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भारतीय मानक मसौदा
फ़िश मील के रूप में पोल्ट्री आहार घटक — विशिष्टता
(आई एस 4307 का तीसरा पुनरीक्षण)

Draft Indian Standard
FISH MEAL AS POULTRY FEED INGREDIENT — SPECIFICATION
(Third Revision of IS 4307)

ICS No. 65.120

Animal Feeds and Nutrition Committee, FAD 05	Sectional	Last Date of Comments: 15 March 2025
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FOREWORD

(Formal clauses would be added later)

Fish meal is a rich source of high quality protein and contains, besides calcium and phosphorus, certain growth factors which are necessary for maximum growth rate and hatchability in poultry. Fish meal suitable for use as poultry feed ingredient is made either by washing, cooking, pressing, drying and pulverizing non-fatty or fatty fresh fish or fish waste. It may also be prepared by heat treating non-fatty, unsalted dry fish to such an extent as would ensure destruction of harmful micro-organisms, followed by pulverizing.

Considering that fish meal shows wide variations in its important constituents, formulation of this standard was taken up to promote the manufacture and use of fish meal of a uniform quality.

This standard was first published in 1967 and subsequently revised 1975 and 1983. In the first revision, requirement for chloride content was included and test methods for crude protein, crude fat and acid-insoluble ash were updated. In the second revision, the requirement of crude fat requirement was modified.

In this revision, methods of tests prescribed for determination of various parameters have been updated and packaging and marking requirements have also been updated.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be

rounded off in accordance with IS 2: 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Draft Indian Standard
FISH MEAL AS POULTRY FEED INGREDIENT— SPECIFICATION
(Third Revision)

1 SCOPE

1.1 This standard prescribes requirements and methods of sampling and test for fish meal to be used as poultry feed ingredient.

2 REFERENCES

The standards listed below contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below:

<i>IS No.</i>	<i>Title</i>
IS 460 (Part 1) : 2020	Test sieves — Specification Part 1 Wire cloth test sieves (<i>fourth revision</i>)
IS 1070 : 2023	Reagent grade water — Specification (<i>fourth revision</i>)
IS 4905:2015	Random sampling and randomization procedures (<i>first revision</i>)
IS 5887 (Part 3/Sec 1) : 2020 / ISO 6579- 1 : 2017	Methods for detection of bacteria responsible for food poisoning Part 3 Horizontal method for the detection, enumeration and serotyping of salmonella Section 1 Detection of salmonella spp. (<i>third revision</i>)
IS/ISO 5983 (Part 1) :2005	Animal feeding stuffs — Determination of nitrogen content and calculation of crude protein content: Part 1 (Kjeldahl Method)
IS 5983 (Part 2): 2021/ ISO 5983- 2:2009	Animal feeding stuffs — Determination of nitrogen content and calculation of crude protein content: Part 2 Block digestion and steam distillation method (<i>first revision</i>)
IS/ISO 6865 : 2000	Animal feeding stuffs — Determination of crude fibre content — Method with intermediate filtration
IS 7874 (Part 1): 1975	Methods of tests for animal feeds and feeding stuffs Part 1 General methods
IS 7874 (Part 2): 1975	Methods of tests for animal feeds and feeding stuffs Part 2 Minerals and trace element
IS 14826: 2021/ISO 5985: 2002	Animal feeding stuffs — Determination of ash insoluble in hydrochloric acid (<i>first revision</i>)
IS/ISO 16634 -1: 2008	Food products — Determination of the total nitrogen content by combustion according to the dumas principle and calculation of the crude protein content — Part 1: Oilseeds and animal feeding stuffs

3 GRADES

3.1 The fish meal shall be of two grades, namely, Grade 1 and Grade 2 (*see* Table 1).

4 REQUIREMENTS

4.1 Raw Material — Fish meal shall be obtained from fresh fish and/or fish wastes or from unsalted dried fish or all of them, eliminating poisonous fishes.

4.2 Preparation — The fish meal shall be prepared by cooking the raw material or by heat-treating the dried fish, pressing the cooked mass, drying and pulverizing the treated material to the required mesh size (*see* 4.3.1).

4.3 Product Requirements

4.3.1 Fish meal shall be in the form of powder ground to such fineness that 99 percent of material shall pass through 2.80 mm IS Sieve [*see* IS 460 Part 1)].

4.3.2 The material shall have the characteristic odour and shall be free from any off-odour indicative of spoilage.

4.3.3 The material shall be free from adulterants, arthropod infestation, visible fungal growth and any harmful material.

4.3.4 The material shall also conform to the requirements prescribed in Table 1.

4.3.5 Microbiological Requirements — The material shall be free from *Salmonella* as detected by the method given in IS 5887 (Part 3/ Sec 1).

5 PACKING AND MARKING

5.1 Packing – Fish meal shall be packed in clean and sound moisture-proof, HDPE bags or polyethylene lined jute or laminated paper bags. The mouth of each bag shall be machine stitched.

Table 1 Requirements for Fish Meal as Poultry Feed Ingredient

(Clause 3.1, 4.3.4 and 7.1)

Sl No.	Characteristic	Requirement		Method of Test, Ref to
		Grade 1	Grade 2	
(1)	(2)	(3)	(4)	(5)
i)	Moisture content, percent by mass, <i>Max</i>	10.0	10.0	4 of IS 7874 (Part 1)
ii)	Crude protein (N X 6.25), percent by mass, <i>Min</i>	60.0	50.0	IS/ISO 5983 (Part 1)* or IS 5983 (Part 2) or IS/ISO 16634-1
iii)	Crude fibre, percent by mass, <i>Mass, Max</i>	12.0	12.0	IS/ISO 6865

iv)	Acid insoluble ash, percent by mass, <i>Max</i>	3.0	5.0	10 of IS 7874 (Part 1) or IS 14826*
v)	Chlorine (as NaCl), percent by mass, <i>Max</i>	4.0	5.0	4 of IS 7874 (Part 2)

NOTES

- 1) The values specified for requirements at Sl. No. (ii) to (v) are on moisture-free basis.
- 2) In case of dispute, the test method indicated by '*' shall be the referee method.
- 3) For crude fibre, the manual method given in IS/ISO 6865 shall be the referee method.

