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मानक

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IS 8879 (1980): DHUPA Fat [FAD 13: Oils and Oilseeds]



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“Knowledge is such a treasure which cannot be stolen”

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IS : 8879 - 1980

Indian Standard
SPECIFICATION FOR *DHUPA FAT*
(*First Revision*)

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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Indian Standard

SPECIFICATION FOR *DHUPA* FAT

(*First Revision*)

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AMENDMENT NO. 1 OCTOBER 1995
TO
IS 8879 : 1980 SPECIFICATION FOR *DHUPA* FAT
(*First Revision*)

(*Page 4, Foreword, clause 0.6*) — Add the following clause **0.7** after clause **0.6** and renumber the subsequent clause:

‘0.7 A scheme for labelling environment friendly products to be known as ECO Mark has been introduced at the instance of the Ministry of Environment and Forests (MEF). The ECO Mark shall be administered by the Bureau of Indian Standards (BIS) under the BIS Act, 1986 as per the Resolution No. 71 dated 20 February 1991 as published in the Gazette of the Government of India vide GSR 85(E) dated 21 February 1991. For a product to be eligible for marking with the ECO Mark it shall also carry the Standard Mark of BIS for quality besides meeting additional optional environment friendly (EF) requirements. The EF requirements for *DHUPA* fat are therefore being included through an amendment.

This amendment is based on the Gazette Notification No. 678 dated 30 August 1994 for Labelling Edible Oils, Tea and Coffee as environment friendly products, published by the Ministry of Environment and Forests.’

(*Page 5, clause 4.4*) — Add the following clauses after clause **4.4**:

‘4.5 Optional Requirements for ECO Mark

4.5.1 *General Requirements*

4.5.1.1 The product shall conform to the requirements of quality prescribed under clauses **4.1** to **4.4**.

4.5.1.2 The manufacturers shall produce to BIS environmental consent clearance from the concerned State Pollution Control Board as per the norms laid down under the *Water (Prevention and Control of Pollution) Act, 1974*; *Air (Prevention and Control of Pollution) Act, 1981*; *Water (Prevention and Control of Pollution) Cess Act, 1977* respectively, along with the authorization, if required under the *Environment (Protection) Act, 1986*, while applying for ECO Mark.

4.5.2 *Specific Requirements*

Amend No. 1 to IS 8879 : 1980

4.5.2.1 The product shall not contain aflatoxin, more than 5 mg/kg, when tested by the method prescribed in Appendix A.

4.5.2.2 The pesticide residues, if any, shall not exceed the tolerance limits as prescribed in the *Prevention of Food Adulteration Act, 1954* and *Rules* made thereunder.

4.5.2.3 Only permitted antioxidants not exceeding the quantities specified against each as prescribed under the *Prevention of Food Adulteration Act, 1954* and *Rules* made thereunder, shall be used, if required.

4.5.2.4 The product shall not contain any of the toxic metals in excess of the quantities prescribed in Table 2.

TABLE 2 LIMITS FOR TOXIC METALS

SL No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST, REF TO
i)	Lead, mg/kg, <i>Max</i>	5.0	15 of IS 1699 : 1995*
ii)	Arsenic, mg/kg, <i>Max</i>	0.5	do
iii)	Cadmium, mg/kg, <i>Max</i>	1.0	do
iv)	Mercury (total) mg/kg, <i>Max</i>	0.25	do

*Methods of sampling and test for food colours (*second revision*).

(Page 5, clause 5.1) — Add the following clause 5.1.1 after clause 5.1:

‘5.1.1 For ECO Mark the product shall be packed in such packages which are made from recyclable (that is which can be re-processed to manufacture any useful product) or biodegradable materials.’

(Page 7, clause 6.2) — Add the following clause 6.3 after clause 6.2:

“6.3 For ECO Mark the containers shall be marked with the following information:

- a) List of identified critical ingredients in descending order of quantity, percent by mass, which shall include ‘made from *DHUPA* fat’;
- b) The brief criteria for which the product has been labelled for ECO Mark; and
- c) Shelf life of the product.”

(Page 7, clause 8.2) — Add the following Appendix after clause 8.2:

'APPENDIX A
(Clause 4.5.2.1)

DETERMINATION OF AFLATOXIN

A-1 REAGENTS

A-1.1 Acetone, 70 Percent — 700 ml acetone in 300 ml distilled water.

A-1.2 Acetone, 20 Percent — 200 ml acetone in 800 ml distilled water.

A-1.3 Lead Acetate, 20 Percent — 200 g neutral acetate in distilled water and 3 ml glacial acetic acid, diluted to one litre.

A-2 PROCEDURE

A-2.1 Dissolve 30 g sample in 100 ml hexane.

A-2.2 Extract with 3 × 50 ml 70 percent acetone.

A-2.3 To the extract add 60 ml distilled water and 20 ml lead acetate.

A-2.4 Boil to reduce volume to 150 ml. Cool to about 20°C.

A-2.5 Filter and wash with 20 percent acetone.

A-2.6 Extract filtrate and washings with 3 × 50 ml chloroform.

A-2.7 Pass chloroform layer through anhydrous sodium sulphate.

