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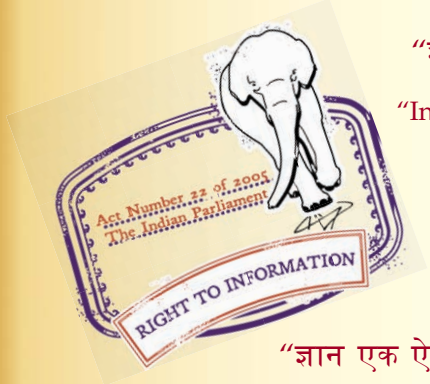

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SPECIFICATION FOR SOLVENT EXTRACTED NIGERSEED OILCAKE (MEAL) AS LIVESTOCK FEED

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SPECIFICATION FOR SOLVENT EXTRACTED NIGERSEED OILCAKE (MEAL) AS LIVESTOCK FEED

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Indian Standard

SPECIFICATION FOR SOLVENT EXTRACTED NIGERSEED OILCAKE (MEAL) AS LIVESTOCK FEED

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 12 November 1970, after the draft finalized by the Animal Feeds Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 The solvent extraction of oleaginous materials industry has made very rapid advances in the country. The solvent extracted oils are utilized in the field of human feeding whereas the extracted oilcakes (meals) are utilized for feeding livestock. Till recently the solvent extracted oilcakes (meals) were not permitted to be fed to the livestock in the country. It was generally felt that the residual solvent remaining in the extracted oilcake (meal) will be toxic to the cattle on account of the different solvents used for extraction purposes. Moreover, in the absence of any experimental data on the usefulness of solvent extracted oilcakes (meals) for feeding livestock, no decision could be taken. However, based on the experience gained in countries abroad where extracted oilcakes (meals) are known to be fed to livestock since very long without any ill effects, the Ministry of Food & Agriculture, Government of India gave a clearance for the use of solvent extracted oilcakes (meals) for feeding the livestock.

0.3 The Ministry of Health, Government of India has keenly felt that National Standards be formulated to control the quality of solvent extracted oilcakes (meals) in order to encourage the development of the solvent extraction industry in the country. In order that the extracted oilcakes (meals) are fit for use for feeding livestock, it is essential that they contain the necessary nutrients. Therefore, to assist the industry to manufacture extracted oilcakes (meals) of a proper quality for feeding livestock, this standard has been formulated which prescribes the composition requirements.

0.4 Solvent extracted nigerseed oilcake (meal) provides a rich source of protein and may be extensively used as a protein supplement in livestock rations. Solvent extracted nigerseed oilcake (meal) has been figuring as an important item of export from India during the recent years and its

production has been on the increase as a result of the rapid expansion of the solvent extraction industry in India. It is expected that this standard will help in the proper utilization of this material and also in developing further our foreign trade.

0.5 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 : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for solvent extracted nigerseed oilcake (meal) used in livestock feeding.

2. GRADES

2.1 Solvent extracted nigerseed oilcake (meal) shall be of two grades, namely, Grade 1 and Grade 2.

3. REQUIREMENTS

3.1 Description — The solvent extracted nigerseed oilcake (meal) shall be obtained by extraction of oil by means of a solvent from the *GHANI* or expeller pressed nigerseed oilcake. The *GHANI* or expeller pressed nigerseed oilcake shall have been obtained by pressing clean and sound nigerseeds (*Guizotia abyssinica* Cass). The meal shall have been subjected to heat and steam treatment under controlled and regulated conditions so as to remove traces of solvent. The material shall be in the form of either flakes or powder and shall be free from harmful constituents and castor cake or husk or both, or *MAHUA* cake, when tested according to the method prescribed in Appendices A and B. It shall be free from rancidity, adulterants, insect or fungus infestation and from musty odour.

3.2 Solvent for Extraction — Only hexane of food grade conforming to IS : 3470-1966† shall be used for extracting nigerseed oilcake.

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

4. PACKING AND MARKING

4.1 Packing — Unless otherwise agreed to between the purchaser and the vendor, the material shall be packed in clean and sound jute bags. The

*Rules for rounding off numerical values (*revised*).
†Specification for hexane, food grade.

mouth of each bag shall be either machine-stitched or rolled over and hand-stitched. If hand-stitched, the stitches shall be with strong jute twine with at least 14 stitches in each row.

