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Indian Standard

IS 7123 : 2019

केश तेल — विशिष्टि

(तीसरा पुनरीक्षण)

Hair Oils — Specification

(Third Revision)

ICS 71.100.70

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Price Group 3

Cosmetics Sectional Committee, PCD 19

FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Cosmetics Sectional Committee, had been approved by the Petroleum, Coal and Related Products Division Council.

This standard was first published in 1973 when amongst others, a requirement for peroxide value of 7.5 milliequivalents/1 000 g maximum was also prescribed. Vegetable oils have an inherent tendency to undergo oxidation on storage which is enhanced by direct sunlight and high temperature, thereby resulting in as increased peroxide value. At a certain stage of oxidation, the oil starts giving unpleasant rancid odour. Requirement for peroxide value was prescribed to check rancidity of hair oil. Through use of this standard, manufacturer's difficulty in complying to this requirement was realized.

Though, there is a direct correlation of peroxide value with the degree of unpleasant rancid odour of hair oil which would be tolerable to the consumer, the Committee removed the requirement of peroxide value and introduced a date up to which the product may be used to safeguard the interest of consumers, in the first revision of this standard.

Later on, it was found that, expiry date being a part of marking clause was not complied by most of the manufactures of hair oil and requirement of peroxide value which takes care of rancidity of hair oil had been removed from the standard in the first revision.

Lately, some of the hair oil manufactures themselves observed that hair oil being a consumer non-durable item, requirement of peroxide value may be restored to, to check the unpleasant rancid odour of hair oil. Therefore, in second revision, a requirement for peroxide value has been included alongwith an expiry date as a regular requirement. Another important requirement for microbiological examination of hair oil has been included. Besides, it has been made compulsory to declare the list of critical ingredient used in hair oil on packing as well as packaging materials.

It is necessary that all ingredients used are such that in the concentration in which they would be present in the hair oil, are free from any harmful effects. It shall be the responsibility of the manufacturer to satisfy himself of the dermatological safety of his formulation according to this standard before releasing the product for sale.

In this revision, all the 7 amendments have been incorporated. Storage condition is exempted in case of Type 2 based on mineral oil.

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 off 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.

A scheme for labelling environment friendly known as ECO-Mark has been introduced at the introduced at the Ministry of Environment and Forests (MEF), Government of India. The ECO-Mark is being administered by the *Bureau of Indian Standards Act*, 2016 as per the Resolution No. 71 dated 21 February 1991 and No. 768 dated 24 August 1992 published in the Gazette of the Government of India. For a product to be eligible for marking with ECO logo, it shall also carry the Standard Mark of BIS besides meeting additional environment friendly requirements. For this purpose, the Standard Mark of BIS would be a single mark being a combination of the BIS monogram ISI and the ECO logo. Requirements of ECO friendliness will be additional, manufacturing units will be free to opt for Standard Mark alone also.

Indian Standard

HAIR OILS — SPECIFICATION

(Third Revision)

1 SCOPE

1.1 This standard prescribes the requirements for hair oils and other oil-based cosmetic preparations for the hair. The latter includes hair tonics and hair oil concentrates.

1.1.1 This standard does not covers effleurage type of hair oils, hair creams, brilliantines, pomades and preparations sold under the name of hair darkeners.

1.1.2 Hair oils for which therapeutic claims are made, are not covered in this standard.

2 REFERENCES

2.1 The following standards contain provisions, which through reference in this text, constitute provisions 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 below.

IS No.	*Title*
265 : 1993	Hydrochloric acid (*fourth revision*)
543 : 2019	Cottonseed oil — Specification (*third revision*)
546 : 2014	Mustard oil — Specification (*third revision*)
1070 : 1992	Reagent grade water (*third revision*)
2088 : 1983	Methods for determination of arsenic (*second revision*)
3448 : 2014	Rice bran oil (*third revision*)
3491 : 2019	Safflower oil seed oil — Specification (*first revision*)
3958 : 1984	Methods of sampling cosmetics (*first revision*)
4011 : 2019	Method of test for safety evaluation of cosmetics (*third revision*)
4276 : 2014	Soybean oil — Specification (*second revision*)
4277 : 2014	Sunflower oil — Specification (*second revision*)
4707	Classification of cosmetics raw materials and adjuncts:
(Part 1) : 2017	Dyes, colours and pigments (*third revision*)
(Part 2) : 2017	List of raw materials generally not recognized as safe for use in cosmetics (*fourth revision*)
5637 : 1970	Watermelon seed oil
7299 : 2017	Mineral oil for cosmetic industry — Specification (*first revision*)
11375 : 1985	Groundnut oil for cosmetic industry
11376 : 1985	Sesame oil for cosmetic industry
11470 : 1985	Coconut oil for cosmetic industry
11486 : 1985	Castor oil for cosmetic industry