A-2.8 Concentrate to 50 ml and spot on TLC plate.

A-3 CALCULATION

$$\text{Aflatoxin, mg/kg} = \frac{V \times s \times 1\,000}{v \times m}$$

where

V = volume of extract in ml,

v = volume of extract giving minimum observable fluorescence in μl ,

m = mass of sample in g, and

s = standard toxin giving minimum observable fluorescence in μg .

(FAD 44)

**AMENDMENT NO. 2 MARCH 2002
TO
IS 8879 : 1980 SPECIFICATION FOR *DHUPA* FAT
(*First Revision*)**

(*Amendment No. 1, page 2, clause 4.5.2.1*) — Substitute '5 µg/kg' for '5 mg/kg'.

(FAD 44)

Reprography Unit, BIS, New Delhi, India

Indian Standard
SPECIFICATION FOR *DHUPA* FAT
(*First Revision*)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 25 September 1980, after the draft finalized by the Oils and Oilseeds Sectional Committee had been approved by the Agricultural and Food Products Division Council and the Chemical Division Council.

0.2 *DHUPA* fat is obtained from seed kernels of *DHUPA* also known as Indian copal tree (*Vateria indica* Linn.). *DHUPA* trees grow mostly in moist evergreen forests in the Western Ghats and foothills from North Kanara (Karnataka) to Kerala through the Ghat forests of south Kanara, Coorg, Malabar and Coimbatore. It is also occasionally found in deciduous forests, adjoining rivers in the aforementioned areas. Apart from the Ghats, *DHUPA* trees are also found on the Deccan Plateau and along the Arabian sea-coast, the altitudinal range being from 60 to 1 220 metres. *DHUPA* trees have also been extensively planted as an avenue tree in parts of Karnataka and Kerala states. The flowering time is from January to March and fruits ripen from May to July. The fruits are fleshy, wingless, about 50 to 60 mm long and contain one large seed.

0.3 This standard was first published in 1978 and covered only raw grades. In this revision, refined grade of the material suitable for edible use and obtained by the process of expression as well as solvent extraction has been included. The concerned technical committee decided to revise this standard including refined grade for edible uses after reviewing various aspects like its suitability for edible consumption, shortage of edible oils in the country and need for maximum exploitation of indigenous resources. However, specification for edible grade of *DHUPA* fat is yet to be included under the Prevention of Food Adulteration (PFA) Rules of the Ministry of Health, Government of India.

0.4 *DHUPA* kernels contain 19 to 23 percent of a pale-yellow fat having a tallow-like consistency, which turns white on standing. The fat is known by a number of names, such as Malabar tallow, Piney tallow and *DHUPA*

IS : 8879 - 1980

tallow. Stearic acid (38 to 47 percent), oleic acid (38 to 48 percent) and palmitic acid (9 to 15 percent) are the major fatty acids of *DHUPA* fat. The fat derived from *DHUPA* kernels after refining is suitable for edible uses. It may also be used as a cocoa butter substitute or extender after proper processing. It may also be used in yarn sizing and manufacture of soaps and candles. It has sizable potential for availability.

0.5 The standard contains clause 5.1 which calls for agreement between the purchaser and the supplier.

0.6 In the preparation of this revised standard, substantial assistance has been derived from data supplied by Khadi and Village Industries Commission, Bombay; Directorate of Oilseeds Development, Hyderabad; Regional Research Laboratory, Hyderabad and the Oil Technological Research Institute, Anantapur which is thankfully acknowledged.

0.7 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 requirements and methods of sampling and test for *DHUPA* fat for edible as well as industrial purposes.

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given under 2 of IS : 548 (Part I)-1964† and the following shall apply.

2.1.1 *Raw DHUPA Fat* — *DHUPA* fat obtained by the process of expression and/or solvent extraction.

2.1.2 *Refined DHUPA Fat* — *DHUPA* fat obtained by the process of expression or solvent extraction which has been refined by neutralization with alkali, bleached with bleaching earth or activated carbon or both, and deodorized with steam, no other chemical agents being used. Alternatively deacidification, bleaching and deodorization may be done by physical means.

*Rules for rounding off numerical values (*revised*).

†Methods of sampling and test for oils and fats : Part I Sampling, physical and chemical tests (*revised*).

3. TYPES AND GRADES

3.1 The material shall be of the following types and grades:

a) *Expressed*

- 1) Refined grade,
- 2) Raw grade 1, and
- 3) Raw grade 2.

b) *Solvent-Extracted*

- 1) Refined grade,
- 2) Raw grade 1, and
- 3) Raw grade 2.

3.1.1 Refined grades of both types are suitable for edible use.

3.1.2 Raw grades 1 of both types are suitable for manufacture of refined grade but not for direct edible consumption.

3.1.3 Raw grades 2 of both types are meant for industrial purposes only.

4. REQUIREMENTS

4.1 The material shall be obtained from clean and sound seed kernels of *DHUPA* also known as Indian copal (*Vateria indica* Linn.) tree by the process of expression or from cake or kernels by a process of solvent extraction. On melting it shall be clear and free from rancidity, adulterants, sediment, suspended and other foreign matter, separated water and added colouring matter. In addition, refined grades of the material may contain permitted antioxidants in specified quantities as prescribed under Prevention of Food Adulteration (PFA) Rules of Government of India.

