

BUREAU OF INDIAN STANDARDS

Draft Indian Standard

SPECIFICATION FOR BABY TOILET SOAP

(First Revision of IS 10523)

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Last date for receipt of comments is 24 08 2011

0. FOREWORD

0.1 (Formal clause will be added later)

0.2 Considering that baby toilet soap were being produced and consumed in good quantity, the concerned technical committee formulated this Indian Standard and the same was first published in 1983. The Sectional Committee responsible for the preparation of this standard decided to revise it in order to incorporate all the Amendments issued till date.

0.3 Normally the general requirements for a baby toilet soap are similar to those prescribed for toilet soap meant for adults. However, on account of natural difference between a baby's skin and an adult's skin due regard to toxicity and dermatological consideration is given during the manufacture of baby toilet soap. This is because the skin of babies, being much thinner and less cornified than that of an adult, is highly susceptible to irritation and resistance to bacterial attack is not fully developed in the very young ones. If superficial layers of the epidermis are damaged by any means, for example, by the use of harsh toiletries, various skin disorders may develop. It was however not practicable to prescribe all such factors. It was, therefore, emphasized that manufacturers of baby toilet soap shall take the responsibility to establish and ensure dermatological safety of the soap when evaluated as per the method prescribed in IS : 13424-2001.

0.3.1 In order to achieve dermatological safety of baby toilet soap the choice and selection of appropriate quality and quantity of different raw materials is very important.

0.4 In this specification, the use of rosin has not been allowed because its soap may lead to irritation of the skin. On similar consideration a higher limit for total fatty matter, low limits for free caustic alkali and free carbonated alkali and low limits for heavy metals, namely, nickel, copper and iron have been prescribed.

0.5 A scheme for labelling environment friendly products to be known as ECO Mark is being 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 published in the Gazette of the Government of India. For a product to be eligible for 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 baby toilet soap is included in this standard A proposal to incorporate some more EF requirements in phases is also under consideration and would be included in due course

0.6 This standard contains clause **5.1** which calls for agreement between the purchaser and the supplier.

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 toilet soap.

2. REFERENCES

The standards listed in Annex A contain provisions which through reference in this text, constitute provisions of and necessary adjuncts to 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. TERMINOLOGY

3.1 For the purpose of this standard, the definitions given in IS: 286-1978 and IS: 7597-2001 shall apply.

4. REQUIREMENTS

4.1 Description — Baby toilet soap shall be a high grade, thoroughly saponified, milled soap or homogenized soap or both, white or coloured, mildly perfumed or unperfumed, and compressed in firm smooth cakes. It shall possess good cleaning and lathering properties. It shall be free from rancidity.

4.2 Ingredients — Baby toilet soaps shall contain only the following:

Colouring matter, perfume, preservatives and super fatting agents.
All other ingredients except moisture shall be declared on the label.
All these materials shall be non-injurious to skin in use with soap.

4.3 Baby toilet soap shall also comply with the requirements specified in Table 1.

TABLE 1 REQUIREMENTS FOR BABY TOILET SOAP
(Clause 3.3)

SL No.	CHARACTERISTIC	REQUIREMENTS	METHOD OF TEST, REF TO		
			CI No. in IS: 286- 1978*	CI No. in IS: 74- 1979†	Appendix
(1)	(2)	(3)	(4)	(5)	(6)
i)	Total fatty matter, percent by mass, <i>Min</i>	78.0	15	—	—
ii)	Moisture and volatile matter (at 105°C), percent by mass, <i>Max</i>	15.0	4.2	—	—

iii)	Matter insoluble in alcohol, percent by mass, <i>Max</i>	2.0	5	—	—
iv)	Matter insoluble in water, percent by mass, <i>Max</i>	0.5	7	—	—
v)	Free caustic alkali, as sodium hydroxide (NaOH), percent by mass, <i>Max</i>	0.03	6	—	—
vi)	Chlorides, as sodium chloride (NaCl), percent by mass, <i>Max</i>	1.0	10	—	—
vii)	Free carbonated alkali, percent by mass, <i>Max</i>	0.5	2	—	—
viii)	Freedom from rosin	To pass the test	—	23	—
ix)	Freedom from grit	To pass the test	—	—	A
x)	Nickel content	Nil	—	—	B
xi)	Iron content, parts per million, <i>Max</i>	10	—	—	C
xii)	Copper (as Cu) contents, parts per million, <i>Max</i>	3	—	—	D

