed - Specification
ACCORDING TO IS 1374:2024

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो) अनुरूपता मूल्यांकन (विनियम, 2018 की योजना -I के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता के लिए इस उत्पाद मैनुअल का उपयोग सभी क्षेत्रीय / शाखा कार्यालयों और लाइसेंसधारियों द्वारा संदर्भ सामग्री के रूप में किया जाएगा। दस्तावेज़ का उपयोग बीआईएस प्रमाणन प्राप्त करने के इच्छुक संभावित आवेदकों द्वारा भी किया जा सकता है।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure uniformity 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.

1.	मानक संख्या IS No.	:	IS 1374:2024
	शीर्षक Title	:	Chicken Feed - Specification
	संशोधनों की संख्या No. of amendments	:	NIL
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	The ingredients used for manufacturing chicken feed shall conform to the requirements as per Cl. 4.1.1 of IS 1374. The manufacturer shall declare the list of ingredients (as per Annex B) as well as additives (as per Cl 4.3), if used. They shall also provide a declaration (as per Cl. 4.2) that these ingredients comply with the requirements of the standard and that no antibiotics from medically important antimicrobial classes have been incorporated in chicken feed for growth promotion. Note: This section indicates the requirements for raw material

		(if specified in the IS) for which compliance is to be established during Grant of Licence/Change in Scope of Licence/Factory Surveillance
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	: Samples of each type of chicken feed as per Cl. 3 of IS 1374:2024, intended to be covered in the scope of licence, shall be tested.
c)	नमूने का परिमाण Sample Quantity	: 1.5 kg Note: This section indicates the quantity of the sample of the product and/or the raw material (if applicable), required to be sent to the laboratory for testing, for the purpose of Grant of Licence/Change in Scope of Licence/ Factory Surveillance (in case of market surveillance, effort may be made to procure the required quantity of product sample, as far as possible since raw material sample may not be available in market)
3.	परीक्षण उपकरणों की सूची List of Test Equipment	: Please refer to Annex-A
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	: Please refer to Annex-B
5.	एक दिन में संभावित परीक्षण Possible tests in a day	
	i) Description ii) Moisture iii) Crude protein iv) Ether extract v) Crude fibre vi) Acid insoluble ash vii) Salt (as NaCl) viii) Calcium (as Ca) ix) Total phosphorous x) Available phosphorous Note: This section is for the guidance of BIS Certification Officers/Technical Auditors of BIS Authorized Outside Surveillance Agencies (OSAs) during factory inspection to provide ready reference regarding the tests which can be witnessed during the inspection in the factory by the officer/auditor.	
6.	लाइसेंस का दायरा /Scope of the Licence:	
	"Licence is granted to use Standard Mark as per IS 1374:2024 with the following scope:	
	Name of the product	Chicken Feed
	Types	BSF, BGF, BFF, CFL, GFL.. etc. as per Cl. 3 of IS 1374:2024

ANNEX – A

LIST OF TEST EQUIPMENTS

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sr. No.	Tests used in with Clause Reference	Test Equipment/Chemical
1	Description	-----
2	Moisture (Clause 4.1.2 and 7.1 and Table 1, SI No. i)	Aluminium dish with a cover, Air-oven, Desiccator, Analytical Balance
3	Crude protein (Clause 4.1.2 and 7.1 and Table 1, SI No. ii)	Kjeldahl Flask, Distillation Assembly, Potassium Sulphate or Anhydrous Sodium Sulphate, Copper Sulphate, Sulphuric Acid (Concentrated and Standard), Sodium Hydroxide Solution, standard Sodium Hydroxide Solution, Methyl Red Indicator Solution, Boric Acid Solution, Magnesium Oxide OR Potassium sulfate, Copper(II) oxide or Copper(II) sulfate pentahydrate, Sulfuric acid, Paraffin wax, Saccharose, Acetanilide or Tryptophan, Sodium hydroxide solution, Sulfuric acid or Boric acid, Sodium hydroxide, Mixed indicator, pH indicator paper, Boiling aids, such as granulated pumice stone, or glass beads or Carborundum chips, Analytical balance OR Kjeldahl catalyst tablets, Sulfuric acid, Hydrogen peroxide solution, Antifoaming agent, Sodium hydroxide, Methyl Red solution, Bromocresol Green solution, Boric Acid solution (Conc. and dilute), Hydrochloric acid solution, Ammonium sulfate, Ammonium Iron(II) sulfate, Tryptophan, Acetanilide, Sucrose, Analytical balance, Digestion block, Digestion tubes, Exhaust manifold, Centrifugal scrubber apparatus, filter pump or aspirator
3	Ether extract (Clause 4.1.2 and 7.1 and Table 1, SI No. iii)	Petroleum Ether, Hexane, Food Grade, Analytical Balance, Soxhlet or similar apparatus, Steam-bath, Desiccator OR Sodium sulfate, Light petroleum, Silicon carbide chips or glass beads, Acetone, Hydrochloric acid, Filtration aid eg. diatomaceous earth (Kieselguhr), Extraction thimble, Soxhlet-type extractor, Heating apparatus, Drying oven, Electrically heated vacuum oven, Desiccator
4	Crude Fibre (Clause 4.1.2 and 7.1 and Table 1, SI No. iv)	Sulfuric acid, Sodium hydroxide, Analytical Balance, Petroleum ether or hexane, Soxhlet or similar apparatus, Reflux condenser, Linen, Funnel, Gooch crucible, Ethyl alcohol, Air-oven, Muffle furnace, Desiccator OR Hydrochloric acid, Sulfuric acid, Potassium hydroxide solution, Acetone, Filter aid eg. Sea sand or Celite 545, Antifoam agent eg. n-octanol, Light Petroleum, Grinding device, Analytical Balance, Filter crucibles of quartz/porcelain/hard glass with fused sintered filter plate, Porcelain sieve Plates, Incineration dishes, Drying oven, Desiccator, Muffle furnace, Cold-extraction device, Heating device
5	Acid insoluble ash (Clause 4.1.2 and 7.1 and Table 1, SI No. v)	Hydrochloric acid, Analytical Balance, Porcelain/Silica/Platinum dish, Muffle furnace, Air-oven, Watch-glass, Waterbath, Whatman filter paper No. 42 or its equivalent, Desiccator OR Dilute hydrochloric acid, Trichloroacetic acid solution, Analytical balance, Muffle furnace, Drying oven, Hot-plate or gas burner, Boiling water bath, Incineration

