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IS 7983 (1994): Toilet cleaner liquid [CHD 25: Soaps and other Surface Active Agents]



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भारतीय मानक

शौचालय साफ करने का द्रव्य पदार्थ — विशिष्ट

(पहला पुनरीक्षण)

Indian Standard

TOILET CLEANER, LIQUID — SPECIFICATION

(*First Revision*)

UDC 661.185 ; 666.5

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BUREAU OF INDIAN STANDARDS

MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG

NEW DELHI 110002

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Polishes Sectional Committee had been approved by the Chemical Division Council.

This cleaning solution is used for removing, by chemical action, stains and hard water deposits from sanitaryware made of porcelain (sanitaryware made with a pottery base and a glaze fired at cone 9-12) and from steel and cast iron sanitaryware covered with a coating of acid-resistant porcelain enamel. Use of the material requires supervision to guard against personal injury and misapplication. Sanitaryware coated with non-acid resistant porcelain enamel should not be cleaned with this solution since severe etching can result which would increase maintenance problems.

In the formulation of this standard, considerable assistance has been derived from US Federal specification P-C 450 (b) 'Cleaning solution, porcelain', issued by the Federal Supply Service, United States of America which is thankfully acknowledged.

In this revision the title has been changed to bring it in line with the prevailing practice in the present days trade. Also an additional requirement for removal of lime scales has been added. Due to the corrosive nature of the solution, warning has been included in the Marking Clause.

The composition of Technical Committee responsible for formulation of this standard is given in Annex C.

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. 1 OCTOBER 2011
TO
IS 7983 : 1994 TOILET CLEANER, LIQUID — SPECIFICATION

(First Revision)

(Page 2, Annex A, clause A-1.3) — Substitute ‘3.647’ for ‘0.364 7’.

(Page 3, Annex A, clause A-4.1) — Substitute the following for the existing clause:

A-4.1 Apparatus

‘A smooth, white marble cuboid of size 2.8 cm × 2.8 cm × 1.5 cm.’

(CHD 25)

Reprography Unit, BIS, New Delhi, India

Indian Standard

TOILET CLEANER, LIQUID — SPECIFICATION (First Revision)

1 SCOPE

1.1 This standard prescribes requirements and methods of sampling and test for toilet cleaner, liquid.

2 REFERENCES

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

IS No.	Title
1070 : 1992	Reagent grade water (<i>third revision</i>)
1570 : 1961	Schedules for wrought steels
8171 : 1992	Glossary of terms relating to polishes and related materials (<i>first revision</i>)

3 TERMINOLOGY

3.1 For the purpose of this standard, the definitions given in IS 8171 : 1992 shall apply.

3.1.1 Ambient Temperature — It is the temperature between 21 and 38°C.

4 REQUIREMENTS

4.1 Description

The material shall be clear, homogeneous liquid and it may be suitably coloured.

4.1.1 The material shall contain hydrochloric acid and any necessary wetting agents, inhibitors, and other desirable additives. The ingredients used in the manufacture of the material shall be intimately mixed and processed and shall be suitable for the intended purpose.

4.2 Hydrochloric Acid Content

The hydrochloric acid content of the material shall be between 7.0 and 10.0 percent by mass, when tested as prescribed in A-1.

4.3 Sediment

The material shall not have sediment more than 0.1 percent by volume when tested as prescribed in A-2.

4.4 Efficacy

4.4.1 The material shall be able to remove rust stains within 5 minutes when tested as prescribed in A-3.

4.4.2 It shall remove the lime scales as prescribed in A-4.

4.5 Effect on Porcelain Enamel

The material shall not have any etching effect on porcelain when tested as prescribed in A-5.

4.6 Corrosion Inhibition

The material shall be correctly inhibited to minimize metallic corrosion. When tested as prescribed in A-6, the loss in mass of the metal shall not exceed 0.15 percent.

4.7 Keeping Quality

The Toilet Cleaner Liquid shall conform to the requirements prescribed under 4.1 to 4.6 for at least 18 months from the date of manufacture when stored in original sealed containers at ambient temperature.

5 PACKING AND MARKING

5.1 Packing

The material shall be supplied in narrow-mouth glass bottles or suitable plastic bottles fitted with caps. The size of the containers shall preferably be 250 ml, 500 ml and 1 000 ml, or as agreed to between the purchaser and the supplier.

5.1.1 The containers shall be packed in cartons, and the cartons, in turn, in cardboard or wooden boxes, or as agreed to between the purchaser and the supplier.

5.2 Marking

The container shall be marked with the following:

- a) Indication of the source of manufacture;
- b) Net mass or volume of the material, when packed;
- c) The words 'Toilet Cleaner Liquid';
- d) Instructions for use;
- e) Batch/Code number for identification;
- f) Month and year of manufacture, date of expiry; and
- g) Warning: 'Corrosive. Use only for toilet bowls. Keep the bottle closed and out of reach of children. In case of accidental contact with eyes and skin, wash off immediately with water and seek medical advice'.