4.3.1 Calculation of Results — Baby toilet soap is liable to lose moisture on keeping. The results of analysis in respect of other characteristics shall be recalculated in relation to the minimum specified total fatty matter by means of the equations:

$$\text{Recalculated result} = \text{Actual result} \times \frac{\text{Minimum specified total fatty matter}}{\text{Actual total fatty matter}}$$

4.4 Optional Requirements for ECO Mark

4.4.1 General Requirements

4.4.1.1 The product shall conform to the requirements for quality, safety and performance prescribed under clauses 4.1 to 4.3.

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

4.4.2 Specific Requirements

4.4.2.1 The material shall neither contain any synthetic detergent when tested as per the method given in Annex B and C of IS: 4955-2001 nor any phosphate when tested as per the method prescribed in **20** of IS: 286-1978.

4.4.2.2 The material shall pass the test for dermatological safety when evaluated as per the method prescribed in IS : 13424-2001‡.

5. PACKING AND MARKING

5.1 Packing — The material shall be packed as agreed to between the purchaser and the supplier.

5.1.1 For ECO Mark the product shall be packed in such packages which are made from recyclable/reusable or biodegradable materials and declared by the manufacturer and may be accompanied with detailed instructions for proper use.

5.2 Marking — The packages shall be securely closed and labelled in conformity with the statutory requirements of the Government of India as applicable from time to time and the following:

- a) Name of the material;
- b) Manufacturer's name and address and/or his recognized trade-mark, if any;
- c) Net mass when packed;
- d) Total fatty matter content;
- e) Batch No. or Lot No. in code or otherwise; and
- f) Month and year of manufacture.
- g) The following identified critical ingredients in descending order of quantity, percent by mass, for ECO Mark:
 - i) Total fatty matter (TFM), and
 - ii) Water insoluble matter.
 - h) The criteria for which the product has been labelled as ECO Mark

5.2.1 The packages may also be marked with the Standard Mark.

5.2.1.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made there under. 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 For this purpose, scale of sampling and preparation of test samples shall be as prescribed in **3.1**, **3.2**, and **3.3** respectively of IS: 286-1978.

6.2 Number of Tests

6.2.1 Tests for the determination of total fatty matter and free caustic alkali shall be conducted on each of the individual samples separately.

6.2.2 Tests for determination of all the remaining characteristics shall be conducted on the composite sample.

6.3 Criteria for Conformity

6.3.1 For Individual Samples — For each of the characteristics which has been determined on the individual samples (**5.2.1**) the mean (x) and the range (R) of the test results shall be calculated as follows:

$$\text{Mean } (x) = \frac{\text{The sum of the test results}}{\text{Number of test results}}$$

Range (R) = The difference between the maximum and the minimum values of the test results

The lot shall be deemed as conforming to the requirements given in **5.2.1** the expression ($x - 0.6 R$) is greater than or equal to minimum value given in Table 1, and ($x + 0.6 R$) is less than or equal to the maximum value given in Table 1.

6.3.2 For Composite Sample — For declaring the conformity of lot to the requirements of other characteristics determined on the composite sample, the test results for each of the characteristics shall satisfy the relevant requirements.

7. TESTS

7.1 Tests shall be conducted as prescribed in IS: 286-1978, IS: 74-1979 and Annexes A, B, C and D. References to the relevant clauses of IS: 286-1978, IS: 74-1979 and appendices are given in cols 4, 5 and 6 of Table 1.

7.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (*see* IS: 1070-1992) shall be employed in the tests.