		dishes, of platinum or platinum-gold alloy (e.g. 10 % Pt, 90 % Au) or of other material unaffected by the conditions of the test, Desiccator
6	Salt (as NaCl) (Clause 4.1.2 and 7.1 and Table 1, SI No. vi)	Ferric Sulphate, Ammonium Hydroxide, Conc. Nitric acid, Standard Silver Nitrate solution, Standard Potassium Thiocyanate solution, Analytical Balance, Whatman filter paper No. 41 or its equivalent
7	Calcium (as Ca) (Clause 4.1.2 and 7.1 and Table 2, SI No. i)	Hydrochloric Acid, Nitric Acid, Sulphuric Acid, Ammonia Solution, Ammonium Oxalate, Citric acid monohydrate, Ammonium Chloride, Bromocresol Green, Potassium Permanganate, Muffle Furnace, incineration Dish, Sintered Glass Filter Crucible - of porosity (pore size 10 to 16 µm), water bath, Analytical Balance OR Hydrochloric Acid, Lanthanum nitrate solution. Caesium chloride solution. Stock solution of Cu, Fe, Mn and Zn. Standard solution of Cu, Fe, Mn and Zn. Stock solution of Ca, K, Mg and Na, Standard solution of Ca, K, Mg and Na, Analytical Balance, hot plate or gas burner. water bath, Muffle Furnace, Atomic absorption spectrometer, Filter paper
8	Total Phosphorus (Clause 4.1.2 and 7.1 and Table 2, SI No. ii)	Nitric Acid, Ammonium Molybdate, Nitric Acid, Potassium Nitrate, Sodium Hydroxide, Phenolphthalein Indicator Solution OR Calcium carbonate. Hydrochloric Acid, Nitric Acid, Sulphuric Acid, Ammonium heptamolybdate, Ammonium monovanadate, Molybdovanadate reagent. Phosphorus standard solution, Ashing crucibles of silica or porcelain, Muffle Furnace, Kjeldahl flask, Spectrometer, Sand bath
9	Available Phosphorus (Clause 4.1.2 and 7.1 and Table 2, SI No. iii)	Aminonaphtholsulphonic Acid, Sodium Bisulphite, Sodium Sulphite, Calcium Chloride solution, Hydrochloric Acid, Ammonium molybdate, Sulphuric Acid, Phenolphthalein Indicator Solution, Sodium Hydroxide solution, Standard Phosphate solution, Trichloroacetic acid, Colorimeter
10	Lysine (Clause 4.1.2 and 7.1 and Table 2, SI No. iv)	Sodium Citrate buffer, Hydrindantin, Sodium Acetate buffer, Methyl Cellulose (Ethylene-Glycol-Monoethyl Ether), Ninhydrin- Hydrindantin reagent
11	Methionine (Clause 4.1.2 and 7.1 and Table 2, SI No. v)	Standard Sodium Hydroxide solution, Sodium Nitroprusside, Glycine, Phosphoric Acid, Phosphotungstic Acid, Spectrophotometer
12	Methionine+Cystine (Clause 4.1.2 and 7.1 and Table 2, SI No. vi)	Apparatus: Round bottom flask of capacity 100 ml or 500 ml fitted with a reflux condenser, borosilicate glass bottle of capacity 100 ml with screw/cap with rubber/teflon liner for use in oven, Oven, pH meter, Membrane filter 0.2 µm, centrifuge, rotary vacuum evaporator, Amino acid analyser or HPLC equipment along with standard laboratory apparatus and glassware Reagents: Double distilled water or equivalent quality water, hydrogen peroxide, formic acid, hydrochloric acid, 2-2 thiodiethanol, light petroleum, norleucine or any other compound suitable for use as internal standard, nitrogen gas, amino acid, standard substances (Methionine+Cystine), cysteic acid, sodium hydroxide, sulfosalicylic acid, elution buffers, ninhydrin reagents, standard solutions, stock solutions and calibration solutions as per IS/ISO 13903 along with standard laboratory reagents
13	Threonine (Clause 4.1.2 and 7.1 and Table 2, SI No. vii)	Apparatus: Round bottom flask of capacity 100 ml or 500 ml fitted with a reflux condenser, borosilicate glass bottle of capacity 100 ml with screw/cap with rubber/teflon liner for use in oven, Oven, pH meter, Membrane filter 0.2 µm, centrifuge, rotary vacuum evaporator, Amino acid analyser or HPLC equipment along with standard laboratory apparatus and glassware Reagents: Double distilled water or equivalent quality water, hydrogen peroxide,

