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भारतीय मानक मसौदा

बोन मील के रूप में पोल्ट्री आहार संपूरक — विशिष्टि

(आइ एस 1942 का दूसरा पुनरीक्षण)

Draft Indian Standard

BONE-MEAL AS POULTRY FEED SUPPLEMENT — SPECIFICATION
(Second Revision of IS 1942)

ICS 65.120

Animal Feeds and Nutrition Sectional Committee,
FAD 05

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FOREWORD

(Formal clauses will be added later)

Bone-meal is used as a mineral supplement in poultry feeds; its chief mineral constituents being calcium and phosphorus. Bone-meal meant for poultry feeding is prepared by defatting and sterilizing undecomposed bones by steam under pressure. The sterilized bones are then dried and ground to the required fineness.

The starting material is undecomposed bones and these sometimes get contaminated with pathogenic organisms like *Bacillus anthracis*, *Clostridium botulinum*, *Clostridium chauvæi* and *Clostridium septicum*. It is essential; therefore, that the bone-meal meant for use in poultry feeds is free from these organisms. In order to ensure that the bone-meal is safe for feeding the poultry, absence of the spores of these organisms has been included as one of the requirements in this standard.

This standard was first issued in 1961 and revised in 1968. In the first revision, the limits for various parameters were revised considering the changed raw material conditions, that is, change in the composition of bones of animals due to low level of nutrition or other agro-climatic factors, and to accommodate the varying processes employed for producing feed grade bone-meal. In the first revision a limit for total ash was also included.

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

**BONE-MEAL AS POULTRY
FEED SUPPLEMENT— SPECIFICATION**
(*Second Revision*)

1 SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for bone-meal to be used as a mineral supplement in poultry feeds.

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 5470 : 2002	Dicalcium phosphate, animal feed grade — Specification (<i>first revision</i>)
IS/ISO 6492 : 1999	Animal feeding stuffs — Determination of fat content
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 elements
IS 7874 (Part 3) : 2020	Methods of tests for animal feeds and feeding stuffs Part 3 Microbiological methods (<i>first revision</i>)
IS 13433 (Part 1) : 2024 / ISO 6490-1:1985	Animal feeding stuffs — Determination of calcium content Part 1 Titrimetric method (<i>first revision</i>)
IS 14826: 2021/ISO 5985: 2002	Animal feeding stuffs — Determination of ash insoluble in hydrochloric acid (<i>first revision</i>)
IS 14828 : 2000 / ISO 6491 :1998	Animal feeding stuff — Determination of total phosphorus content — Spectrophotometric method
IS 15121 : 2002 / ISO 6869 : 2000	Animal feeding stuffs — Determination of the contents of calcium, copper, iron, magnesium, manganese, potassium, sodium and zinc — Method using atomic absorption spectrometry
EN 15621 : 2017	Animal feeding stuffs: Methods of sampling and analysis — Determination of calcium, sodium, phosphorus, magnesium, potassium, sulphur, iron, zinc, copper, manganese and cobalt after pressure digestion by ICP-AES

3 REQUIREMENTS

3.1 Description — Bone-meal shall be obtained from undecomposed bones after removal of adhering tissues, defatting, sterilization by steam under pressure, drying and grinding. The material

shall be nearly white in colour and the particle size shall be such that not less than 90 percent by mass of the material passes through 106-micron IS Sieve [see IS 460 Part 1)]. Bone-meal shall not smell even after prolonged storage and shall be free from adulterants, insect and fungus infestation.

3.2 Bone-meal shall also conform to the requirements prescribed in Table 1.

Table 1 Requirements for Bone – Meal as Poultry Feed Supplement

(Clause 3.2 and 6.1)

Sl. No. (1)	Characteristic (2)	Requirement (3)	Method of Test (4)
i)	Moisture, percent by mass, <i>Max</i>	7	4 of IS 7874 (Part 1)
ii)	Calcium, percent by mass, <i>Min</i>	31	IS 13433 (Part 1) or IS 15121* or EN 15621
iii)	Phosphorus, percent by mass, <i>Min</i>	14	IS 14828* or EN 15621
iv)	Crude fat, percent by mass, <i>Max</i>	1.0	IS/ISO 6492
v)	Total ash, percent by mass, <i>Min</i>	85	9 of IS 7874 (Part 1)
vi)	Acid insoluble ash, percent by mass, <i>Max</i>	1.0	10 of IS 7874 (Part 1) or IS 14826*
vii)	Fluorine, percent by mass, <i>Max</i>	0.60	IS 7874 (Part 2) or Annex B of IS 5470*
viii)	Spores of <i>Bacillus anthracis</i> and <i>Clostridium</i> sp	Nil	IS 7874 (Part 3)

NOTES-

- 1) The values specified for requirements at Sl. No. (ii) to (viii) are on moisture-free basis.
- 2) In case of dispute, the test method indicated by ‘*’ shall be the referee method.

4 PACKING AND MARKING

4.1 Packing — Bone-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.

4.2 Marking

4.2.1 Each container shall be suitably marked or labelled and shall give the following information:

- a) Name 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*.

4.2.2 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.

