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( Reaffirmed 2002 )

मधुमोम, अपरिष्कृत तथा परिष्कृत – विशिष्ट  
( तीसरा पुनरीक्षण )

(Reaffirmed 2014)

*Indian Standard*

**BEESWAX, CRUDE AND REFINED —  
SPECIFICATION**

*( Third Revision )*

ICS 65.140.10; 75.140

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**BUREAU OF INDIAN STANDARDS**  
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NEW DELHI 110002

**AMENDMENT NO. 1 JUNE 2007  
TO  
IS 1504 : 1996 BEESWAX, CRUDE AND  
REFINED — SPECIFICATION**

*( Third Revision )*

[Page 2, Table 1, SI No. (iv)] — Substitute:

- a) *Column 3* – Substitute ‘5 to 24’ for ‘12.0’.
- b) *Column 4* – Substitute ‘5 to 24’ for ‘8.0’.
- c) *Column 5* – Substitute ‘5 to 24’ for ‘10.0’.

(FAD 3)

Reprography Unit, BIS, New Delhi, India

**AMENDMENT NO. 2 APRIL 2011  
TO  
IS 1504 : 1996 BEESWAX, CRUDE AND  
REFINED — SPECIFICATION**

*(Third Revision)*

[Page 1, clause 9.1(d)] — Substitute 'Net quantity' for 'Net mass'.

[Page 1, clause 9.1(d)] — Insert the following at the end:

'e) Any other requirement as given under the *Standards of Weights and Measures (Packaged Commodities) Rules, 1977.*'

(FAD 3)

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Reprography Unit, BIS, New Delhi, India

## Apiary Industry Sectional Committee, FAD 3

### FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Apiary Industry Sectional Committee had been approved by the Food and Agricultural Division Council.

Beeswax, as the name suggests is a wax secreted in form of scales by the worker bees through their wax glands. It is extracted from honeycombs of either wild or domesticated bees after the removal of honey. The beeswax as obtained from the comb is called 'raw beeswax' and is progressively modified by physical treatment to yield crude and refined beeswax and by chemical treatment to yield bleached beeswax. This standard prescribes requirements only for crude and refined beeswax where as the requirements for bleached beeswax are covered separately under IS 4028 : 1992.

Beeswax has many uses, such as the making of adhesives, candles, cosmetics, electrical insulation, explosives, floor polishes, lubricants, pencils, pharmaceuticals, printing inks, shoe creams, varnishes and in leather, moulding, paper, rubber industries, etc.

This standard was first published in 1959, revised in 1968 and again in 1974. This revision incorporates among others, the following major changes:

- (a) Methods of tests have been incorporated for requirements of specific gravity and refractive index in view of their deletion from IS 4028 : 1992, cross-referred in the standard.
- (b) Requirements of saponification value and iodine value have been modified.

While formulating this standard, due consideration has been given to the relevant rules prescribed by the Government of India, namely, the General (Grading and Marking) rules framed under the *Agricultural Produce (Grading and Marking) Act, 1937*. This standard is subject to the restrictions imposed under these Acts and Rules, wherever applicable.

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. 'Rules for rounding of numerical values (*revised*)'. The number of significant places retained in the rounded off value, should be the same as that of the specified value in this standard.

# Indian Standard

## BEESWAX, CRUDE AND REFINED — SPECIFICATION

### (Third Revision)

#### 1 SCOPE

1.1 This standard prescribes requirements and the methods of sampling and tests for beeswax, crude and refined.

#### 2 REFERENCES

The following Indian Standards 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:

IS No.	Title
323:1959	Rectified spirit ( <i>revised</i> )
460 (Part 1) : 1985	Specification for test sieves: Part 1 Wire cloth test sieves ( <i>third revision</i> )
548 (Part 1) : 1964	Methods of sampling and test for oils and fats: Part 1 Methods of sampling, physical and chemical tests
1070:1992	Reagent grade water ( <i>third revision</i> )
4028:1992	Beeswax, bleached for cosmetic industry ( <i>second revision</i> )
6287:1985	Methods for sampling and analysis for sugar confectionery ( <i>first revision</i> )

#### 3 TERMINOLOGY

3.1 For the purpose of this standard, the definitions given in IS 548(Part 1) : 1964 shall apply.

#### 4 TYPES AND GRADES

4.1 The beeswax shall be of the following two types:

- a) *Crude Beeswax* — The material obtained from the honeycombs after the removal of honey and after subjecting the material to a preliminary treatment, such as melting, scumming, decantation and moulding. It shall not contain any other added material, such as paraffin wax and starch.
- b) *Refined Beeswax* — The material obtained after subjecting crude beeswax to further purification by melting and finer filtration.