		formic acid, hydrochloric acid, 2-2 thiodiethanol, light petroleum, norleucine or any other compound suitable for use as internal standard, nitrogen gas, amino acid, standard substances (Threonine), cysteic acid, sodium hydroxide, sulfosalicylic acid, elution buffers, ninhydrin reagents, standard solutions, stock solutions and calibration solutions as per IS/ISO 13903 along with standard laboratory reagents
14	Metabolizable Energy (Clause 4.1.2 and 7.1 and Table 2, SI No. viii)	Apparatus – Brooder – battery or floor type, glass bottles – stoppered, wide mouthed Reagents – Acetic acid – 2%, Sulphuric Acid – 5%
15	Manganese (Clause 4.1.3 and 7.1 and Table 3, SI No. i)	Hydrochloric acid, Lanthanum nitrate solution. Caesium chloride solution. Stock solution of Mn, Standard solution of Mn, Analytical balance, Electric hot plate or gas burner, water bath. muffle furnace, AAS, Filter paper
16	Iodine (Clause 4.1.3 and 7.1 and Table 3, SI No. ii)	Takadiastase, Methyl Orange Indicator, Dilute Sulphuric Acid, Bromine Water, Sodium Sulphite Solution, Phenol Solution, Potassium Iodide Solution, Standard Sodium Thiosulphate Solution, Starch Solution, Sodium Chloride Solution, Potassium Iodide Control Solution, Concentrated Sulphuric Acid, Erlenmeyer flask
17	Iron (Clause 4.1.3 and 7.1 and Table 3, SI No. iii)	Hydrochloric acid, Lanthanum nitrate solution. Caesium chloride solution. Stock solution of Fe, Standard solution of Fe, Analytical balance, Electric hot plate or gas burner, water bath. muffle furnace, AAS, Filter paper
18	Zinc (Clause 4.1.3 and 7.1 and Table 3, SI No. iv)	Hydrochloric acid, Lanthanum nitrate solution. Caesium chloride solution. Stock solution of Zn, Standard solution of Zn, Analytical balance, Electric hot plate or gas burner, water bath. muffle furnace, AAS, Filter paper
19	Copper (Clause 4.1.3 and 7.1 and Table 3, SI No. v)	Hydrochloric acid, Lanthanum nitrate solution. Caesium chloride solution. Stock solution of Cu, Standard solution of Cu, Analytical balance, Electric hot plate or gas burner, water bath. muffle furnace, AAS, Filter paper
20	Selenium (Clause 4.1.3 and 7.1 and Table 3, SI No. vi)	Water (HPLC grade or equivalent), Sodium methoxide, Disodium hydrogen citrate sesquihydrate $[\text{HOC}(\text{COOH})(\text{CH}_2\text{COONa})_2 \cdot 1.5\text{H}_2\text{O}]$, Sodium Chloride, tert-Butyl methyl ether (MTBE), Methyl undecanoate, Tritridecanoin, Octodecenoic acid methyl ester, Linoleic acid methyl ester, Methyl octodecadienoate conjugated acids, Qualitative cis/trans FAME isomers standard mixture solution, Standard FAME mixture solution.
21	Sodium (Clause 4.1.3 and 7.1 and Table 3, SI No. vii)	Apparatus Analytical balance, capable of weighing to the nearest 1 mg. Muffle furnace, electrically heated, capable of being maintained at $(550 \pm 20)^\circ\text{C}$. Ashing dishes, of platinum or silica. Flame photometer with an air-butane, air-propane or air-acetylene flame in a ratio allowing complete combustion; or an atomic absorption spectrometer operating in emission mode and equipped to determine potassium and sodium with an air-acetylene flame. Sand bath or hot plate, capable of being maintained at approximately 150°C . TD (to deliver) precision pipettes or microburette of 5 ml capacity. TC (to contain) precision pipettes, of various capacities. Beakers, of 250 ml capacity Standard Laboratory equipment Reagents Water, double distilled, or double deionized. Potassium chloride (KCl), dried for 2 h at $(110 \pm 2)^\circ\text{C}$. Sodium chloride (NaCl), dried for 2 h at $(110 \pm 2)^\circ\text{C}$. Concentrated hydrochloric acid, $c(\text{HCl}) = 12 \text{ mol/l}$ ($\rho_{20}(\text{HCl}) = 1.19 \text{ g/ml}$). Hydrochloric acid, $c(\text{HCl}) = 6 \text{ mol/l}$. Dilute hydrochloric acid, $c(\text{HCl}) = 0.1 \text{ mol/l}$. caesium chloride aluminium nitrate nonahydrate Biological Certified Reference Materials. Standard Laboratory Reagents

