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Indian Standard

**SPECIFICATION FOR *NEEM*
KERNEL OIL AND DEPULPED *NEEM* SEED OIL**

(First Revision)

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**INDIAN STANDARDS INSTITUTION
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SPECIFICATION FOR *NEEM* KERNEL OIL AND DEPULPED *NEEM* SEED OIL (*First Revision*)

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Indian Standard

SPECIFICATION FOR *NEEM* KERNEL OIL AND DEPULPED *NEEM* SEED OIL (*First Revision*)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 25 September 1975, after the draft finalized by the Oils and Oilseeds Sectional Committee had been approved by the Chemical Division Council and the Agricultural and Food Products Division Council.

0.2 This standard was first published in 1968 and covered only the oil obtained from *NEEM* kernels. It is well recognized now that along with *NEEM* kernel, depulped *NEEM* seeds are also commercially available. The concerned Sectional Committee, therefore, decided to revise IS : 4765-1968* to include depulped *NEEM* seed oil as well. This revision covers oil obtained from *NEEM* kernels and depulped *NEEM* seeds and, therefore, the title of the standard has also been suitably modified.

0.3 *NEEM* oil is obtained from the seeds of the *NEEM* tree (*Azadirachta indica*), also known as margosa, VEPA, etc, which grows all over the country but is found concentrated in areas of Uttar Pradesh, Rajasthan, Tamil Nadu and Andhra Pradesh. Utilization of *NEEM* seeds is beset with the problem of organization of systematic collection and crushing of seeds. But with the ever increasing exploitation of non-edible oils for industrial and pharmaceutical purposes, *NEEM* oil is gaining importance economically. Owing to its strong disagreeable odour, persistent dark colour and bitter taste due to occurrence in appreciable quantities of the non-fatty constituents along with the glycerides, no attractive soap can be prepared with *NEEM* oil. Nevertheless, most of the *NEEM* oil produced is used for soap making, with attempts being made in the direction of improvement in quality in regard to colour, odour and taste.

0.4 The component glycerides of *NEEM* oil are primarily those of oleic (about 57 percent), stearic (about 15 percent) and palmitic (about 16 percent) acids together with small amounts of linoleic and arachidic acids. Apart from these, there are non-fatty components described as ' total bitters '

*Specification for *NEEM* kernel oil.

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which are a mixture of complex terpenoids insoluble in fats and hexane; and 'odorous compounds' which are also constituted of complex terpenoids which, however, are soluble in fats and hexane. In fact, it is these constituents that characterize this oil and are responsible for its pharmaceutical properties. While some of the bitter and coloured constituents have been isolated and their chemical constitution established, investigations on the odorous constituents, believed to be sulphur compounds, have so far been inconclusive.

0.5 In the preparation of this revision, substantial assistance has been derived from the data supplied by the Khadi & Village Industries Commission, Bombay, which is thankfully acknowledged.

0.6 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 *NEEM* kernel oil and depulped *NEEM* seed oil.

2. TERMINOLOGY

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

3. REQUIREMENTS

3.1 The material shall be obtained from clean and sound kernels or depulped seeds of *NEEM* plant, *Azadirachta indica* A. Juss. Syn. *Melia azadirachta* Linn., fam. Meliaceae. It shall be clear and free from adulterants, sediment, suspended and other foreign matter, separated water and added colouring substances.

3.1.1 The clarity of the material shall be judged by the absence of turbidity after keeping the filtered sample at 30°C for 24 hours.

3.2 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)-1974‡.

3.3 Colour of Soap — The colour of soap, as determined by the method given in Appendix A, shall not be deeper than light brownish-yellow.

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

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

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

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

TABLE 1 REQUIREMENTS FOR NEEEM KERNEL OIL AND DEPULPED NEEEM SEED OIL

Sl. No.	CHARACTERISTIC	REQUIREMENT FOR		METHOD OF TEST [REF TO CL No. IN IS : 548 (PART I)-1964*]
		<i>Neem</i> Kernel Oil	Depulped <i>Neem</i> Seed Oil	
(1)	(2)	(3)	(4)	(5)
i)	Moisture and insoluble impurities, percent by mass, <i>Max</i>	0.3	0.5	5 and 6
ii)	Colour in a 1-inch cell expressed as Y + 5R, not deeper than	45	55	13
iii)	Refractive index at 40°C	1.461 5 to	1.470 5	10
iv)	Saponification value	180 to 205	175 to 200	15
v)	Iodine value (Wijs)	65 to 80	65 to 80	14
vi)	Acid value, <i>Max</i>	15	20	7
vii)	Unsaponifiable matter, percent by mass, <i>Max</i>	2	2	8
viii)	Titre, °C, <i>Min</i>	36	36	12

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

4. PACKING

4.1 The material shall be supplied in suitable well-closed containers as agreed to between the purchaser and the supplier.

5. MARKING

5.1 The containers shall be marked with the following particulars:

- Name of the material;
- Net mass;
- Manufacturer's name and his recognized trade-mark, if any;
- Batch No. or lot No. in code or otherwise; and
- Month and year of manufacture.