3 TYPES

3.1 There shall be three types of hair oils, namely

a) Type 1 based on vegetable oil(s).
b) Type 2 based on mineral oil, and
c) Type 3 based on a mixture of vegetable oil(s) (raw and/or refined) and mineral oil.

4 REQUIREMENTS

4.1 Description

The hair oil shall be colourless or coloured, with or without perfume. It shall be free from any sediment and suspended matter at 27°C and unpleasant rancid odour. It shall contain suitable antioxidants, if necessary, to prevent it from developing unpleasant rancid odour till the time of its actual use.

4.2 Ingredients

4.2.1 *Base Oil*

4.2.1.1 *For type 1*

The oil or oils used as the base shall be of the quality specified below except for the requirement of colour when used in the formulation of coloured hair oil.

a) Castor oil conforming to IS 11486,
b) Coconut oil conforming to IS 11470,
c) Groundnut oil conforming to IS 11375,
d) Sesame oil conforming to IS 11376,
e) Cottonseed oil conforming to IS 543,

f) Sunflower oil conforming to IS 4277,
g) Safflower oil conforming to IS 3491,
h) Soybean oil conforming to IS 4276,
j) Mustard oil confirming to IS 546,
k) Rice bran oil confirming to IS 3448,
m) Watermelon seed oil confirming to IS 5637, and
n) Any other edible oil confirming to and permitted by FSSR and IS 4707 (Part 1) and IS 4707 (Part 2).

4.2.1.2 *For type 2*

The base oil shall conform to IS 7299.

4.2.1.3 *For type 3*

The oil or oils used as the base shall be of the quality specified below except for the requirement of colour when used in the formulation of coloured hair oil.

a) Castor oil conforming to IS 11486,
b) Coconut oil conforming to IS 11470,
c) Groundnut oil conforming to IS 11375,
d) Sesame oil conforming to IS 11376,
e) Cottonseed oil conforming to IS 543,
f) Sunflower oil conforming to IS 4277,
g) Safflower oil conforming to IS 3491,
h) Soybean oil conforming to IS 4276,
j) Mineral oil conforming to IS 7299,
k) Mustard oil confirming to IS 546,
m) Rice bran oil confirming to IS 3448,
n) Watermelon seed oil confirming to IS 5637, and
p) Any other edible oil confirming to and permitted by FSSR and IS 4707 (Part 1) and IS 4707 (Part 2).

4.2.2 *Dyes and Colours*

If dyes, colours (pigments, lakes etc) are to be added, these shall be as specified in IS 4707 (Part 1) or Schedule 'Q' of the Drugs and Cosmetics Rules.

4.2.3 *Other Additives*

Other additives shall conform to the requirements prescribed in IS 4707 (Part 2).

4.2.4 For safety evaluation of novel ingredients used in formulation of hair oil, hair oil shall comply to IS 4011.

4.3 Acid Value

The acid value of Type 1 and Type 3 hair oils when tested as prescribed in **A-2.1** shall be not more than 1.0. The hair oil of Type 2 shall pass the test prescribed in **A-2.2**.

4.4 Microbiological Examinations

The material when tested as prescribed in **A-3** shall contain not more than 1 000 micro-organisms per gram.

4.5 Peroxide Value

The material when tested as prescribed in **A-4** shall have peroxide value not exceeding 10 milliequivalents/1 000 g.

4.6 Heavy metals calculated as lead (Pb) and Arsenic (as As_2O_3) shall not exceed 20 ppm and 2 ppm, respectively when tested by the methods prescribed under **A-5** and **A-6**, respectively.