22	Chloride (Clause 4.1.3 and 7.1 and Table 3, SI No. viii)	Rotary shaker, operating at a rotation frequency of approximately 35 min⁻¹ to 40 min⁻¹, Volumetric flasks, class A of capacities 200 ml, 500 ml, and 1 000 ml, Pipettes, class A of appropriate capacities, Burettes, class A of appropriate capacities, Analytical balance, capable of weighing to 0,000 1 g, Filter paper, of appropriate porosity and other laboratory equipment Water, complying with at least grade 3 in accordance with ISO 3696; Acetone; n-Hexane; Nitric acid, mass concentration $\rho_{20}(\text{HNO}_3) = 1,38 \text{ g/ml}$; Dilute nitric acid, volume fraction $\rho(\text{HNO}_3) = 2 \%$, Potassium chromate solution, mass concentration $\rho(\text{K}_2\text{CrO}_4) = 5 \%$ in water; Ammonium iron(III) sulfate, saturated solution; Activated carbon, free from chloride and not capable of adsorbing chloride; Potassium hexacyanoferrate(II) trihydrate; Zinc acetate 6hydrate $[\text{Zn}(\text{CH}_3 \text{ COO})_2 \cdot 2\text{H}_2\text{O}]$; Glacial Acetic Acid; Sodium chloride; Silver nitrate, standard volumetric solution, $c_s = 0,1 \text{ mol/l}$; Ammonium thiocyanate or potassium thiocyanate, standard volumetric solution, $c_t = 0,1 \text{ mol/l}$; other laboratory reagents.
23	Potassium (Clause 4.1.3 and 7.1 and Table 3, SI No. ix)	Apparatus Analytical balance, capable of weighing to the nearest 1 mg. Muffle furnace, electrically heated, capable of being maintained at $(550 \pm 20)^\circ\text{C}$. Ashing dishes, of platinum or silica. Flame photometer with an air-butane, air-propane or air-acetylene flame in a ratio allowing complete combustion; or an atomic absorption spectrometer operating in emission mode and equipped to determine potassium and sodium with an air-acetylene flame. Sand bath or hot plate, capable of being maintained at approximately 150°C. TD (to deliver) precision pipettes or microburette of 5 ml capacity. TC (to contain) precision pipettes, of various capacities. Beakers, of 250 ml capacity Standard Laboratory equipment Reagents Water, double distilled, or double deionized. Potassium chloride (KCl), dried for 2 h at $(110 \pm 2)^\circ\text{C}$. Sodium chloride (NaCl), dried for 2 h at $(110 \pm 2)^\circ\text{C}$. Concentrated hydrochloric acid, $c(\text{HCl}) = 12 \text{ mol/l}$ ($\rho_{20}(\text{HCl}) = 1,19 \text{ g/ml}$). Hydrochloric acid, $c(\text{HCl}) = 6 \text{ mol/l}$. Dilute hydrochloric acid, $c(\text{HCl}) = 0,1 \text{ mol/l}$. caesium chloride aluminium nitrate nonahydrate Biological Certified Reference Materials. Standard Laboratory Reagents
24	Vitamin A (Clause 4.1.3 and 7.1 and Table 3, SI No. x)	Potassium hydroxide solution, Ethanol, 2-Propanol, Light petroleum, A11-trans-retinyl acetate, vitamin A acetate, A11-trans-retinol, vitamin A alcohol, Methanol, HPLC grade, Sodium sulfate, Sodium ascorbate solution, Inert gas e.g. nitrogen, HPLC, UV (or UV-Visible) spectrometer, water bath, Rotary vacuum evaporator, Extraction Apparatus, Membrane filter (0.45 μm pore size)
25	Vitamin D3 (Clause 4.1.3 and 7.1 and Table 3, SI No. xi)	Ethanol, Methanol, Methyl Chloride, Phosphate buffer, Diethyl Ether, Acetone, Acetonitrile, Inert gas e.g. nitrogen, Vitamin D3 standard substance, HPLC
26	Vitamin B1 (Clause 4.1.3 and 7.1 and Table 3, SI No. xii)	Chromatography Columns, Centrifuge, Fluorometer, Blender, Sodium Acetate Buffer, :Enzyme Solution, Stock Thiamine Solution, Activated Decalso or Equivalent, Acetic Acid, Potassium Chloride Solution, Bromocresol Green Indicator, Isobutyl Alcohol, Anhydrous Sodium Suphate, Potassium Hydroxide Solution, Potassium Ferricyanide Solution, Oxidizing Reagent
27	Vitamin B2 (Clause 4.1.3 and 7.1 and Table 3, SI No. xiii)	Photo-Fluorometer, Hydrochloric Acid, Sodium Hydroxide Solution, Riboflavin Stock Solution, (Glacial) Acetic Acid, Potassium Permanganate, Hydrogen Peroxide, Sodium Hydrosulphite

	xiii)	
28	Pantothenic acid (Clause 4.1.3 and 7.1 and Table 3, SI No. xiv)	Autoclave, Colorimeter, Hypodermic Syringe, Incubator, Erlenmeyer Flask, Acid-Hydrolyzed Casein, Cystine-Tryptophan Solution, Adenine-Guanine-Uracil (AGU) Solution, Vitamin Solution, Pantothenic Acid Stock solution, Biotin Stock Solution, Niacin Stock Solution, Salt Solution A and B, Anhydrous Glucose, Anhydrous Sodium Acetate, Basal Medium Stock Solution, Agar Medium, sodium chloride, sodium hydroxide, Bromothymol Blue Indicator Solution, Pantothenic Acid Standard, Acetate Buffer, Mylase P., Alkaline Phosphatase, Chicken Liver Extract, Bicarbonate Buffer
29	Niacin (Clause 4.1.3 and 7.1 and Table 3, SI No. xv)	Photoelectric colorimeter, Sulphuric Acid, Sodium Hydroxide, Ammonium Sulphate(solid), Nicotinic Acid standard, Sulphanilic Acid Solution, Cyanogen Bromide Solution, Dilute Ammonium Hydroxide, Dilute Hydrochloric and Hydrobromic Acid, Phosphate Buffer Solution
30	Biotin (Clause 4.1.3 and 7.1 and Table 3, SI No. xvi)	Autoclave, Centrifuge, Hypodermic Syringe, Colorimeter, Incubator, Erlenmeyer flask, Acid-Hydrolyzed Casein, Cystine-Tryptophan Solution, Adenine-Guanine-Uracil (AGU) Solution, Vitamin Solution, Pantothenic Acid Stock solution, Biotin Stock Solution, Niacin Stock Solution, Salt Solution A and B, Anhydrous Glucose, Anhydrous Sodium Acetate, Basal Medium for Biotin Assay, Agar Medium, sodium chloride, sodium hydroxide, Bromothymol Blue Indicator Solution, Sulphuric Acid, Sodium Hydroxide, Biotin Standard
31	Vitamin B12 (Clause 4.1.3 and 7.1 and Table 3, SI No. xvii)	Casein Hydrolysate, Sodium Acetate Buffer, Asparagine Solution, Adenine-Guanine-Uracil (AGU) Solution, Xanthine Solution, Salt Solution A and B, Polysorbate 80 , Vitamin Solution I and II, Tomato Juice, Standard Cyanocobalamin, L-Cystine, L-Tryptophan, Hydrochloric acid, Asparagine Solution, Casein Hydrolysate Solution, Dextrose Anhydrous, Sodium Acetate(Anhydrous), Ascorbic Acid
32	Folic Acid (Clause 4.1.3 and 7.1 and Table 3, SI No. xviii)	Folic Acid or Monoglutamate, Tetrahydro-folic acid (THFA), 10-formyl THFA, 5,10-methenyl THFA, 5-Methyl THFA, Triglutamates, Heptaglutamates, <i>Lactobacillus Casei</i> (ATCC No. 7469 or NCIM No. 2077), Incubator, Autoclave, Centrifuge, Sterilizing oven, Photoelectric Colorimeter or Turbidimeter, Activated Charcoal, L- Cystine, dl-tryptophane, Adenine-Guanine- Uracil (AGU) Solution, Xanthine Solution, Salt Solution A and B, Pyridoxine and Thiomine, Biotin, Riboflavin,
33	Choline (Clause 4.1.3 and 7.1 and Table 3, SI No. xix)	Acetonitrile(MS grade), Ammonium formate(MS grade or equivalent), Formic acid(MS grade or equivalent), Nitric acid, Isopropanol(MS grade or equivalent), Desiccant. L-carnitine(inner salt), Choline bitartrate, L-carnitine-d3 HCL, Choline-1,1,2,2-d4chloride, HPLC, Microwave, Vortex mixture, Analytical balance, Magnetic stir plate, Desiccator
34	Vitamin E (Clause 4.1.3 and 7.1 and Table 3, SI No. xx)	Ethanol, Methanol, Potassium Hydroxide solution, Light Petroleum Ether, Sodium Sulphate(anhydrous), Tetrahydrofuran, Acetonitrile, Inert Gas(Nitrogen), Vitamin E Standard substances, HPLC OR Potassium hydroxide, Ethanol, Hexane(HPLC grade), Light Petroleum, Vitamin E standard substance(DL-a-tocopherol), 1,4-Dioxan, HPLC grade., Sodium sulfate, Sodium ascorbate solution, Inert Gas(Nitrogen), Vitamin E Standard substances, HPLC, ethanol, Methanol, water Bath, Rotary vacuum Evaporator, Membrane filter, 0.45 m pore size, Grinding apparatus, UV (or UV/Visible) spectrometer
35	Vitamin K ₃ (Clause 4.1.3 and 7.1 and Table 3, SI No. xxi)	NA – Test method not specified.