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

ANNEX A (Clause 2)

<i>IS No.</i>	<i>Title</i>
IS: 2-1960	Rules for rounding off numerical values (<i>revised</i>).
IS: 74-1979	Methods of sampling and test for drying oils for paints (<i>second revision</i>).
IS: 265-1993	Hydrochloric acid (<i>fourth revision</i>).
IS: 286-1978	Methods of sampling and test for soaps (<i>second revision</i>).
IS: 1070-1992	Reagent grade water – specification (<i>third revision</i>).
IS: 4955-2001	Household laundry detergent powders-specification(<i>fourth revision</i>)
IS: 7597-2001	Surface active agents-Glossary of terms(first revision)
IS : 13424-2001	Safety evaluation of bathing bars and toilet soap – methods of test

ANNEX B [Table 1, Item (ix)]

TEST FOR FREEDOM FROM GRIT

A-0. OUTLINE OF THE METHOD

A-0.1 Soap is rubbed with water between the hands for a specified time and examined for its gritty or rough feel, if any.

A-1. PROCEDURE

A-1.1 Hold a bar of soap in running tap water and rub between both hands for about 3 minutes. No gritty or rough feel should be perceived while rubbing the soap surface. Examine the surface of the bar which shall not be rough and shall feel smooth when the fingers are moved across the surface. Set the bar on and let it dry for 24 hours at room temperature and examine its surface.

A-1.2 The soap shall be taken to have passed the test if there is no gritty or rough feel on the surface.

ANNEX C

[Table 1, Item (x)]

DETERMINATION OF NICKEL

B-0. OUTLINE OF THE METHOD

B-0.1 The method is based on the isolation of metal from the soap and reaction between nickel in the oxidized form with dimethyl glyoxime forming a red colour.

B-1. REAGENTS

B-1.1 Sodium Hydroxide — AR grade.

B-1.2 Concentrated Hydrochloric Acid—Conforming to IS: 265-1993.

B-1.3 Dimethyl Glyoxime Solution — 0.1 percent (*v/v*) in 95 percent ethyl alcohol.

B-1.4 Saturated Bromine Water

B-1.5 Liquor Ammonia — Relative density 0.9.

B-2. PROCEDURE

B-2.1 Isolation of Metals from Soap — Weigh 50 g of soap in a beaker and dissolve in hot water. Add to this soap solution 40 ml of concentrated hydrochloric acid, stir and keep on steam bath until fatty acid layer separates. Add 20 g of paraffin wax, stir at intervals and allow it to settle until phases are clear. Cool to room temperature.

B-2.1.1 Remove wax cake with rod, rinse with water and add rinsings to aqueous phase. Evaporate, aqueous phase to about 60 ml by gentleboiling. Add 100 ml of water and filter through paper washed previously with hydrochloric acid. Evaporate filtrate and washings to about 60 ml. Cool and transfer to volumetric flask. Make up the volume to 100 ml. Take aliquot portions for metal estimation.

B-2.2 Determination of Nickel Content — Take 50 ml aliquot of the aqueous solution from the test solution in a 250-ml beaker. Evaporate the solution to about 15 ml by heating. Transfer the solution to a 50-ml glass stoppered volumetric flask using a small quantity of water for rinsing the solution from the beaker into the volumetric flask. Add to the flask 3 ml of saturated bromine water and allow to stand for one minute. Add liquor ammonia dropwise until excess bromine is destroyed as indicated by the disappearance of brown colour. Then add 5 ml of liquor ammonia in excess. If a precipitation occurs, filter the solution and wash the precipitate with distilled water; combine the filtrate and the washings and concentrate to a volume of a few millilitres and transfer to a 50-ml volumetric flask. Add 10 ml of dimetyl glyoxime solution, followed by 15-20 ml of 95 percent ethyl alcohol. Mix thoroughly and make up the volume and again mix thoroughly. Allow the solution to stand for 5 minutes to permit full development of colour. The sample shall be considered to have passed the test if no pink colour develops.

ANNEX D

[Table 1, Item (xi)]

DETERMINATION OF IRON

C-0. OUTLINE OF THE METHOD

C-0.1 The method is based on the isolation of metal from the soap by dissolving in hot water. The aqueous extract is treated with citric acid to sequester aluminium and then thioglycolic acid in ammoniacal solution is added and colour measured spectrophotometrically.

C-1. APPARATUS

C-1.1 Spectrophotometer

C-2. REAGENTS

C-2.1 Liquor Ammonia — Relative density 0.9.

C-2.2 Sulphuric Acid — 50 percent (*v/v*).

C-2.3 Citric Acid (Aqueous Solution) — 50 percent (*v/v*).