6. SAMPLING

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

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

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7. TESTS

7.1 Tests shall be carried out as prescribed in IS : 548 (Part I)-1964*, IS : 548 (Part II)-1974† and Appendix A. References to the relevant clauses of these standards are given in 3.2 and col 5 of Table 1.

7.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (see IS : 1070-1960‡) shall be used in tests.

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

APPENDIX A **(Clauses 3.3 and 7.1)**

TEST FOR COLOUR OF SOAP

A-1. GENERAL

A-1.0 Outline of the Method — The oil is saponified with alcoholic sodium hydroxide, the alcohol is evaporated, and the colour of the residual soap assessed by visual examination.

A-1.1 Apparatus

A-1.1.1 Enamelled Beaker — one, 100 ml capacity.

A-1.1.2 Water-Bath

A-1.2 Reagent

A-1.2.1 Alcoholic Sodium Hydroxide Solution — 25 percent solution (*m/v*). This solution shall be completely colourless.

A-1.3 Procedure — Take 20 ml of alcoholic sodium hydroxide solution in the enamelled beaker, and immerse the beaker in the water-bath. When the alcohol begins to boil, add 15 ml of the hot oil in a thin stream, constantly stirring the mixture with a glass rod. Care should be taken to ensure that saponification is complete. Evaporate off the alcohol as quickly as possible while still stirring and assess the colour of the residual soap by visual examination.

NOTE — A gentle stream of clean dry air facilitates the quick evaporation of alcohol. The dry soap shall not be overheated lest the colour should deteriorate.

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

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

‡Specification for water, distilled quality (*revised*).

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INDIAN STANDARDS

ON

OILS AND FATS, AND RELATED MATERIALS

IS :

- 75-1973 Linseed oil, raw and refined (*second revision*)
- 435-1973 Castor oil (*second revision*)
- 542-1968 Coconut oil (*second revision*)
- 543-1968 Cottonseed oil (*second revision*)
- 544-1968 Groundnut oil (*second revision*)
- 545-1968 *MAHUA* oil (*second revision*)
- 546-1975 Mustard oil (*second revision*)
- 547-1968 Sesame oil (*second revision*)
- 548 (Part I)-1964 Methods of sampling and test for oils and fats: Part I Methods of sampling, physical and chemical tests (*revised*)
- 548 (Part II)-1974 Methods of sampling and test for oils and fats: Part II Purity test (*second revision*)
- 595-1956 Blown rape (or mustard) oil for use in lubricants
- 877-1971 Methods of sampling and test for activated carbon used for decolorizing vegetable oils and sugar solution
- 887-1968 Animal tallow (*first revision*)
- 1035-1972 Methods of sampling and test for bleaching earths (*second revision*)
- 1675-1971 Stearic acid, technical (*first revision*)
- 1676-1960 Oleic acid, technical
- 1780-1961 Vegetable tallow
- 1796-1960 Crude glycerine and refined glycerine
- 1965-1971 Bleaching earth of Indian origin used for decolorizing vegetable oils (*first revision*)
- 3448-1968 Rice bran oil (*first revision*)
- 3470-1966 Hexane, food grade
- 3490-1965 Nigerseed oil
- 3491-1965 Safflower oil
- 3492-1965 *KARANJA* oil
- 3579-1966 Methods of test for oilseeds
- 4054-1966 Neatsfoot oil
- 4055-1966 Maize (corn) oil
- 4056-1966 Fish oil for leather industry
- 4088-1966 *KUSUM* oil
- 4115-1967 Methods for sampling of oilseeds
- 4276-1967 Solvent-extracted soybean oil, refined
- 4277-1975 Sunflower oil (*first revision*)
- 4427-1967 Grading for groundnut kernels for oil milling and for table use
- 4428-1967 Grading for mustard seeds for oil milling
- 4429-1967 Grading for sesame seeds for oil milling
- 4617-1968 Grading for linseed for oil milling
- 4618-1968 Grading for castor seeds for oil milling
- 4619-1968 Grading for *MAHUA* kernels for oil milling
- 4620-1968 Grading for cotton seeds for oil milling
- 4765-1975 *NEEM* kernel and depulped *NEEM* seed oil (*first revision*)
- 5292-1969 Grading for safflower seeds for oil milling
- 5293-1969 Grading for niger seeds for oil milling
- 5294-1969 Grading for *KUSUM* seeds for oil milling
- 5614-1970 Tobaccoseed oil
- 5637-1970 Watermelon seed oil
- 5638-1970 Acid oil (cottonseed and groundnut)
- 5686-1970 Code of practice for handling and storage of oil seeds
- 6220-1971 Grading for copra for table use and for oil milling
- 7375-1974 Salseed fat
- 7787-1975 Grading for *NEEM* kernels and depulped *NEEM* seeds for oil milling

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	Conversion
Force	newton	N	1 N = 1 kg. 1 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
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²

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