36	Vitamin B6 (Clause 4.1.3 and 7.1 and Table 3, Sl. No. xxii)	Monobasic potassium phosphate, Potassium chloride, Calcium chloride, Magnesium sulphate, Manganese sulphate, Ferric chloride, Casein Hydrolysate, Biotin Solution, Calcium Pantothenate Solution, Thiamine Solution, Potassium Citrate Buffer, Malt extract, Glucose, Yeast extract, Peptone, Agar
37	Linoleic acid Clause 4.1.3 and 7.1 and Table 3, Sl. No. xxiii)	<u>Apparatus:</u> Analytical balance, Micropipette, Dispensers, Volumetric flasks and Volumetric pipets, Test tubes, Vortex mixer, Laboratory centrifuge, Gas-liquid chromatograph, Carrier Gas (Hydrogen or Helium), Other gases (free from organic impurities, nitrogen and hydrogen), Capillary column, Magnetic stirrer <u>Reagents:</u> Water (HPLC Grade or equivalent grade), Sodium methoxide solution, Transesterification solution, Sodium chloride, Disodium hydrogen citrate sesquihydrate, tert-Butyl methyl ether (MTBE), Methyl undecanoate, Tritridecanoin, Octodecenoic acidmethyl ester, Linoleic acid methyl ester, Methyl octodecadienoate conjugated acids, Qualitative cis/trans FAME isomers standard mixture solution, Standard FAME mixture solution
38	Arsenic Clause 4.1.4 and 7.1 and Table 4, Sl. No. i)	<u>Test for Arsenic as per A-6 of IS 1767</u> Modified Gutzeit Apparatus, Mercuric Bromide Paper, Lead acetate paper, , Standard Arsenic Trioxide solution, Stannous Chloride Solution, Potassium Iodide OR <u>Determination of Arsenic by ICP-MS (EN 17053)</u> Apparatus Laboratory grinder, Analytical balance, capable of weighing to an accuracy of 1 mg, Pressure digestion apparatus, capable to reach temperatures above 210 °C, One-mark volumetric flasks, Inductively Coupled Plasma Mass Spectrometer (ICP-MS); Freeze-drying equipment, capable of freeze-drying liquid animal feeding stuffs; Oven for pre-drying, capable to hold a temperature of 70 °C ± 5 °C; Beaker, capacity 250 ml; Electric hot plate, with temperature control. Other laboratory equipment Reagents Nitric acid concentrated, not less than 65 % (mass fraction), c(HNO₃) = 14,4 mol/l, having a density of approximately ρ(HNO₃) = 1,40 g/ml. Nitric acid solution of 5 % (mass fraction), Nitric acid solution (rinsing solution), Hydrochloric acid concentrated, 30 % (mass fraction), c(HCl) = 9,5 mol/l, having a density of approximately ρ(HCl) = 1,15 g/ml. Hydrogen peroxide, not less than 30 % (mass fraction), c(H₂O₂) = 9,7 mol/l, having a density of approximately ρ(H₂O₂) = 1,12 g/ml. Single-element and multi-element stock solutions for ICP-MS, β = 1 000 mg/l, Calibration solutions Internal standard stock solution, β = 1000 mg/l; Internal standard working solution, β = 1 mg/l Gold chloride stock solution, AuCl₃ (in 10 % HCl), β = 10 g Au/l. Gold stability solution, β = 200 mg Au/l, Other laboratory reagents
39	Fluorine Clause 4.1.4 and 7.1 and Table 4, Sl. No. ii)	APPARATUS Ion Selective Electrode Meter Single Junction Reference Electrode Solid State Fluoride Electrode Magnetic Stirrer and Stir Bars Plastic Labware

