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“Step Out From the Old to the New”

Indian Standard

LAUNDRY SOAP POWDERS/FLAKES - SPECIFICATION

(Second Revision)

UDC 661.187.86-492.2

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

August 1993

Price Group 2
Soaps and Other Surface Active Agents Sectional Committee, CHD 025

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Soaps and Other Surface Active Agents Sectional Committee had been approved by the Chemical Division Council.

This Indian Standard was first published in 1964 on specific requests received from several organizations, notably the Ministry of Defence, Government of India and was revised in 1974. Soap powders and flakes represent laundry soap in a form that facilitates quick preparation of a washing solution and are characterized by their powder or flakes form and ready solubility in water.

Based on the experience gained over the years and in view of the current trend to reduce oil consumption due to shortage of oils and fats and consequent efforts to develop newer manufacturing technologies involving the use of non-soap detergents (NSD) and lime soap dispensing agents (LSD), the technical committee responsible for the formulation of this standard decided to revise it again. In this revision a requirement for LSD/NSD content has been incorporated. This is expected to improve further the performance of Type 2 laundry soaps. Further, requirement for active alkalinity has been incorporated while the limits for matter insoluble in alcohols and free caustic alkali have been suitably modified.

To overcome the phenomenon of sweating and to avoid coalescing and lumping of laundry soap (Type 1) powders on storage, a requirement for glycerol content had been included in the first revision. Even though so far no conclusive evidence has been established to prove the correlation between glycerol content and sweating of soap powders, presence of glycerol has been mentioned to be one of the reasons for sweating. The experience of the Ministry of Defence has been that laundry soap powders having glycerol content of more than 1.5 percent by mass exhibit sweating on storage. The concerned technical committee after considering all aspects decided to introduce the requirement for glycerol content for Type 1 of laundry soap powders.

The committee responsible for the preparation of this standard is given in Annex B.

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.
AMENDMENT NO. 4 SEPTEMBER 2008
TO
IS 2887 : 1993 LAUNDRY SOAP POWDERS/FLAKES — SPECIFICATION
(Second Revision)

(Page 1, clause 5.4, read with Amendment No. 1) — Substitute 'Additional Requirements for ECO Mark' for 'Optional Requirements for ECO Mark'.

(CHD 25)

Reprography Unit, BIS, New Delhi, India
AMENDMENT NO. 3 JULY 2001
TO
IS 2887 : 1913 LAUNDRY SOAP POWDERS/FLAKES — SPECIFICATION
(Second Revision)

[Page 1, clause 6.2(e)] — Insert the following after 6.2(e):

'f) Critical ingredients mentioning the actual compound in descending up
to a limit of 0.5 percent by mass, as identified under ECO-Mark Scheme.'

( CHD 25 )

Reprography Unit, BIS, New Delhi, India
AMENDMENT NO. 2 SEPTEMBER 1999
TO
IS 2887 : 1993 LAUNDRY SOAP POWders/FLAKES — SPECIFICATION
(Second Revision)

(Amendment No. 1, Page 2, clause 5.4.4) — Substitute the following for the existing text:

'The non soapy detergent (NSD), if used, in the manufacture of laundry soap powders/flakes shall be readily biodegradable when tested by modified sturm test as prescribed in IS 13933 : 1995†.

†Method of test for ready biodegradability of surface active agents (modified sturm test)'.

( CHD 25 )

Reprography Unit, BIS, New Delhi, India
AMENDMENT NO. 1 AUGUST 1994
TO
IS 2887 : 1993 LAUNDRY SOAP POWDERS/FLAKES — SPECIFICATION
( Second Revision )

( Cover page 3, Foreword, para 4 ) — Add the following after para 0.4:

'A scheme for labelling environment friendly products known as ECO Mark has
been introduced at the instance of the Ministry of Environment and Forests
(MEF), Government of India. The ECO Mark would be administered by the
Bureau of Indian Standards (BIS) under the BIS Act, 1986 as per the Resolution
No. 71 dated 21 February 1991 and No. 425 dated 28 October 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 Mark of BIS besides meeting
additional optional environment friendly (EF) requirements. For this purpose,
the Standard Mark of BIS would be a single mark being a combination of the
Mark and ECO Logo. Requirements to be satisfied for a product to qualify
for the BIS Standard Mark for ECO friendliness will be included in the relevant
published Indian Standards through amendment. These requirements will be
optional; manufacturing units will be free to opt for the Mark alone also.

This amendment is based on the Gazette Notification No. 4 dated 5 January 1994
for laundry soaps as environment friendly products published in the Gazette of
India. This amendment is, therefore, being issued to this standard to include
environment friendly requirements for laundry soap powders/flakes.

( Page 1, clause 5.3.2 ) — Add the following clauses after 5.3.2:

'5.4 Optional Requirements for ECO Mark

5.4.1 The product shall conform to the requirements for quality, safety and
performance prescribed under clauses 5.1 to 5.3.2.