TABLE 1 REQUIREMENTS FOR SOLVENT EXTRACTED NIGERSEED OILCAKE (MEAL) AS LIVESTOCK FEED

(*Clauses* 3.3 *and* 6.1)

Sl No.	Characteristic	Requirement		Method of Test, Ref to Cl No. in IS : 1714-1960*
		Grade 1	Grade 2	
(1)	(2)	(3)	(4)	(5)
i)	Moisture, percent by weight, *Max*	9	9	5
ii)	Crude protein (nitrogen × 6·25), percent by weight, *Min*	35	29	6
iii)	Crude fat, percent by weight, *Max*	1·0	1·0	8
iv)	Crude fibre, percent by weight, *Max*	18	20	9
v)	Acid insoluble ash, percent by weight, *Max*	1·5	2·5	11

NOTE — The requirements for items (ii) to (v) are on moisture-free basis.

*Methods of sampling and test for oilcakes as livestock feed.

4.2 Marking — Each bag shall be suitably marked by stencilling or by attaching a label to give the following information:

a) Name and the grade of the material;

b) Name of the manufacturer;

c) Batch or code number;

d) Net weight in kg; and

e) Date of packing.

4.2.1 The bags may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. Presence of this mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard, under a well-defined system of inspection, testing and quality control during production. This system, which is devised and supervised by ISI and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by ISI for conformity to the standard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

5. SAMPLING

5.1 The method of drawing representative samples of the material and the criteria for conformity shall be as prescribed in **2** of IS: 1714-1960*.

6. TESTS

6.1 Tests for different characteristics shall be carried out as prescribed in the relevant clauses of IS: 1714-1960* specified in col 5 of Table 1. Tests for detecting the presence of castor husk and *MAHUA* cake shall be carried out as prescribed in Appendices A and B.

6.2 Quality of Reagents — Unless specified otherwise, pure chemicals shall be employed in tests and distilled water (*see* IS: 1070-1960†) shall be used where the use of water as a reagent is intended.

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

APPENDIX A

(*Clause* 3.1 *and* 6.1)

DETECTION OF CASTOR HUSK

A-0. PRINCIPLE

A-0.1 The method is based on the fact that castor husk is not bleached under the conditions which cause the bleaching of almost all other materials of vegetable origin likely to be present in an oilcake. The method consists of the treatment of the material with dilute alkali and acid solutions followed by treatment with bleaching powder solution and the isolation of the unbleached castor husk.

A-1. APPARATUS

A-1.1 White Photographic Dish

A-2. REAGENTS

A-2.1 Sodium Hydroxide Solution — 5 percent (*w/v*).

A-2.2 Dilute Hydrochloric Acid — 5 percent (*w/v*).

A-2.3 Bleaching Powder Solution — 5 percent (*w/v*), freshly prepared.

A-3. PROCEDURE

A-3.1 Take three separate 100-g portions of the material and boil for 30 minutes with one litre of the sodium hydroxide solution. Filter through muslin, boil again for 30 minutes with one litre of the dilute hydrochloric acid and filter. Digest the residue for a period depending upon the type of the oilcake with the solution of bleaching powder. When bleaching is

*Methods of sampling and test for oilcakes as livestock feed.
†Specification for water, distilled quality (*revised*).

complete, filter off the solution. Spread the bleached residue in a thin layer under water in a white photographic dish. Black pieces, if Any, removed and examined microscopically. After identification, the pieces are compared with portions of castor husk which have undergone the same treatment. Castor husk has a characteristic structure, the sharp-angled black pieces of husk showing a distinctive pitted surface, when examined by reflected light under a microscope.

APPENDIX B

(*Clauses* 3.1 *and* 6.1)

DETECTION OF *MAHUA* CAKE

B-0. PRINCIPLE

B-0.1 The method is based on the fact that toxic saponins (mowrin) give a typical colour test when extracted.

B-1. APPARATUS

B-1.1 Extraction Tube — 150 × 13 mm, with a taper tip having an internal diameter of 1·5 mm.

B-2. REAGENTS

B-2.1 Antimony Trichloride Solution — prepared by dissolving 125 g of antimony trichloride in 300 to 400 ml of chloroform. Add 5 g of calcium chloride and filter while hot. Dilute the filtrate to 500 ml with chloroform.

B-2.2 Rectified Spirit — 95 percent (*v/v*) (*see* IS : 323-1959*).

B-3. PROCEDURE

B-3.1 Take 10 g of the finely-ground material in the extraction tube. Tap it to pack it well. Pour rectified spirit into the tube so as to soak the sample. Collect the first drop of the extract on Whatman No. 1 filter paper, about 10 cm in diameter. Dry and then wash by placing 2 to 3 drops of distilled water in the centre of the dried spot. Dry the filter paper completely. Dip the paper in a beaker containing antimony trichloride solution, and then let the paper dry. Heat the paper gently by holding it over a spirit lamp or a burner. Care shall be taken as not to overheat the paper, which will be evident by its charring. Appearance of a pink colour after heating for five minutes indicates the presence of *MAHUA* oilcake.

*Specification for rectified spirit (*revised*).

(*Continued from page* 2)

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