NOTE — Any other marking required under *Weights and Measures (Packaged Commodities) Regulations, 1977* may also be given.

5.2.1 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.

6 TEST METHOD

6.1 Tests shall be carried out as prescribed in Annex A.

6.2 Quality of Reagents

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

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

7 SAMPLING AND CRITERIA FOR CONFORMITY

7.1 The method of preparation and drawal of samples of the material and the criteria for conformity shall be as given in Annex B or as agreed to between the purchaser and the supplier.

ANNEX A

(*Clauses 4.2 to 4.6 and 6.1*)

METHODS OF TEST FOR TOILET CLEANER, LIQUID

A-1 DETERMINATION OF HYDROCHLORIC ACID CONTENT

A-1.1 Reagents

A-1.1.1 *Standard Sodium Hydroxide Solution*
0.1 N.

A-1.1.2 *Methyl Orange Indicator Solution*

Dissolve 0.05 g of methyl orange in 100 ml of water.

A-1.2 Procedure

Weigh a glass-stoppered conical flask containing about 30 ml of distilled water. Add rapidly 3 to 4 ml of the thoroughly mixed sample, stopper and reweigh. Dilute to 50 ml with water and titrate with standard sodium hydroxide solution using methyl orange as indicator.

A-1.3 Calculation

$$\text{Hydrochloric acid (HCl), percent by mass} = \frac{V \times N \times 0.3647}{M}$$

where

V = volume in ml of standard sodium hydroxide solution used in titration,

N = normality of standard sodium hydroxide solution used, and

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

A-2 DETERMINATION OF SEDIMENT

A-2.1 Apparatus

A-2.1.1 *Graduated Centrifuge Tube*

Capable of reading up to 0.1 ml.

A-2.1.2 Centrifuge

Capable of revolving at 1 500 rev/min, having a diameter of swing (tip to tip of whirling tubes) of not less than 40 cm.

A-2.2 Procedure

Mix the sample thoroughly, take 100 ml and place it in the graduated centrifuge tube. Centrifuge at a speed of 1 500 rev/min for 10 minutes. Read the volume of the sediment at the bottom of the tube.

NOTE — If the available centrifuge has a swing varying from that stated above, calculate the proper speed using the following formula, where D represents the diameter of swing:

$$\text{rev/min} = 1\,500/40/D$$

A-2.3 Report of the volume of the sediment in terms of volume per 100 ml of sample.

A-3 TEST FOR EFFICACY

A-3.1 Apparatus

A-3.1.1 *Porcelain Plate*

Unglazed porcelain streak plate.

A-3.2 Reagent

A-3.2.1 *Ferric Chloride Solution*

5 percent approximately of the anhydrous salt.

A-3.3 Procedure

A-3.3.1 *Preparation of Stained Specimens*

Take the porcelain plate and wet one side with ferric chloride solution. Set the stain by baking at $130 \pm 2^\circ\text{C}$ for 2 hours.

A-3.3.2 Saturate a cloth or sponge with the sample and apply to the stained plate prepared as specified in **A-3.3.1**. Allow the sample to react for 5 minutes and then note the colour of the plate. The original white appearance of the plate should be restored.

A-4 TEST FOR LIMESCALES

A-4.1 Apparatus

A smooth, white, marble cube of size
2.8 cm × 2.8 cm × 2.7 cm.

A-4.2 Procedure

Rub with a 00 grade carborandum paper all sides of the cube. Gently brush away the powdered marble with a soft camel hair brush.

Rinse the cube in running distilled or deionised water for about one minute. Place the cube in a tared porcelain dish (W_1) and dry at $105 \pm 2^\circ\text{C}$ to a constant mass (W_2). Cool in a desiccator and weigh.

Mass of the cube in g, $W = W_2 - W_1$

Prepare a bed with 2-3 mm dia glass balls inside a 250 ml glass beaker. Place the marble cube with the flat surface resting on glass balls bed.

Pour 50 ml of the material and wait for 10 seconds. Drain off the product within another 10 seconds and allow the cube to remain in the glass beaker for a total period of 30 minutes.

Rinse the cube with distilled or demineralised water for about 10 minutes and place the cube in a tared porcelain dish (W_3) and dry to constant mass at $105^\circ\text{C} \pm 2^\circ\text{C}$ (W_4).

Mass of the cube in g = $W_4 - W_3$

Percent loss of mass in g = $\frac{(W_4 - W_3)}{W} \times 100$

The mass of loss of marble should not be less than 1.0 percent.

A-5 TEST FOR EFFECT ON PORCELAIN ENAMEL

A-5.1 Apparatus

A-5.1.1 Porcelain Enamel Plate

New 70 mm × 70 mm white porcelain acid-

resistant enamelled steel plate. The enamelling shall be 1 mm.