4.7 Additional Requirements for ECO-Mark

4.7.1 *General Requirements*

4.7.1.1 The products shall conform to the requirements for quality, safety and performance prescribed under **4.1** to **4.6**.

4.7.1.2 All the ingredients that go into formulation of cosmetics shall comply with the provisions of IS 4707 (Part 1) and IS 4707 (Part 2).

5 PACKING AND MARKING

5.1 Packing

The hair oil shall be packed in suitable well closed containers, not exceeding pack size of 1 kg or 1 litre, and the container should not have deleterious effect on the product.

5.2 Marking

The containers shall be legibly marked with following information:

a) Manufacturer's name and recognized trade-mark, if any;
b) Indication of the source of manufacture and type of the material;
c) Net contents of the material in ml or g;
d) Batch number, in code or otherwise, to enable the lot of material to be traced back from records;
e) Store in cool place protected from sunlight[1);
f) Use before[2) '…' (month and year to be declared by the manufacturer); and
g) List all ingredients — Ingredients present at greater than 1 percent shall be listed in descending order of mass at the time they added, followed by those in concentration of less than or equal to 1 percent in any order. Colouring agents may be listed in any order after the other ingredients[3), 4)].

NOTES
1 This is exempted in case of Type 2 based on mineral oil.
2 This is exempted in case of pack sizes of 10 g/25 ml or less and if the shelf life of the product is more than 24 months.
3 This is exempted in case of pack sizes of 30 g/60 ml or less.
4 Composition percentage of mineral oil as well as vegetable oil shall be declared in Type 3 hair oil.

5.2.1 *BIS Certification Marking*

The containers may also be marked with the Standard Mark.

5.2.1.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

6 SAMPLING

6.1 Representative samples of the material shall be drawn as prescribed in IS 3958.

6.2 Tests for all the requirements shall be carried out on the composite sample.

6.3 The material shall be taken to have conformed to this standard if the composite sample passes all the tests.

ANNEX A

(*Clauses* 4.3, 4.4 *and* 4.5)

METHODS OF TEST FOR HAIR OILS

A-1 QUALITY OF REAGENTS

A-1.1 Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070) shall be used in tests.

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

A-2 DETERMINATION OF ACID VALUE

A-2.1 For Type 1 and Type 3

A-2.1.1 *Regents*

A-2.1.1.1 *Ethyl alcohol*

95 percent by volume, neutralized to mixed indicator solution (**A-2.1.1.2**).

A-2.1.1.2 *Mixed indicator solution*

Dissolve 1 g of phenolphthalein in 100 ml of ethyl alcohol and add to it 1 ml of 0.1 percent solution of methylene blue in water.

A-2.1.1.3 Standard aqueous potassium hydroxide or sodium hydroxide solution — 0.1 N.

A-2.1.2 *Procedure*

Weigh accurately a suitable quantity of the oil in a 200 ml conical flask. The mass of the oil taken shall be such that the volume of alkali required for the the titration does not exceed 10 ml. Add 50 ml of hot ethyl alcohol and 1 ml of the mixed indicator solution. Boil the mixture for about 5 min and titrate while hot with standard alkali solution. Shaking vigorously during titration.

A-2.1.3 *Calculation*

$$\text{Acid value} = = \frac{56.1VN}{M}$$

where

V = volume in ml, of standard alkali solution used;

N = normality of standard alkali solution; and

M = mass in g, of the material taken for the test.

A-2.2 For Type 2

A-2.2.1 *Procedure*

Shake 20 g of the material with an equal amount of hot distilled water. Test the aqueous portion with blue litmus paper.

A-2.2.1.1 The material shall be taken to have passed the test if litmus does not change colour.

A-3 MICROBIOLOGICAL EXAMINATION

A-3.0 Outline of the Method

The test consists of plating a known mass of the sample on two selected culture media specifically suitable for the growth of bacteria and fungi and incubating them for a specified period to permit the development of visual colonies for counting.

A-3.1 Apparatus

A-3.1.1 Tubes, of resistant glass, provided with closely fitting metal caps.

A-3.1.2 *Autoclaves, of Suitable Size* — They shall keep uniform temperature within the chamber up to and including the sterilizing temperature of 120°C. They shall be equipped with an accurate thermometer located so as to register the minimum temperature within the sterilizing chamber, a pressure gauge and properly adjusted safety values.

