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भारतीय मानक मसौदा

पशुधन आहार घटक के रूप में घुलनशील (डीडीजीएस) के साथ सूखा डिस्टिलर अनाज — विशिष्टि

Draft Indian Standard

**DRIED DISTILLERS GRAIN WITH SOLUBLES (DDGS) AS LIVESTOCK FEED
INGREDIENT — SPECIFICATION**

ICS 65.120

Animal Feeds and Nutrition Sectional
Committee, FAD 05

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FOREWORD

(Formal clauses would be added later)

Dried distillers grains with solubles (DDGS) is the main by-product obtained from the production of ethanol from grains of maize, rice, barley or wheat. A significant portion of grains (maize, rice, barley or wheat) production in the country has been used for ethanol production and therefore Distillers Dried Grains with Solubles (DDGS) has emerged as a viable, cost effective alternative to grains in animal feed. The demand for DDGS based animal feed has increased exponentially over the years. When blended into the animal feed, DDGS provide a high-protein meal that is readily available to the animals.

Development of national standard for DDGS as feed ingredient has been taken up to specify optimum requirements for DDGS being sold commercially in the country benefitting both farmers and the feed industry.

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

**DRIED DISTILLERS GRAIN WITH SOLUBLES (DDGS) AS LIVESTOCK
FEED INGREDIENT — SPECIFICATION**

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for Dried Distillers Grain with Solubles (DDGS) used as livestock feed ingredient.

2 REFERENCES

The standards listed in Annex A 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 indicated in Annex A.

3 DESCRIPTION

Dried Distillers Grain with Solubles (DDGS) is the main by-product of the distillation of alcohol from maize grain (*Zea mays* L.), rice grain (*Oryza sativa*), barley grain (*Hordeum vulgare*) or wheat grain (*Triticum aestivum*). DDGS is produced as a result of extraction of starch from the grains and is considered as valuable feed ingredient for livestock feeding. It is rich in crude protein, moderately rich in crude fat and relatively low in crude fibre.

4 REQUIREMENTS

4.1 General

The material shall be free from harmful constituents, rancidity, adulterants, insect or visible fungus infestation and from fermented, musty or other objectionable odour. It shall be free from dirt and extraneous matter including iron or other metallic pieces.

4.2 The material shall be of Type 1 or Type 2 and shall also conform to the requirements prescribed in Table 1.

**Table 1 Requirements for Dried Distillers Grain with Solubles (DDGS) as Livestock
Feed Ingredient
(Clause 4.2)**

Sl. No.	Characteristic	Requirement		Method of Test, Ref to
		Type-1 (High protein)	Type-2 (Low protein)	
(1)	(2)	(3)	(4)	(5)
i)	Moisture, percent by mass, Max	11.0	11.0	4 of IS 7874 (Part 1)

ii)	Crude protein (N×6.25), percent by mass, Min	40.0	25.0	IS/ISO 5983 (Part 1)* or IS 5983 (Part 2) or IS/ISO 16634-1
iii)	Crude fat, percent by mass, Min	1.5	5.0	IS/ISO 6492
iv)	Crude fibre, percent by mass, Max	5.0	9.0	IS/ISO 6865
v)	Acid insoluble ash, percent by mass, Max	1.0	2.0	Annex A of IS 1712 or IS 14826*
vi)	Castor husk or cake	<i>Absent</i>	<i>Absent</i>	11 of IS 7874 (Part 1)
vii)	<i>Mahua</i> cake	<i>Absent</i>	<i>Absent</i>	12 of IS 7874 (Part 1)
viii)	Aflatoxin B ₁ (ppb), Max	40.0	40.0	IS 14718* or IS 18143 or AOAC 2003.02
ix)	Urea, percent by mass, Max	<i>Absent</i>	<i>Absent</i>	IS 7874 (Part 1) or AOAC 967.07*

NOTES

- 1) The values specified for requirements at Sl. No. (ii) to (ix) 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 PACKING AND MARKING

5.1 Packing

The material shall be packed in clean, dry and sound jute/HDPE bags. The mouth of each bag shall be either machine-stitched or rolled over and hand-stitched with strong jute twine.

5.2 Marking

5.2.1 Each bag shall be legibly and indelibly marked to give the following information:

- a) Name and type of the material;
- b) Source of DDGS;
- c) Name and address of the manufacturer;
- d) Batch or code number;
- e) Net mass in kg;
- f) Date of packing;
- g) Best before date in month & year format; and
- h) Any other requirements as specified 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 Representative samples of the material for ascertaining conformity to this standard shall be drawn according to the method prescribed in Annex D of IS 2052.

7 TESTS

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

7.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070) shall be employed in tests.

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

ANNEX A
(Clause 2)
LIST OF REFERRED STANDARDS

<i>IS No.</i>	<i>Title</i>
IS 1070 : 2023	Reagent grade water — Specification (<i>fourth revision</i>)
IS 1712 : 2022	Cottonseed oilcake as livestock feed ingredient — Specification (<i>third revision</i>)
IS 2052 : 2023	Compounded feeds for cattle — Specification (<i>fifth revision</i>)
IS 7874 (Part 1) : 1975	Methods of tests for animal feeds and feeding stuffs: Part 1 General methods
IS/ISO 5983 (Part 1) : 2005	Animal feeding stuffs — Determination of nitrogen content and calculation of crude protein content Part 1 Kjeldahl method
IS/ISO 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 6492 : 1999	Animal feeding stuffs — Determination of crude fat content
IS/ISO 6865 : 2000	Animal feeding stuffs — Determination of crude fibre content — Method with intermediate filtration
IS 14826 : 2021/ ISO 5985 : 2002	Animal feeding stuffs — Determination of ash insoluble in hydrochloric acid (<i>first revision</i>)
IS/ISO 14718 : 1998	Animal feeding stuffs — Determination of Aflatoxin B ₁ content of mixed feeding stuffs — Method using high-performance liquid chromatography
IS 18143: 2023/ ISO 17375 : 2006	Animal feeding stuffs — Determination of Aflatoxin B ₁
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