A-5.2 Procedure

Place approximately one gram of diatomaceous earth on the plate (see **A-4.1**) to make a 16-mm diameter circle with a depth of 10 mm and saturate the earth with 2 ml of the sample. Cover the wetted area with a watch glass and set aside for 16 hours. At the expiry of 16 hours, wash using a rag or sponge, dry the plate and examine with a 5 X magnifying glass for any etching by comparing with a new plate, under good lighting conditions.

A-6 DETERMINATION OF CORROSION INHIBITION

A-6.1 Preparation of Test Specimen

Take new 50 mm × 50 mm × 1 mm pieces of hot-rolled steel, conforming to **C-10** of IS 1570 : 1961. Descale by immersing in concentrated hydrochloric acid. The specimens shall then be rinsed, first with tap water, next with distilled water, and finally with acetone. Dry the specimens at $105 \pm 2^\circ\text{C}$ for 15 minutes. Weigh the specimens to the nearest milligram and store in a desiccator. Proceed with the test with specimens prepared on the same day of the test.

A-6.1.1 Procedure

Take 3 new specimens prepared as in **A-6.1** and place in 250-ml beakers, one specimen in one beaker. Rest the specimen on a section of 3 mm glass rod bent to V shape. Add 200 ml of the sample to each beaker. Allow the sample to remain unagitated in contact with the metal specimen for 24 hours at room temperature. Remove the specimen after 24 hours, rinse two or three times with distilled water, and finally rinse with acetone, dry at $105 \pm 2^\circ\text{C}$ for 15 minutes, and weigh again.

A-6.1.2 Calculation

$$\text{Percent loss in mass of the metal} = \frac{W_1 - W_2}{W_1}$$

where

W_1 = mass in g of the test specimen before immersion, and

W_2 = mass in g of the test specimen after immersion.

ANNEX B
(Clause 7.1)

SAMPLING OF TOILET CLEANER, LIQUID

B-1 GENERAL REQUIREMENTS FOR SAMPLING

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

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

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

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

B-1.4 The samples shall be placed in clean, dry and airtight glass or other suitable containers on which the material has no action.

B-1.5 The sample containers shall be of such a size that they are almost completely filled by the sample.

B-1.6 Each sample container shall be sealed airtight after filling and marked with full details of sampling, the date of sampling and the year of manufacture of the material.

B-1.7 Samples shall be stored in such a manner that the temperature of the material does not vary unduly from the ambient temperature.

B-2 SCALE OF SAMPLING

B-2.0 To determine the conformity of a consignment of cleaning solution to this standard, samples shall be selected so as to be representative of the whole consignment. In the absence of any prior agreement between the purchaser and the supplier on the mode of sampling and determining the criteria of conformity, the following sampling scheme is recommended to serve as a guide.

B-2.1 Lot

All the containers in a single consignment of the material drawn from the same batch of manufacture and of the same size shall constitute a lot. If a consignment is declared or known to consist of different batches of manufacture or of different sizes of containers, the containers belonging to the same batch and size shall be grouped together and each such group shall constitute a separate lot.

B-2.1.1 Samples shall be tested for each lot for ascertaining the conformity of the material to the requirements of this standard.

B-2.2 The number of containers (n) to be chosen from a lot shall depend upon the size of the lot (N) and shall be in accordance with Table 1.

B-2.3 These containers shall be chosen at random from the lot. In order to ensure the randomness of selection, random number table as agreed to between the purchaser and the supplier shall be used. In case such a table is not available, the following procedure shall be adopted:

‘Arrange all the containers in the lot in a systematic manner and starting from any container, count them as 1, 2, 3,, up to r and so on where r is the integral part of N/n (N being the total number of containers in the lot and n the number of containers to be selected). Every r th container thus counted shall be withdrawn from the lot to give a sample for test.’

Table 1 Number of Containers to be Selected
(Clause B-2.2)

Sl No.	Lot Size	No. of Containers to be Selected
(1)	(2)	(3)
	N	n
i)	50 to 500	10
ii)	501 to 1 000	15
iii)	Above 1 000	20

B-3 PREPARATION OF COMPOSITE SAMPLE

B-3.1 Shake well each of the containers selected as in B-2.3. Pour out a quantity of material such that the total quantity obtained from all the containers provides material sufficient for all the tests (about 500 g). Thoroughly mix the material drawn from all the selected containers so as to form the composite sample. Divide this composite sample into three parts, each sufficient from carrying out the intended tests and transfer them to thoroughly cleaned and dry sample containers. Send one each to the purchaser and the supplier and the third as referee sample bearing the seals of the purchaser and the supplier. Keep the referee sample at a place agreed to between the purchaser and the supplier.

B-4 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

B-4.1 Tests for all the characteristics specified in 2 shall be done on the composite sample.

B-4.2 The lot shall be declared as conforming to this standard if the test results satisfy the corresponding requirements.

ANNEX C

(Foreword)

COMMITTEE COMPOSITION

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