4.2 The refined beeswax shall be of two grades, namely, Grade A and Grade B.

NOTE — Grade A beeswax is derived from *Apis cerana indica*, *A mellifera* bees, whereas Grade B may be from other species of *Apis* or a mixture thereof.

#### 5 DESCRIPTION

5.1 The material shall be in the form as agreed to between the purchaser and the supplier. In the absence of such an agreement, it shall be in the form of slabs.

#### 6 REQUIREMENTS

##### 6.1 Colour and Aroma

The colour of crude and refined beeswax shall be whitish yellow to yellowish brown and it shall have a characteristic aroma.

6.2 The aqueous extract of Grade A refined beeswax shall not be acidic.

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

#### 7 SAMPLING

7.1 The method of preparing representative test samples of the material and the criteria of conformity shall be as prescribed in Annex D.

#### 8 PACKING

8.1 Unless otherwise agreed to between the purchaser and the vendor, each slab shall be wrapped in greaseproof paper or a suitable plastic material like polyethylene. A number of such slabs shall be packed together in a suitable container.

#### 9 MARKING

9.1 Each container shall be legibly and indelibly marked with the following:

- a) Name, type and grade of the material;
- b) Name of the manufacturer;
- c) Batch or code number; and
- d) Net mass.

##### 9.2 BIS Certification Marking

Each container may also be marked with the Standard Mark.

9.2.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

**Table 1 Requirements for Beeswax, Crude and Refined**  
(Clause 6.3)

Sl No.	Characteristic	Crude	Refined		Method of Test Ref to	
			Grade A	Grade B	Annex	Cl No. in Other Indian Standard
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Specific gravity	0.950 to 0.995	0.955 to 0.980	0.945 to 0.980	A-1	—
ii)	Refractive index at 75°C	—	1.440 5 to 1.445 5	1.440 5 to 1.445 5	A-2	—
iii)	Melting point, °C	58 to 64	63 to 66	59 to 63	—	A-2 of IS 4028 : 1992
iv)	Acid value, <i>Max</i>	12.0	8.0	10.0	—	A-3 of IS 4028 : 1992
v)	Saponification Value	Not less than 80	90 to 105	90 to 105	—	A-4 of IS 4028 : 1992
vi)	Iodine value	5.5, <i>Max</i> 10.0	5.5 to 10.0	5.5 to 10.0	—	A-7 of IS 4028 : 1992
vii)	Ash, percent by mass, <i>Max</i>	0.6	0.2	0.5	—	A-8 of IS 4028 : 1992
viii)	<sup>1</sup> Sulphated ash, percent by mass, <i>Max</i>	0.006	0.002	0.005	—	6 of IS 6287 : 1985
ix)	Total volatile matter, percent by mass, <i>Max</i>	1.0	0.75	0.75	—	A-9 of IS 4028 : 1992
x)	Matter in soluble in benzene, percent by mass, <i>Max</i>	—	1.0	—	B	—
xi)	Matter soluble in water, percent by mass, <i>Max</i>	—	0.5	—	C	—

<sup>1</sup> Shall not contain any particles of gritty nature which are retained on 425 µm IS sieve [see IS 460 (Part 1) : 1985 ].

## ANNEX A

[Table 1, Sl No. (i) and (ii)]

### A-1 DETERMINATION OF SPECIFIC GRAVITY

#### A-1.1 Apparatus

A-1.1.1 Water Bath, maintained at 30° ± 1°C.