A-3.1.3 *Petri Dishes* — Of 100 mm diameter and

15 mm depth. The bottom of the dishes shall be free from bubbles and scratches and shall be flat so that the medium is of uniform thickness throughout the plate.

A-3.1.4 *Colony Counter* — An approved counting aid, such as Quebec colony counter. If such a counter is not available, counting may be done with a lens giving a magnification of 1.5 diameter. In order to ensure uniformity of conditions during counting, illumination equivalent to that provided by the Quebec colony counter shall be employed.

A-3.2 Media

A-3.2.1 *Nutrient Agar Medium*

Dissolve 5 g of yeast extract (or meat extract), 5 g of sodium chloride and 10 g of peptone in 1 000 ml of distilled water continued in a 2 litre beaker by heating on a water-bath. Add 25 g of powdered agar and continue boiling until the agar is completely dissolved. Adjust the *p*H to 7.4 with sodium hydroxide solution using *p*H meter or comparator. Filter while hot through lint cloth placed in a funnel and dispense into tubes in 20 ml quantities. Filter only if necessary. Close the tubes with metal caps or cotton plugs and sterilize in an autoclave at 121°C and 1.05 kgf /cm^2 pressure for 20 min. After autoclaving, store the tubes in a refrigerator and use them within 3 weeks.

A-3.2.2 *Sabouraud Agar Medium*

Dissolve 10 g peptone and 40 g of glucose in 1 000 ml of distilled water contained in a 2 litre conical flask by heating in water-bath. Add 25 g of powdered agar and continue boiling until the agar is completely dissolved. *p*H need not be adjusted (it automatically comes to 5.4). Filter while hot through lint cloth placed in a funnel and dispense into tubes in 20 ml quantities. Filter only, if necessary. Close the tubes with metal caps or cotton plugs and sterilize in and autoclave at 121°C and 1.05 kgf/cm^2 pressure for 15 min. After autoclaving, store the tubes in a refrigerator and use them within 3 weeks.

A-3.3 Sterilization of Apparatus

A-3.3.1 *Tubes*

These shall be sterilized in the autoclave at 121°C and 1.05 kgf/cm^2 pressure for 20 min or in a hot air oven at 160°C for 1h.

A-3.3.2 *Petri Dishes*

These shall be packed in drums and sterilized in the autoclave at 121°C and 1.05 kgf/cm^2 pressure for 20 min or individually wrapped in kraft paper and sterilized in a hot air oven at 160°C for 1 h.

A-3.3.3 *Pipettes*

These shall be place in pipettes cone (of copper, standard steel or aluminium) after plugging with metal caps or cotton plugs and sterilized in an autoclave at 121°C and 1.05 kgf/cm^2 pressure for 20 min or in a hot air oven at 160°C for 1 h.

A-3.4 Procedure

A-3.4.1 Melt sufficient number of nutrient agar tubes and sabouraud agar tubes in a water-bath and transfer while hot into a constant temperature water bath mentioned at 48 ± 2°C.

A-3.4.2 Weigh and transfer aseptically four 0.5 g portions of the sample to four melted nutrient agar tubes, and four 0.5 g portions to four sabouraud agar tubes. Shake the tubes to mix the contents thoroughly and pour into sterile petri dishes. Incubate the nutrient agar tubes at 37 ± 0.5°C for 48 h and the sabouraud agar tubes at 20 to 25°C for 7 days.

A-3.5 Determine the average number of colonies per gram of the sample on nutrient agar tubes, as well as, the average number of colonies per gram of sample on sabouraud agar tubes. The mean of the two average numbers shall be taken as the number of micro-organisms per gram of the samples.

A-4 TEST FOR PEROXIDE VALUE

A-4.1 Reagents

A-4.1.1 *Glacial Acetic Acid*

A-4.1.2 *Chloroform*

A-4.1.3 *Potassium Iodide Solution*, saturated, freshly prepared

A-4.1.4 *Standard Sodium Thiosulphate Solution,* 0.01 N, freshly standardized.

A-4.1.5 *Starch Indicator Solution*

Triturate 5 g of starch and 0.01 g of mercuric iodide with 30 ml of cold water and slowly pour it with stirring into one litre of boiling water. Boil for 3 min. Allow to cool and decant off the supernatant clear liquid.