		REAGENTS Distilled or Deionized Water 100 mg/kg Fluoride Standard Solution Reference Electrode Filling Solution Total Ionic Strength Adjustment Buffer (TISAB-III)
40	Lead Clause 4.1.4 and 7.1 and Table 4, Sl. No. iii)	Test for heavy metals as per A-7 of IS 1767 Nessler cylinders and standard laboratory equipment/glassware Dilute hydrochloric acid – 5 N, dilute acetic acid – 1 N, dilute ammonium hydroxide – 5 N, hydrogen sulphide solution – saturated, lead nitrate
41	Mercury Clause 4.1.4 and 7.1 and Table 4, Sl. No. iv)	<u>Determination of Mercury by ICP-MS (EN 17053)</u> Apparatus Laboratory grinder, Analytical balance, capable of weighing to an accuracy of 1 mg, Pressure digestion apparatus, capable to reach temperatures above 210 °C, One-mark volumetric flasks, Inductively Coupled Plasma Mass Spectrometer (ICP-MS); Freeze-drying equipment, capable of freeze-drying liquid animal feeding stuffs; Oven for pre-drying, capable to hold a temperature of 70 °C ± 5 °C; Beaker, capacity 250 ml; Electric hot plate, with temperature control. Other laboratory equipment Reagents Nitric acid concentrated, not less than 65 % (mass fraction), c(HNO ₃) = 14,4 mol/l, having a density of approximately ρ(HNO ₃) = 1,40 g/ml. Nitric acid solution of 5 % (mass fraction), Nitric acid solution (rinsing solution), Hydrochloric acid concentrated, 30 % (mass fraction), c(HCl) = 9,5 mol/l, having a density of approximately ρ(HCl) = 1,15 g/ml. Hydrogen peroxide, not less than 30 % (mass fraction), c(H ₂ O ₂) = 9,7 mol/l, having a density of approximately ρ(H ₂ O ₂) = 1,12 g/ml. Single-element and multi-element stock solutions for ICP-MS, β = 1 000 mg/l, Calibration solutions Internal standard stock solution, β = 1000 mg/l; Internal standard working solution, β = 1 mg/l Gold chloride stock solution, AuCl ₃ (in 10 % HCl), β = 10 g Au/l. Gold stability solution, β = 200 mg Au/l, Other laboratory reagents
42	Nitrite Clause 4.1.4 and 7.1 and Table 4, Sl. No. v)	Apparatus and reagents as per AOAC 968.07 KNO ₃ , CdCl ₂ , BaCl ₂ , NH ₄ Cl, NH ₄ OH, NaOH, Sulfinilamide, HCl, (1-naphthyl)ethylene diamine-HCl, NaCl, H ₂ O 25 ml buret or equivalent id chromatographic tube with stopcock and reservoir, Glass stoppered dark bottle, refrigerator
43	Aflatoxin B ₁ Clause 4.1.4 and 7.1 and Table 4, Sl. No. vi)	Test as per Annex M Toluene, Chloroform(HPLC Grade), Potassium Hydroxide solution, Light Petroleum Ether, Sodium Sulphate(anhydrous), n-Hexane, Acetonitrile, Glacial acetic acid, Diethyl Ether, Silica Gel, Inert Gas, Aflatoxin B ₁ standard, HPLC OR High-performance liquid chromatography as per IS/ISO 14718 Sulfuric acid, Acid-washed Celite 545 or product of equivalent quality, Florisil Sep-Pak style cartridge, Waters No. 51960, or product of equivalent, Acetone. Methanol. Acetonitrile, Chloroform, Acetone, Methanol, Concentrated nitric acid, Potassium bromide, Iodine, Sodium hypochlorite solution, Inert Gas, Aflatoxin B ₁ standard, HPLC OR

		High-performance liquid chromatography with post-column derivatization as per IS 18143 Vertical or horizontal shaker, adjustable. Filter paper, of diameter 24 cm, prefolded (e.g. cellulose for fine precipitates). Erlenmeyer flask, with screw top or glass stopper. Glass microfibre filter paper, of diameter 5 cm (e.g. 1,6 µm retention). Reservoir, 75 ml with Luer tip connector for IAC. Hand pump, 20 ml syringe with Luer lock or rubber stopper for IAC. Volumetric flasks, of 5 ml, 10 ml and 20 ml capacity, with an accuracy of at least 0.5 % HPLC pump, suitable for flow rate at (1,000 ± 0,005) ml/min Injection system RP-HPLC column, e.g. LC-18 or ODS-2, with optional but recommended pre-column Post-column derivatization system with PBPB OR System for HPLC post-column derivatization with electrochemically generated bromine. Fluorescence detector, with a 360 nm excitation filter and a > 420 nm cut-off emission filter, or equivalent Disposable filter unit (0,45 µm) One-mark pipettes, of 1 ml, 2 ml, 5 ml and 10 ml capacity. Analytical balance, capable of weighing to the nearest 0,1 mg. Laboratory balance, capable of weighing to the nearest 0,01 g. Calibrated microlitre syringe(s) or microlitre pipette(s), 20 µl to 500 µl. Evaporator, optional, only needed for Option B (6.3.3). Spectrophotometer. Quartz glass cell, 1 cm optical path length. Reagents as per IS 18143
44	Free Gossypol Clause 4.1.4 and 7.1 and Table 4, Sl. No. vii)	Tumbler mixer, having a rotational frequency of approximately 35 min – 1, or other shaker Spectrometer, suitable for making measurements at wavelengths between 435 and 445 nm, with cells of optical path length 10 mm. Volumetric flasks, of capacities 25 and 50 ml Conical flasks, of capacities 50, 100 and 250 ml 2- Propanol/n-hexane, 60 + 40 mixture by volume, 3-aminopropan-1-ol glacial acetic acid Aniline Zinc Dust
45	Hydrocyanic acid Clause 4.1.4 and 7.1 and Table 4, Sl. No. viii)	Apparatus and chemicals as per AOAC 970.11, 915.03 Acid titration method Analytical Balance, No. 20 Sieve, 800 ml Kjeldahl Flask, Steam distillation apparatus, Gooch crucible, titration apparatus, and other laboratory equipment KSCN, AgNO₃, HNO₃, other laboratory reagents Alkaline Titration method Analytical Balance, No. 20 Sieve, 800 ml Kjeldahl Flask, Steam distillation apparatus, titration apparatus with microburet, and other laboratory equipment NaOH, NH₄OH, AgNO₃, KI, other laboratory reagents
46	BHC Clause 4.1.4 and 7.1 and Table 4, Sl. No.	Gas chromatographic method as per IS 15950 Separating funnels, of 500 ml capacity with polytetrafluoroethylene (PTFE) stopcocks and stoppers.