5.2 Marking

5.2.1 Each bag shall be suitably marked or labelled with the following information:

- a) Name and grade of the material;
- b) Name and address of the manufacturer;
- c) Batch or code number;
- d) Net mass in kg;
- e) Date of packing;
- f) Best before date in day, month and year format;
- g) Any other requirement as given under *The Legal Metrology (Packaged Commodities) Rules, 2011*.

5.2.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the products may be marked with the standard mark.

6 SAMPLING

6.1 The method of drawing representative samples of the material and the criteria for conformity shall be as prescribed in Annex A.

7 TESTS

7.1 Tests shall be carried out as prescribed in the relevant appendices specified in col (5) of Table 1.

7.2 Quality of Reagents — Unless specified otherwise, pure chemical and distilled water (*see* IS 1070) shall be used in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities, which affect the experimental results.

ANNEX A
(Clause 6.1)
SAMPLING OF FISH MEAL

A-1 GENERAL REQUIREMENTS FOR SAMPLING

A-1.1 Samples shall be taken in a protected place, not exposed to damp air, dust or soot.

A-1.2 The sampling instruments shall be clean and dry, when used.

A-1.3 Precautions shall be taken to protect the samples, the material being sampled, the sampling device and the containers for samples from adventitious contamination.

A-1.4 The samples shall be placed in clean dry containers. The sample containers shall be of such size that they are almost completely filled by the sample.

A-1.5 Each container shall be sealed air-tight with a stopper or a suitable closure in such a way that it will not be possible to open or reseal it without detection after filling, and marked with full details of sampling, date of sampling, name of the vendor and other important details of the consignment.

A-1.6 The samples shall be analysed as soon as possible. If necessary, sample shall be stored in such a manner that there is no deterioration of the material.

A-1.7 The sampling instruments as well as the sample containers used for taking samples for assessment of harmful organism shall be clean, dry and sterile.

A-2 SCALE OF SAMPLING

A-2.1 All the bags produced during a single batch of manufacture shall constitute a lot. If a consignment is declared to consist of different batches, the batches shall be grouped separately and the bags in each group shall constitute a separate lot.

A-2.1.1 Samples shall be tested for each lot for ascertaining conformity of the material to the requirements of this standard.

A-2.2 The number of bags to be selected from a lot shall depend on the size of the lot and shall be in accordance with col (1) and (2) of Table 2.

Table 2 Scale of Sampling
(Clause A-2.2, A-3.1 and A-3.2)

Lot Size	Number of Bags to be Selected for Sampling
<i>N</i>	<i>n</i>
(1)	(2)
2 to 15	2
16 to 40	3
41 to 65	4
66 to 110	5
111 to 180	6
181 to 300	7
301 to 450	8

451 to 600	9
601 to 800	10
Above 801	12

A-2.3 The bags to be selected for sampling shall be chosen at random from the lot and for this purpose a random number table (*see* IS 4905) as agreed to between the purchaser and the vendor shall be used. If such a table is not available, the following procedure shall be adopted:

Starting from any bag, count 1, 2, 3 up to r in a systematic manner. Every r^{th} bag shall be withdrawn, r being integral part of N/n , where N is the total number of bags, and n the number of bags to be selected.

A-3 TEST SAMPLE

A-3.1 Preparation of Sample for *Salmonella* Assessment — Draw with a sterile corer or any other appropriate sterile sampling instrument equal quantities of the material from three different parts of each bag selected according to Table 2. The total quantity of material drawn from each bag shall be not less than 500 g. Transfer the samples to a sterile sample container. The composite sample so obtained shall be thoroughly mixed under sterile conditions and filled in a sterile sample container. The sample container shall be labelled with the particulars given in **A-1.5**.

A-3.2 Preparation of Sample for Other Tests – After removing samples for *Salmonella* assessment, thoroughly mix the contents of each of the selected bags (*see* Table 2) separately and remove approximately a quarter of the contents by the quartering method. Mix together the quarters so removed from all the selected bags and subdivide the quantity by quartering further so as to obtain two different samples of approximately 1 kg each of the material as composite sample. One of the two composite sample shall be transferred immediately to a sample container and sealed air-tight. The sample container shall be labelled with the information particulars given in **A-1.5**. Comminute the other composite sample to such fineness as will pass through 425-micron IS Sieve taking care against loss of moisture. Mix the comminuted sample thoroughly and transfer it immediately to a dry and clean sample container. Label the sample container with the information given in **A-1.5**. Take appropriate quantity of this comminuted sample for the various tests in Table 1.

A-4 CRITERIA FOR CONFORMITY

A-4.1 The test results on the non-comminuted composite sample for various characteristics shall meet the requirements prescribed in **4.3.1** to **4.3.3**.

A-4.2 The test results on the comminuted sample for various characteristics shall meet the requirements prescribed in **4.3.4**.

A-4.3 The test results on the sample drawn under **A-3.1** for *Salmonella* organisms shall meet the requirements prescribed in **4.3.5**.