5.4.2 The manufacturers shall produce the consent clearance as per the
provisions of Water (Prevention and Control of Pollution) Act, 1974, Water
(Prevention and Control of Pollution) Cess Act, 1977 and Air (Prevention and
Control of Pollution) Act, 1981, alongwith the authorization, if required under
the Environment (Protection) Act, 1986 to BIS while applying for ECO Mark.
5.4.3 Product formulated or manufactured shall not contain phosphates when tested as per the method prescribed in Annex D of IS 4955 : 1993*.

5.4.4 The non soapy detergent (NSD) if used in the manufacture of laundry soap powders shall have a biodegradability of minimum 97 percent when tested as per method prescribed in IS 12795 : 1989†.

5.4.5 The material shall pass the test when evaluated for irritant potential as per the method prescribed in IS 11601 (Part 1) : 1986‡ and skin sensitization potential when evaluated as per the method prescribed in IS 11601 (Part 2) : 1992§.

(Page 1, clause 6.1) — Add the following clauses after 6.1:

'6.1.1 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.'

(Page 2, clause 6.2) — Add the following clauses 6.2.1 after 6.2:

'6.2.1 The product shall display a list of identified critical ingredients in descending order of quantity, percent by mass for ECO Mark.

6.2.2 The brief criteria for which the product has been labelled as ECO Mark shall be indicated.'

*Specification for household laundry detergent powders (third revision).
†Specification for linear alkyl benzene.
‡Methods of safety evaluation of synthetic detergents : Part 1 Method of test for irritant potential of synthetic detergents.
§Methods of safety evaluation of synthetic detergent: Part 2 Method of test for skin sensitization potential of synthetic detergents (Guinea pig maximization test.)
Indian Standard
LAUNDRY SOAP POWDERS/FLAKES – SPECIFICATION
(Second Revision)

1 SCOPE
This standard prescribes requirements and methods of sampling and test for laundry soap powders/flakes.

2 REFERENCES
The Indian Standards listed below are necessary adjuncts to this standard:

<table>
<thead>
<tr>
<th>IS No.</th>
<th>Title</th>
</tr>
</thead>
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<tr>
<td>286 : 1978</td>
<td>Methods of sampling and test for soaps ( second revision )</td>
</tr>
<tr>
<td>548</td>
<td>Methods of sampling and test for oils and fats : Part 2 Purity tests ( second revision )</td>
</tr>
<tr>
<td>1070 : 1992</td>
<td>Reagent grade water ( third revision )</td>
</tr>
<tr>
<td>4955 : 1993</td>
<td>Household laundry detergent powders ( third revision )</td>
</tr>
</tbody>
</table>

3 TERMINOLOGY
3.1 For the purpose of this standard, the following definitions shall apply in addition to those given under 2 of IS 286 : 1978.

3.2 Builders
A complementary component of soap powders/flakes usually inorganic, which with reference to the washing action, adds its characteristic properties to those of the essential constituents.

3.2.1 Builders are added to soap powders/flakes to improve its effectiveness under the conditions of use. The action of builders is mostly physico-chemical and comprises a series of effects which result in a more economic usage and better cleansing action of soap powders/flake special in hard water areas. Substances commonly used as builders are soda ash, sodium silicates, sodium phosphates, borax and cellulose derivatives.

4 TYPES
4.1 There shall be two types of laundry soap powders/flakes namely, Type 1 ( Pure ) and Type 2 ( Built ).

5 REQUIREMENTS
5.1 General Requirements

5.1.1 Description
The material shall be well saponified soap in powder/flake form with or without builders, and shall be free flowing.

5.1.2 Odour and Lathering Properties
Laundry soap powders/flakes shall not have any disagreeable odour and shall possess good lathering and cleansing properties.

5.2 Laundry soap powders/flakes shall also comply with the requirements given in Table 1.

5.3 Special Requirements
For supply to the Ministry of Defence, the following special requirements shall be complied with for Type 1 ( Pure ) laundry soap powders/flakes.

5.3.1 The moisture and volatile matter ( at 105°C ), when determined in accordance with 4 of IS 286 : 1978, shall be not more than 4.0 percent by mass.

5.3.2 The titre of fatty acids, when determined in accordance with 16 of IS 286 : 1978, shall be not more than 25°C.

6 PACKING AND MARKING
6.1 Packing
The material shall be packed as agreed to between the purchaser and the supplier.

6.2 Marking
The packages shall be securely closed and marked with the following particulars:

a) Indication of source of manufacture ;

b) Brand name of the material, type and recognized trade-mark, if any ;

c) Year and month of manufacture ;

d) Net mass when packed ; and

e) Batch number or lot number in code or otherwise.
Table 1 Requirements for Laundry Soap Powder/Flakes