	ix)	Filtering flasks, of 500 ml capacity. Büchner funnel, of porcelain, with internal diameter 90 mm. Graduated tubes, of 10 ml capacity, with polytetrafluoroethylene (PTFE) stoppers. Glass chromatographic tube, about 300 mm in length, 8 mm to 10 mm internal diameter, with coarse fritted plate of porosity grade P 100 (pore size index 40 mm to 100 mm [2]) or glass wool plug. Rotary vacuum evaporator, provided with round-bottom flasks of 100 ml and 500 ml capacities and a water bath at 40 °C ± 2 °C. Mechanical shaker or high-speed blender. Gas chromatographic system Grinder Water, Hexane, Acetone, Dichloromethane, silica gel 60 with a mass fraction of water of 10%, Eluting solvent: dichloromethane in hexane, 20 % (by volume), Inert gas, for example nitrogen, Sodium sulfate, anhydrous, Sodium chloride, saturated solution, Pesticide reference standards as per IS 15950, Internal standard: mirex (1,3,5-tribromobenzene) or pentachloronitrobenzene Standard laboratory apparatus and reagents
47	DDT Clause 4.1.4 and 7.1 and Table 4, Sl. No. x)	-do-
48	Endosulphan Clause 4.1.4 and 7.1 and Table 4, Sl. No. xi)	-do-
49	Aldrin Clause 4.1.4 and 7.1 and Table 4, Sl. No. xii)	-do-

ANNEX C

SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that manufacturers (licensees/applicants) will implement a Quality Assurance Plan i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan defining the control unit (i.e. lot/batch etc.) and the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and submit the same to BIS Branch Office for information. The manufacturer shall comply with the same and maintain test records in accordance with para 2.4.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is: Entire quantity of chicken feed of the same type produced using the same consignment of raw materials under similar conditions in a batch.

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in **Table 1**.

1.3.3 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan. Alternatively, the manufacturer has the option of adherence to the quality plan as per levels of control recommended in column 3 of Table 1.

1.4 However, all manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard.

2. ENSURING COMPLIANCE THROUGH TESTING- It is expected that manufacturers (licensees/applicants) will establish a suitably equipped and staffed in house laboratory (In house testing facility) for testing at least those parameters of the Indian Standard which require routine testing for ensuring quality of the product. This includes in-process controls as may be defined and put in place by the manufacturer and testing parameters/requirements which can only be performed in the factory.

2.1 For the guidance of manufacturers, Table 1 giving the recommended levels of control is given below. Column 2 of Table 1 indicates routine tests where test equipment is required in house as “R” or other tests which can be subcontracted as “S”. Subcontracting is permitted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.2 For MSME manufacturers, the requirement of maintaining a laboratory/in-house testing facility for routine tests (indicated as “R” in Column 2 of Table 1) is also optional.

2.2.1 MSME manufacturers may utilize common cluster based facilities as per guidelines for the utilization of cluster based test facilities by MSMEs or the provisions of Sharing of testing facilities or get testing done from BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.3 Large Scale manufacturers shall maintain an in-house laboratory equipped at least with test facilities for routine tests (indicated as “R” in Column 2 of Table 1), where different tests given in the specification shall be carried out in accordance with the method given in the specification. They shall also implement a calibration plan for the in-house test equipment.

2.3.1 Alternatively, in lieu of an in-house laboratory, large scale manufacturers can also utilize the provisions of Sharing of testing facilities as per the Guidelines for Grant of Licence available on BIS website www.bis.gov.in. (Under Conformity Assessment>Product Certification Process). Even for subcontracted tests, provisions for sharing of testing facilities can be utilized.

2.4 TEST RECORDS- The manufacturers maintaining an in-house laboratory or utilizing common cluster based facilities or shared test facilities shall maintain test records for the tests carried out to establish conformity. For the tests being subcontracted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025, test reports issued by the laboratories shall be available for inspection by BIS.

3. PACKING AND MARKING - The Standard Mark as given in the Schedule of the licence shall be incorporated legibly and indelibly on each bag provided always that the material so marked conforms to each requirement of the specification.

3.1 Packing and Marking shall be done as per the Indian Standard.

3.2 **Additional Marking requirements:** The material shall also be marked with the following additional requirement on each bag:

a) “For BIS certification details please visit www.bis.gov.in”

4. HYGIENIC CONDITIONS – The factory shall always be maintained in good hygienic condition. All the processing equipment shall be properly cleaned and care shall be taken to prevent infestation and adventitious contamination.

5. REJECTION - All the production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark. 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
(ONLY FOR GUIDANCE PURPOSE)