4.1.1 Solvent-extracted oil shall be obtained from the seed kernels using solvent hexane conforming to IS : 3470-1966*.

4.2 The clarity of the material shall be judged by the absence of any turbidity after keeping the filtered sample at 60°C for 24 hours.

4.3 **Admixture with other oils** --- The material shall be free from admixture with other oils when tested according to the methods prescribed in IS : 548 (Part II)-1976†.

4.4 The material shall also comply with the requirements given in Table 1.

5. PACKING

5.1 The material shall be packed in suitable, well closed containers as agreed to between the purchaser and the supplier. The refined grade of the material shall be placed in new tin containers.

*Specification for hexane, food grade.

†Methods of sampling and test for oils and fats : Part II Purity tests (*third revision*).

TABLE 1 REQUIREMENTS FOR DHUPA FAT

(Clause 4.4)

Sl. No.	CHARACTERISTIC	REQUIREMENT FOR						METHOD OF TEST REF. TO
		Expressed Type			Solvent Extracted Type			
		Refined grade	Raw grade 1	Raw grade 2	Refined grade	Raw grade 1	Raw grade 2	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
i)	Moisture and volatile matter, percent by mass, <i>Max</i>	0.10	0.5	1.0	0.10	0.75	1.5	Cl 5
ii)	Refractive index* at 60°C	←-----1.4577 to 1.4677-----→						Cl 10
iii)	Colour in $\frac{1}{4}$ -in cell on Lovibond scale, expressed as ($T+5R$), not deeper than	10	18	25	10	25	40	Cl 13
iv)	Acid value†, <i>Max</i>	0.5	12	20	0.5	12	20	Cl 7
v)	Iodine value (Wijs)	←-----36 to 51-----→						Cl 14
vi)	Saponification matter	←-----186 to 193-----→						Cl 15
vii)	Unsaponifiable matter, percent by mass, <i>Max</i>	1.0	1.0	1.5	1.0	1.5	2.0	Cl 8
viii)	Titre, °C, <i>Min</i>	—	53	53	—	53	53	Cl 12
ix)	Flash point, Pensky-Martens (closed), °C, <i>Min</i>	—	—	—	250	100	90	IS : 1448[P : 21]-1970§

of
IS: 548
(Part I)-
1964‡

*This corresponds to Butyro Refractometer (B. R.) reading of 47.6 to 62.8.

†The corresponding figure in terms of free fatty acids (FFA) when expressed as oleic acid shall be maximum 0.25, 6 and 10 percent by mass for refined, raw grades 1 and raw grades 2 of the material respectively.

‡Methods of sampling and test for oils and fats : Part I Sampling, physical and chemical tests (revised).

§Methods of test for petroleum and its products : [P : 21] Flash point (closed) by Pensky-Martens apparatus (first revision).

6. MARKING

6.1 The containers shall be marked with the following information:

- Name, type and grade of the material;
- Net mass;
- A statement that permitted antioxidants have been used, if added;

- d) Manufacturer's name and recognized trade-mark, if any;
- e) Batch number or lot number in code or otherwise; and
- f) Month and year of manufacture.

6.1.1 The containers 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. The ISI 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 which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. 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.

6.2 In addition in case of types and grades which are not suitable for edible use, the following information shall be suitably marked, either printed on the label affixed to the container or lithographed or stencilled thereon with indelible ink, in a type size of not less than 50 mm:

- a) Raw grade 1 of both types — 'NOT FOR DIRECT EDIBLE CONSUMPTION', and
- b) Raw grade 2 of both types — 'FOR INDUSTRIAL NON-EDIBLE USES ONLY'.

7. SAMPLING

7.1 Representative samples of the material shall be drawn as prescribed under 3 of IS : 548 (Part I)-1964*.

8. TESTS

8.1 Tests shall be carried out as prescribed in IS : 548 (Part I)-1964*, IS : 548 (Part II)-1976† and IS : 1448 [P : 21]-1970‡. Reference to the relevant clauses of IS : 548 (Part I)-1964* and IS : 1448 (P : 21)-1970‡ is given in col 9 of Table 1 and that of IS : 548 (Part II)-1976† in 4.3.

8.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (see IS : 1070-1977§) shall be used in tests.

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

*Methods of sampling and test for oils and fats : Part I Sampling, physical and chemical tests (revised).

†Methods of sampling and test for oils and fats : Part II Purity tests (third revision).

‡Methods of test for petroleum and its products : [P : 21] Flash point (closed) by Pensky-Martens apparatus (first revision).

§Specification for water for general laboratory use (second revision).

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INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	Unit	Symbol
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	Unit	Symbol
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	Unit	Symbol	Definition
Force	newton	N	1 N = 1 kg.m/s ²
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²

INDIAN STANDARDS INSTITUTION

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002

Telephones : 26 60 21, 27 01 31

Telegrams : Manaksanstha

Regional Offices:

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