A-1.1.2 Specific Gravity Bottle, 25 ml capacity

#### A-1.2 Reagent

A-1.2.1 Rectified Spirit (see IS 323:1959)

#### A-1.3 Procedure

Melt approximately 2 g of the material in a porcelain crucible at temperature of about 100°C. Allow to cool to room temperature. Remove the solidified beeswax from the crucible, warming slightly if necessary. Attach a tared silk thread that will suspend the beeswax during weighing. Store the sample for two hours at a temperature of 30 ± 1°C. Determine the mass of the sample, first in air and then in rectified spirit maintained at 30 ± 1°C. Determine the specific gravity at 30°/30°C of the rectified spirit by means of the specific gravity bottle.

#### A-1.4 Calculation

$$\text{Specific gravity at } 30^{\circ}/30^{\circ}\text{C} = \frac{M_1 d}{M_1 - M_2}$$

where

$M_1$  = mass, in g, of the material in air;

$d$  = specific gravity of rectified spirit; and

$M_2$  = mass, in g, of the material in rectified spirit.

### A-2 DETERMINATION OF REFRACTIVE INDEX

#### A-2.1 Apparatus

A-2.1.1 Abbe Refractometer — with a thermostatically controlled water bath at 75 ± 0.1°C and an arrangement to circulate water through the instrument. The instrument should be standardized, following the manufacturer's instructions, with a liquid of known purity and refractive index, or with a glass prism of known refractive index. Distilled water which has a refractive index of 1.333 0 at 20.0°C is a satisfactory liquid for standardization.

A-2.1.1.1 Light source — If the refractometer is equipped with a compensator, a tungsten lamp or

a daylight bulb may be used. Otherwise, monochromatic light, such as an electric sodium vapour lamp, should be used.

### A-2.2 Procedure

Melt the material and filter it through a filter paper to remove any impurities and the last traces of moisture. Make sure that the sample is completely

dry. Adjust the temperature of the refractometer to  $75.0 \pm 0.1^\circ\text{C}$  by circulating water from the water-bath. Ensure that the prisms are clean and completely dry, and then place a few drops of the sample on the lower prism. Close the prisms, tighten firmly with the screw-head and allow to stand for one or two minutes. Adjust the instrument and the light to obtain the most distinct reading possible and determine the refractive index.

## ANNEX B

[Table 1, Item (x)]

### DETERMINATION OF MATTER INSOLUBLE IN BENZENE

#### B-1 PROCEDURE

**B-1.1** Agitate 5 g of beeswax with 100 ml of pure benzene until no more will dissolve. Heat to  $60^\circ\text{C}$  to promote further solution and to coagulate the

insoluble matter. Allow to cool without further disturbance for three hours. Filter the insoluble matter on a sintered glass crucible (G No. 4) and wash with benzene. Dry on a boiling water-bath for two hours and express the result in percent by mass.

## ANNEX C

[Table 1, Item (xi)]

### DETERMINATION OF MATTER SOLUBLE IN WATER

#### C-1 APPARATUS

**C-1.1** Evaporating Dish, 10 cm diameter and 5 cm deep.

**C-1.2** Measuring Flask, 250 ml

**C-1.3** Boiling Water-Bath

**C-1.4** Oven, at  $100 \pm 2^\circ\text{C}$ .

#### C-2 PROCEDURE

**C-2.1** Take 5 g of the material in 500 ml beaker and add to it 100 ml of distilled water (see IS 1070 : 1992), boil and stir thoroughly. Cover the beaker with a watch-glass and allow it to stand for 4 hours at room temperature with occasional stirring. Filter into a 250 ml measuring flask. Wash the

residual sample and the filter paper with distilled water (see IS 1070 : 1992) and make up the volume. Transfer a measured volume of the filtrate into a weighed evaporating dish and evaporate to dryness over a boiling water bath. Dry the residue to constant mass in an oven maintained at  $100 \pm 2^\circ\text{C}$ .

#### C-3 CALCULATION

**C-3.1** Matter soluble in water, percent by mass = 
$$\frac{M_1 \times 250 \times 100}{V \times M_2}$$

where

$M_1$  = mass, in g, of the residue;

$V$  = volume in ml of the filtrate taken; and

$M_2$  = mass, in g, of the sample taken.

## ANNEX D

(Clause 7.1)

### SAMPLING OF BEESWAX, CRUDE AND REFINED

#### D-1 GENERAL REQUIREMENTS OF SAMPLING

**D-1.0** In drawing, preparing, storing and handling samples, the following precautions and directions shall be observed.