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or)S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Methods Clause Reference			No. of Sample	Frequency	Remarks
4.1	Description	4.1	IS 1374	R	The manufacturer shall put in place inspections and in process controls to ensure that the product conforms to the specified requirement		
4.1.1	Ingredients	4.1.1	IS 1374	R	The manufacturer shall put in place inspections and in process controls to ensure that only ingredients as permitted in the standard are used, and maintain records thereof		
4.1.2, Table 1	Requirements for chicken feeds						
i.	Moisture		IS 7874 (Part 1)	R	One	Each control unit	
ii.	Crude protein		IS 7874 (Part 1) or IS/ISO 5983 (Part 1)*or IS/ISO 5983 (Part 2)	R	One	Each control unit	
iii.	Ether extract		IS 7874 (Part 1)* or IS/ISO 6492	R	One	Each control unit	
iv.	Crude fibre		IS 7874 (Part 1) or IS/ISO 6865*	R	One	Each control unit	
v.	Acid insoluble ash,		IS 7874 (Part 1) or IS 14826*	R	One	Each control unit	
vi.	Salt (as NaCl)		IS 7874 (Part 2)	R	One	Each control unit	
4.1.2, Table 2	Requirements for chicken feeds						
i.	Calcium		IS 13433 (Part 1) or IS 15121* or EN 15621	R	One	Each control unit	
ii.	Total phosphorus,		IS 7874 (Part 2) or IS 14828* or EN 15621	R	One	Each control unit	
iii.	Available phosphorus	Annex F	IS 1374	R	One	Each control unit	

iv.	Lysine		Annex G or IS/ISO 13903	S	One	Once in six months	
v.	Methionine		Annex H or IS/ISO 13903	S	One	Once in six months	
vi.	Methionine +Cysteine		IS/ISO 13903	S	One	Once in six months	
vii.	Threonine		IS/ISO 13903	S	One	Once in six months	
viii.	Metabolizable energy	Annex J	IS 1374	R	The manufacturer shall put in place inspections and in process controls to ensure that the product conforms to the specified requirement, and maintain records thereof		
4.1.3, Table 3	Requirements for Minerals, Vitamins, Amino Acids and Fatty Acids per kg of Chicken Feeds						
i.	Manganese		IS 15121* or EN 15621	S	One	Once in six months	Or whenever there is change in material or its source
ii.	Iodine		IS 7874 (Part 2)	S	One	Once in six months	Or whenever there is change in material or its source
iii.	Iron		IS 15121* or EN 15621	S	One	Once in six months	Or whenever there is change in material or its source
iv.	Zinc		IS 15121* or EN 15621	S	One	Once in six months	Or whenever there is change in material or its source
v.	Copper		IS 15121* or EN 15621	S	One	Once in six months	Or whenever there is change in material or its source
vi.	Selenium		AOAC 996.17 * or EN 17053	S	One	Once in six months	Or whenever there is change in material or its source
vii.	Sodium		ISO 7485	S	One	Once in six months	Or whenever there is change in material or its source
viii.	Chloride		IS 14829	S	One	Once in six months	Or whenever there is change in material or its source
ix.	Potassium		ISO 7485	S	One	Once in six months	Or whenever there is change in material or its source

x.	Vitamin A		IS 15120	S	One	Once in six months	Or whenever there is change in material or its source
xi.	Vitamin D ₃	Annex K	IS 1374	S	One	Once in six months	Or whenever there is change in material or its source
xii.	Vitamin B ₁		IS 5398	S	One	Once in six months	Or whenever there is change in material or its source
xiii.	Vitamin B ₂		IS 5399	S	One	Once in six months	Or whenever there is change in material or its source
xiv.	Pantothenic acid		IS 9840	S	One	Once in six months	Or whenever there is change in material or its source
xv.	Niacin		IS 5400	S	One	Once in six months	Or whenever there is change in material or its source
xvi.	Biotin		IS 9820	S	One	Once in six months	Or whenever there is change in material or its source
xvii.	Vitamin B ₁₂		IS 7529	S	One	Once in six months	Or whenever there is change in material or its source
xviii.	Folic acid		IS 7234	S	One	Once in six months	Or whenever there is change in material or its source
xix.	Choline		IS 17668	S	One	Once in six months	Or whenever there is change in material or its source
xx.	Vitamin E		Annex L or IS 15948*	S	One	Once in six months	Or whenever there is change in material or its source
xxi.	Vitamin K		Test method to be specified.	NA	NA	NA	Till such time, test method is prescribed, the manufacturers shall maintain record showing the quantity of Vitamin K added to each batch of feed.
xxii.	Vitamin B ₆		IS 7530	S	One	Once in six months	Or whenever there is change in material or its source
xxiii.	Linoleic acid		AOAC 2012.13	S	One	Once in six months	Or whenever there is change in material or its source

4.1.4, Table 4	Maximum Prescribed Limit for Harmful Substances						
i.	Arsenic		A-6 of IS 1767 or AOAC 957.22* or EN 17053	S	One	Once in six months	Or whenever there is change in material or its source
ii.	Fluorine		Annex B of IS 5470* or AOAC 975.08	S	One	Once in six months	Or whenever there is change in material or its source
iii.	Lead		A-7 of IS 1767 or AOAC 999.11* or EN 17053	S	One	Once in six months	Or whenever there is change in material or its source
iv.	Mercury		AOAC 971.21, 2015.01* or EN 17053	S	One	Once in six months	Or whenever there is change in material or its source
v.	Nitrite (Na pitrite)		AOAC 968.07	S	One	Once in six months	Or whenever there is change in material or its source
vi.	Aflatoxin B ₁		Annex M or IS/ISO 14718* or IS 18143 or AOAC 2003.02	S	One	Once in six months	Or whenever there is change in material or its source
vii.	Free gossypol		IS/ISO 6866	S	One	Once in six months	Or whenever there is change in material or its source
viii.	Hydrocyanic acid		AOAC 970.11, 915.03	S	One	Once in six months	Or whenever there is change in material or its source
ix.	BHC		IS 15950* or AOAC 970.52 or AOAC Method No. 2007.01 : 2019	S	One	Once in six months	Or whenever there is change in material or its source
x.	DDT		IS 15950* or AOAC 970.52 or AOAC Method No. 2007.01 : 2019	S	One	Once in six months	Or whenever there is change in material or its source
xi.	Endosulphan		IS 15950* or AOAC 970.52 or AOAC Method No. 2007.01 : 2019	S	One	Once in six months	Or whenever there is change in material or its source
xii.	Aldrin		IS 15950* or AOAC 970.52	S	One	Once in six months	Or whenever there is change in material or its

			or AOAC Method No. 2007.01 : 2019				source
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