A-4.2 Procedure

Weigh accurately about 5 g of the material in a 250 ml glass stoppered conical flask and dissolve by shaking in 30 ml of a mixed solvent containing 3 parts by volume of glacial acetic acid and 2 parts by volume of chloroform. Add 0.5 ml of saturated potassium iodide solution, allow the solution to stand for exactly 1 min with occasional shaking, then add 30 ml of water and titrate with standard sodium thiosulphate solution. Add the thiosulphate solution until the colour of the titrated solution become light yellow. Then add 1 ml of starch indicator solution and continue the titration till the disappearance of the blue colour.

Carry out a blank determination without using the sample.

A-4.2.1 *Calculation*

Provide value mill equivalents 1 000 g

$$1\,000 = \frac{(V_1 - V_2)}{M} N$$

where

V_1 = Volume in ml, of standard sodium thiosulphate solution required with the sample;

V_2 = Volume in ml, of standard sodium thiosulphate solution required with the blank;

N = normality of standard sodium thiosulphate solution; and

M = mass in g, of the sample taken for the test.

A-5 DETERMINATION OF HEAVY METALS

A-5.1 Outline of the Method

The colour produced with hydrogen sulphide solution is matched against that obtained with standard lead solution.

A-5.2 Apparatus

A-5.2.1 *Nessler Cylinders* — 50 ml capacity.

A-5.3 Reagent

A-5.3.1 *Dilute Hydrochloric Acid* — Approximately 5 N.

A-5.3.2 *Dilute Acetic Acid* — Approximately 1 N.

A-5.3.3 *Dilute Ammonium Hydroxide* — Approximately 5 N.

A-5.3.4 *Hydrogen Sulphide Solution* — Standard.

A-5.3.5 *Standard Lead Solution* — Dissolve 1.600 g of lead nitrate in water and make up the solution to 1 000 ml. Pipette out 10 ml of the solution and dilute again to 1 000 ml with water. One millilitre of this solution contains 0.01 mg of lead (as Pb).

A-5.4 Procedure

Weigh 2.000 g of material in a crucible and heat on a hot plate and then in a muffle furnace to ignite it at 600°C to constant mass. Add 3 ml of dilute hydrochloric acid, warm (wait till no more dissolution occurs) and make up the volume to 100 ml. Filter the solution. Transfer 25 ml of the filtrate into a Nessler's cylinder. In the second Nessler's cylinder, add 2 ml of dilute acetic acid, 1.0 ml of standard lead solution and make up the volume with water to 25 ml.

Add 10 ml of hydrogen sulphide solution to each Nessler cylinder and make up the volume with water to 50 ml. Mix and allow to stand for 10 min. Compare the colour produced in the two Nessler's cylinders. Blank determinations without samples are recommended to avoid errors arising out of reagents.

A-5.5 Results

The sample may be taken to have passed the test, if the colour developed in the sample solution is less than that of standard solution.

A-6 DETERMINATION OF ARSENIC

A-6.1 Outline of the Method

Arsenic present in a solution of the material is reduced to arsine, which is made to react with mercuric bromide paper. The stain produced is compared with a standard stain.

A-6.2 Reagents

A-6.2.1 *Mixed Acid* — Dilute one volume of concentrated sulphuric acid with four volumes of water. Add 10 g of sodium chloride for each 100 ml of the solution.

A-6.2.2 *Ferric Ammonium Sulphate Solution* — Dissolve 64 g of ferric ammonium sulphate in water containing 10 ml of mixed acid and make up to one litre.

A-6.2.3 *Concentrated Hydrochloric Acid — see* IS 265.

A-6.2.4 *Stannous Chloride Solution* — Dissolve 80 g of stannous chloride ($SnCl_2.2H_2O$) in 100 ml of water containing 5 ml of concentrated hydrochloric acid.

A-6.3 Procedure

Carry out the test as prescribed in IS 2088, adding into the Gutzeit bottle, 2 ml of ferric ammonium sulphate solution, 0.5 ml of stannous chloride solution and 25 ml of sample solution as prepared in **A-5.4**.

For comparison, prepare a stain using 0.001 mg of arsenic trioxide.

Bureau of Indian Standards

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Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

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