5 SAMPLING

5.1 Representative samples of the material for testing conformity to this specification shall be drawn according to the method prescribed in Annex A.

6 TESTS

6.1 Tests shall be carried out as prescribed in col (4) of Table 1.

6.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (*see IS 1070*) shall be employed in all tests.

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

ANNEX A
(Clause 5.1)
SAMPLING OF BONE-MEAL

A-1 GENERAL REQUIREMENTS OF SAMPLING

A-1.1 In drawing, preparing, storing and handling test samples, care should be taken that the properties are not affected. The following precautions and directions shall be observed.

A-1.2 Samples shall be taken in a protected place, not exposed to damp air, dust or soot.

A-1.3 The sampling instrument shall be clean, dry and sterile.

A-1.4 Precautions shall be taken to protect the samples, the material being sampled, the sampling instrument and the containers for samples from adventitious contamination.

A-1.5 The samples shall be placed in clean, dry and sterile glass containers. The sample containers shall be of such size that they are almost completely filled by the samples.

A-1.6 Each container shall be sealed air-tight with a stopper or a suitable closure in such a way that it could not be opened and resealed without detection, after filling and marked with full details of sampling, date of sampling, date of manufacture, batch number, name of the manufacturer, and other important particulars of the consignment.

A-1.7 Samples shall be stored in such a manner that there is no deterioration of the material.

A-1.8 Sampling shall be done by a person agreed to between the purchaser and the vendor and, if desired by any of them, in the presence of the purchaser (or his representative) and the vendor (or his representative).

A-2 SCALE OF SAMPLING

A-2.1 Lot — All the containers in a single consignment of the material drawn from a single batch of manufacture shall constitute a lot. If a consignment is declared to consist of different batches of manufacture the batches shall be grouped separately and the container in each group shall constitute a separate lot.

A-2.1.1 Sample shall be tested for each lot for ascertaining conformity of the material to the requirement of this specification.

A-2.2 The number of containers 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 Number of Containers to be Selected for Sampling
(Clause 5.1)

Sl No.	Lot Size	No. of Containers to be Selected for Sampling
	(<i>N</i>)	(<i>n</i>)
(i)	(1)	(2)
(ii)	2 to 15	2
(iii)	16 to 40	3
(iv)	41 to 65	4
(v)	66 to 110	5
(vi)	111 to 180	6
(vii)	181 to 300	7
(viii)	301 to 450	8
(ix)	451 to 600	9
(x)	601 and above	10

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 container, count 1, 2, 3, etc, up to *r* and so on in a systematic manner. Every *r*th container shall be withdrawn, being the integral part of N/n , where *N* is the total number of containers in the lot and *n* the number of containers to be selected.

A-3 TEST SAMPLES AND REFEREE SAMPLES

A-3.1 Preparation of Individual Samples — Draw with an appropriate sampling instrument equal quantities of the material from different parts of each container selected according to Table 2. The total quantity of material drawn from each container shall be not less than 1.5 kg. Mix all the portions of the material drawn from the same container thoroughly. Take out about 0.75 kg of the material and divide it into three equal parts. Each portion thus obtained shall constitute the test sample representing that particular container and shall be transferred immediately to clean, dry and sterile container and sealed air-tight. These shall be labelled with the particulars given in **A-1.6**. The individual samples so obtained shall be divided into three sets in such a way that each set has a test sample representing each container selected. One of the sets shall be for the purchaser another for the vendor and the third for the referee.

A-3.2 Preparation of Composite Sample — From the mixed material from each selected container remaining after the individual sample. have been taken, equal quantities of the material from each container shall be taken and mixed together so as to form a composite sample weighing not less than 0.75 kg. This composite sample shall be divided into three equal parts and transferred to clean dry and sterile containers which shall be labelled with the particulars given in **A-1.6** and sealed air-tight. One of these samples shall be for the purchaser, another for the vendor and the third for the referee.

A-3.3 Referee — Referee samples shall consist of a set of test samples (*see A-3.1*) and a composite sample (*see A-3.2*) and shall bear the seals of the purchaser and the vendor and shall be kept at a place agreed to between the two.

A-4 TESTING OF SAMPLES

A-4.1 Tests for phosphorus shall be conducted individually on each of the samples constituting the set of test samples (*see A-3.1*).

A-4.2 Tests for the remaining characteristics specified in 3.2 shall be conducted on the composite sample (*see A-3.2*).

A-5 CRITERION FOR CONFORMITY

A-5.1 A lot shall be considered as conforming to the specification, when:

- a) Each of the test results for phosphorus satisfies the requirement as specified in Table 1, and
- b) The test results on the composite sample satisfy the other requirements as specified in Table 1.

A-5.2 If one or more test results do not satisfy the requirement for phosphorus, the following procedure shall be adopted for determining conformity of the material for phosphorus:

Calculate the mean and range of the test results as follows:

$$\text{Mean } (\bar{X}) = \frac{\text{Sum of the test results}}{\text{Number of the test samples}}$$

Range (\bar{R}) = Difference between the maximum and the minimum values of the test results

If $\bar{X} - 0.4 R$ greater than or equal to 15.0, the lot shall be considered as conforming to the specification in regard to phosphorus.