C-2.4 Thioglycolic Acid (Aqueous Solution)

C-2.5 Standard Iron Solution — Containing 10 μg of iron per ml prepared from ferric ammonium sulphate $[\text{Fe}_2(\text{SO}_4)_3 \cdot (\text{NH}_4)_2 \text{SO}_4 \cdot 12\text{H}_2\text{O}]$ in acid solution.

C-2.6 Methyl Red Indicator — 0.1 percent aqueous solution.

C-3. PROCEDURE

C-3.1 Isolation of Metals from Soap — Weigh 50 g of the soap sample in a beaker and dissolve it with hot water. To this soap solution add 40 ml of concentrated hydrochloric acid with constant stirring and keep the beaker on steam bath until fatty acid layer separates. Add 20 g of paraffin wax to this solution while hot. Stir the solution at intervals and allow it to settle until phases are clear. Cool the mass to room temperature. Remove the wax cake with rod, rinse with water and add the rinsings to aqueous phase. Evaporate the aqueous phase to above 60 ml by gentle boiling. Add 100 ml of water and filter through paper washed previously with hydrochloric acid. Evaporate the filtrate and washings to about 60 ml. Cool and transfer the solution to a volumetric flask and make up the volume to 100 ml. Take aliquot portion of the solution for metal estimation.

C-3.2 Determination of Iron — Take 5 ml aliquot of the aqueous solution from the test solution in a 25-ml volumetric flask. To this add 4 ml citric acid solution and 0.02 ml methyl red indicator and liquor ammonia till the colour of the solution turns yellow. Then add 3 ml liquor ammonia in excess. Cool the solution and add 3 ml thioglycolic acid. Make up the volume to 25 ml and mix the solution thoroughly. Filter the solution through acid washed and dried filter paper. Measure absorbance of the clear solution at 540 nm in the spectrophotometer using water as reference. Prepare a calibration curve with standard iron solution and determine the iron content of the soap sample from it.

ANNEX E

[Table 1, Item (xii)]

DETERMINATION OF COPPER

D-0. OUTLINE OF THE METHOD

D-0.1 The method is based on the isolation of metal from the soap and to make a copper complex using zinc dibenzyl dithiocarbamate in carbon tetrachloride solution and measure the colour of the solutionspectrophotometrically.

D-1. APPARATUS

D-1.1 Spectrophotometer

D-2. REAGENT

D-2.1 Zinc Dibenzyl Dithiocarbamate Solution — 0.05 percent in (*v/v*) in carbon tetrachloride.

D-2.2 Standard Copper Solution — Containing 1 μg of copper per ml (prepared from a stock solution of 100 times the concentration).

D-3. PROCEDURE

D-3.1 Isolation of Metal from Soap — Weigh 50 g of soap sample in a beaker and dissolve it with hot water. To this soap solution add 40 ml of concentrated hydrochloric acid with constant stirring and keep the beaker on steam bath until fatty acid layer separates. Add 20 g of paraffin wax to this solution while hot. Stir the solution at intervals and allow it to settle until phases are clear. Cool the mass to room temperature. Remove the wax cake with rod, rinse with water and add the rinsings to aqueous phase. Evaporate the aqueous phase to about 60 ml by gentle boiling. Add 100 ml of water and filter through filter paper washed previously with hydrochloric acid. Evaporate the filtrate and washings to about 60 ml. Cool and transfer the solution to a volumetric flask and made up the volume to 100 ml. Take aliquot portion of the solution for metal estimation.

D-3.2 Determination of Copper — Take 20 ml aliquot of the aqueous solution and to it add 10 ml of zinc debenzyl dithiocarbamate solution followed by 25 ml sulphuric acid in a separating funnel. Shake the solution for one minute and allow it to settle. Run the lower carbon tetrachloride layer in to a 25 ml volumetric flask. Wash the aqueous layer with carbon tetrachloride and transfer through glasswool to volumetric flask. Make up the volume and mix well. Measure absorption of the clear solution at 435 nm in the spectrophotometer. Prepare a calibration curve with standard copper solution and determine the copper content of the soap sample from the curve.

NOTE — The standard solution shall also be extracted with carbon tetrachloridebefore estimation of colour.