Clauses 5.2 and 8.1

<table>
<thead>
<tr>
<th>SI No.</th>
<th>Characteristic</th>
<th>Requirements for Type 1 (Pure)</th>
<th>Requirements for Type 2 (Built)</th>
<th>Method of Test Ref to Cl No. in IS 286 : IS 548 (Part 3) : IS 4955:1978 : 1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) i)</td>
<td>Total fatty matter, percent by mass, Min</td>
<td>80.0</td>
<td>40.0</td>
<td></td>
</tr>
<tr>
<td>(1) ii)</td>
<td>Rosin acids, percent by mass of total fatty matter, Max</td>
<td>3.0</td>
<td>15.0</td>
<td></td>
</tr>
<tr>
<td>(1) iii)</td>
<td>Unsaponified fatty matter, percent by mass, Max</td>
<td>0.5</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>(1) iv)</td>
<td>Free caustic alkali, percent by mass, Max</td>
<td>0.2</td>
<td>6.2</td>
<td></td>
</tr>
<tr>
<td>(1) v)</td>
<td>Matter insoluble in alcohol, percent by mass, Max</td>
<td>8.0</td>
<td>5.2</td>
<td></td>
</tr>
<tr>
<td>(1) vi)</td>
<td>Glycerol, percent by mass, Max</td>
<td>1.5</td>
<td>22.0</td>
<td></td>
</tr>
<tr>
<td>(1) vii)</td>
<td>Hexabromide test (on fatty acids)</td>
<td>Negative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) viii)</td>
<td>Active alkalinity, ml, Max</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>(1) ix)</td>
<td>Chlorides (as sodium chloride), percent by mass, Max</td>
<td>—</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>(1) x)</td>
<td>LSD/NSD content, percent by mass, Min</td>
<td>1.5</td>
<td>4.0</td>
<td></td>
</tr>
</tbody>
</table>

NOTE — For the purpose of calculation the molecular mass of LSD/NSD shall be taken as 330.

7 SAMPLING

7.1 General precautions, scale of sample and preparation of test samples, shall be as prescribed in 3.1, 3.2 and 3.3 respectively of IS 286 : 1978.

7.2 Number of Tests

7.2.1 Tests for the determination of total fatty matter, matter insoluble in alcohol and free caustic alkali shall be conducted on each of the individual samples separately.

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

7.3 Criteria for Conformity

7.3.1 For Individual Samples

For each of the characteristics which have been determined on the individual samples (7.2.1) the mean (\( \bar{X} \)) and the range (\( R \)) of the test results shall be calculated as follows:

\[ \text{Mean (} \bar{X} \text{)} = \frac{\text{the sum of test results}}{\text{number of the test results}} \]

\[ \text{Range (} R \text{)} = \text{difference between the maximum and the minimum value of the test results.} \]

The lot shall be deemed as conforming to the requirements if the expression (\( \bar{X} - 0.5 R \)) is greater than or equal to minimum value given in Table 1 and (\( \bar{X} + 0.5 R \)) is less than or equal to maximum value given in Table 1.

7.3.2 For Composite Sample

For declaring the conformity of lot to the requirements of other characteristics determined on this composite sample, the test results for each of the characteristics shall satisfy relevant requirement.

8 TESTS

8.1 Tests to evaluate the characteristics specified shall be conducted as prescribed in IS 286 : 1978 and IS 548 (Part 2) : 1974. References to the relevant clauses of these standards are given in 5.3.1, 5.3.2 and in col 5 and 6 of Table 1.

8.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (see IS 1070 : 1992) shall be employed in tests.

NOTE — ‘Pure chemicals’ shall mean chemicals that do not contain impurities which affect the results of analysis.
ANNEX A

[Clause 5.2 and Table 1, Sl No. (viii)]

DETERMINATION OF ACTIVE ALKALINITY

A-1 APPARATUS

A-1.1 pH Meter

A-1.2 Beaker — 100-ml capacity

A-1.3 Magnetic Stirrer

A-1.4 Burette

A-2 REAGENTS

A-2.1 Hydrochloric Acid — 0.1 N.

A-3 PROCEDURE

Weigh accurately 0.5 g of soap/flake in powder form in a tared 100 ml beaker and add distilled water to make up the mass to 50 g (1 percent solution, m/m). Place the beaker containing the 1 percent solution of the product in aqueous vehicle on a magnetic stirrer and mix the contents thoroughly. Note down the pH of the solution using a pH meter. With the electrode of the pH meter dipping in the solution and keeping the pH meter ‘ON’ add drop by drop 0.1 N hydrochloric acid from a burette till the pH of the solution drops to 8. While adding hydrochloric acid stir the solution continuously. Note the amount of 0.1 N hydrochloric acid required to bring down the pH of the solution to 8 which is a measure of the active alkalinity of the test sample.

Mean of 6 replicate measurements will give active alkalinity expressed as amount in ml of 0.1 N hydrochloric acid.

ANNEX B

( Foreword )

COMMITTEE COMPOSITION

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Representing
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Nand Kishore Khanna & Sons, Bombay

Directorate General of Supplies and Disposals (Inspection Wing), New Delhi

(Continued on page 4)
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Directorate General of Supplies and Disposals (Inspection Wing), New Delhi
Johnson & Johnson Limited, Bombay
All India Soap Works, Bombay
Development Commissioner (Small Scale Industries), New Delhi
Wipro Limited, Bombay
Nirma Limited, Bombay
Karnataka Soaps & Detergents Limited, Bangalore
Ministry of Defence (DGQA)
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Printed at Paragon Enterprises, Delhi, India.