**D-1.1** Samples shall be taken in a protected place not exposed to damp air, dust or soot.

**D-1.2** The sampling instrument shall be clean and dry when used.

**D-1.3** Precautions shall be taken to protect the samples, the material being sampled, the sampling instrument and the containers for the sample from adventitious contamination.

**D-1.4** The samples shall be placed in clean and dry glass containers. The sample containers shall be of such a size that they are almost completely filled by the sample.

**D-1.5** Each container shall be sealed air-tight after filling and marked with full details of sampling, batch or code number, name of the manufacturer, and other important particulars of the consignment.

**D-1.6** Samples shall be stored in such a manner that the temperature of the material does not vary unduly from the normal temperature.

## D-2 SCALE OF SAMPLING

### D-2.1 Lot

All the containers in a single consignment of the same material drawn from a single batch of manufacture shall constitute a lot. If the consignment is declared to consist of different batches of manufacture, the batches shall be marked separately and the groups of containers in each batch shall constitute a separate lot.

**D-2.1.1** Samples shall be tested for each lot for ascertaining the conformity of the material to the requirement of this specification.

**D-2.2** The number of containers to be selected from the lot shall depend on the size of the lot and shall be in accordance with col. 1 and 2 of Table 2.

**D-2.3** The containers shall be selected at random from the lot and for this purpose a random number table as agreed to between the purchaser and the supplier shall be used. If such a table is not available, the following procedure shall be adopted:

Starting from any container in the lot, count them as 1, 2, 3 up to  $r$  in a systematic manner, where  $r$  is equal to the integral part of  $N/n$ ,  $N$  being the total number of containers in the lot and  $n$  the number of containers to be chosen (*see* Table 2). Every  $r$ th container thus counted shall be separated until the requisite number of containers is obtained from the lot to give samples for test.

## D-3 TEST SAMPLES AND REFEREE SAMPLES

### D-3.1 Preparation of individual Samples

Draw with suitable sampling instrument equal quantities of the material from different parts of the container till 500 g of the material is drawn and divide it into three equal parts. Each part so obtained shall constitute an individual sample representing the container and shall be transferred immediately to thoroughly cleaned and dry containers, sealed air-tight and marked with particulars given under **D-1.5**. The individual sample so obtained shall be divided into three sets in such a way that each

set has a sample representing each selected container. One of these shall be marked for the purchaser, another for the vendor and the third for the referee.

### D-3.2 Preparation of Composite Sample

From the material from each of the selected container, remaining after the individual sample has been taken, approximately equal quantities of the material shall be taken and mixed together so as to form a composite sample weighing 150 g. This composite sample shall be divided into three equal parts and transferred to clean and dry containers, sealed air-tight and labelled with particulars as given in **D-1.5**. One of these composite samples shall be for the purchaser, another for the vendor and the third for the referee.

### D-3.3 Referee Samples

Referee samples shall consist of a set of individual samples (**D-3.1**) and a composite sample (**D-3.2**) marked for this purpose and shall bear the seals of the purchaser and the vendor. These shall be kept at a place as agreed to between the two.

## D-4 NUMBER OF TESTS

**D-4.1** Test for melting point, total volatile matter, ash and sulphated ash shall be conducted on each of the samples constituting a set of individual samples.

**D-4.2** Test for specific gravity, refractive index at 75°C, acid value, saponification value and iodine value, matter insoluble in benzene and matter soluble in water shall be conducted on the composite sample.

## D-5 CRITERIA FOR CONFORMITY

**D-5.1** A lot shall be declared to have satisfied all the requirements of this specification when conditions given in **D-5.1.1** to **D-5.1.2** are satisfied.

**D-5.1.1** The test results on each of the individual samples for melting point, total volatile matter, ash and sulphated ash shall satisfy the corresponding requirements as specified in Table 1.

**D-5.1.2** The test results on the composite sample for the characteristics as mentioned in **D-4.2** shall satisfy the corresponding requirements as given in Table 1.

**Table 2 Number of Containers to be Selected for Sampling**

(Clause D-2.2)

Lot Size	No. of Containers to be Selected
$N$	$n$
(1)	(2)
Up to 25	3
26 to 100	4
101 to 500	5
501 to 1 000	7
1 001 and above	9



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### Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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