भारतीय मानक
Indian Standard

IS 13760 : 2024

शौचालय साफ करने का अम्ल आधारित पाउडर — विशिष्टि

(पहला पुनरीक्षण)

Toilet Cleaner, Acid-Based, Powder — Specification

(First Revision)

ICS 71.100.40

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May 2024 Price Group 5

Soaps, Detergents and Surface Active Agents Sectional Committee, CHD 25

FOREWORD

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

This cleaning powder is used for removing, by chemical action, stains and hard water deposits from sanitary ware made of porcelain (sanitary ware made with a pottery base and a glaze fired at cone 91-2) and from steel and cast iron sanitary ware covered with a coating of acid resistant porcelain enamel.

As the product is acidic and thereby corrosive in nature, adequate precautions should be taken while using the same.

This standard was first published in 1993. In this revision, the title of this standard has been modified, packing and marking clause has been updated and amendment no. 1 has also been incorporated.

The composition of the Committee responsible for the formulation of this standard is given in Annex D.

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 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. 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

TOILET CLEANER, ACID-BASED, POWDER — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes requirement and methods of sampling and test for acid based toilet cleaner powder for porcelain surfaces.

2 REFERENCES

The standards given below 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 edition of these standards:

IS No.	*Title*
IS 1070 : 2023	Reagent grade water (*fourth revision*)
IS 8171 : 1992	Glossary of terms relating to polishes and related materials (*second revision*)

3 TERMINOLOGY

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

4 REQUIREMENTS

4.1 Description

4.1.1 The material shall be white or coloured granular powder which may be perfumed to mask the acidic odour.

4.1.2 The material shall contain suitable acid generating chemicals and may contain other desirable additives like corrosion inhibitors, wetting agents, etc. The ingredients used in manufacture of the material shall be intimately blended and processed and shall be suitable for the intended purpose.

NOTE — A suggestive list of various possible ingredients for preparation of product is given in Annex A, for information only.

4.2 Acidity

The acidity of the material shall be such that 1 g of the powder on reaction with water generates acid which consumes not less than 20 ml of 0.1 N NaOH solution when tested as prescribed in **B-1**.

4.3 The material shall also comply with the requirements as specified in Table 1 when tested as prescribed in col (4) of the Table 1.

Table 1 Requirements for Toilet Cleaner, Acid-Based, Powder

(*Clause* 4.3)

Sl No.	Characteristic	Requirement	Methods of Test, Ref to Clause No. in Annex B
(1)	(2)	(3)	(4)
i)	Hydrogen ion concentration, *p*H, *Max*	3.0	**B-2**
ii)	Efficiency, remove rust stains time, min, *Max*	5.0	**B-3**
iii)	Effect on Porcelain Enamel, etching effect	No etching	**B-4**
iv)	Loss on drying, percent by mass, *Max*	5.0	**B-5**
v)	Water insoluble substance, percent by mass, *Max*	5.0	**B-6**

4.4 Keeping Quality

The material shall conform to the requirements as specified in 4.1, 4.2 and 4.3 for at least one year from the date of manufacture when stored in original sealed containers.

4.5 Quality of Reagents

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 analysis.

5 PACKING AND MARKING

5.1 Packing

5.1.1 The material shall be supplied in narrow mouth or sprinkler type polyethylene containers fitted with suitable caps or laminated pouches. The size of the containers/pouches shall preferably be 25 g, 50 g, 500 g, 1 000 g or as agreed to between the purchaser and the supplier.

5.1.2 The containers/pouches shall be packed in cartons or as agreed to between the purchaser and the supplier. The cartons shall be marked with batch number.

5.2 Marking

5.2.1 The containers/pouches shall be marked with the following:

a) Indication of the source of manufacture;

b) Net mass of the material, when packed;

c) The word 'toilet cleaner acid-based powder';

d) Month and year of manufacture;

e) Instructions for use;

f) Cautionary note: 'Material highly acidic and corrosive, avoid physical contact with contents. In case of contact, wash immediately. Keep away from children'; and

g) Any other statutory requirement.

5.2.2 *BIS Certification Marking*

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed there under, and the products may be marked with the Standard Mark.

6 SCALE OF SAMPLING AND CRITERIA FOR CONFORMITY

The method of drawing representative samples of the material and criteria for conformity shall be as prescribed in Annex C.

ANNEX A

(*Clause* 4.1.2)

SUGGESTIVE LIST OF INGREDIENTS

a) Sodium bisulphate;

b) Oxalic acid;

c) Citric acid;

d) Cationic and nonionic surfactants like:

1) Glycerol mono stearate;

2) Ethylene glycol mono stearate;

3) Di-ethylene glycol mono stearate; and

4) Quaternary ammonium surfactants;

e) Anionic detergent powder such as sodium lauryl sulphate, sodium salt of linear alkylbenzene sulphonic acid, alpha olefin sulphonate (AOS), etc;

f) Silica dessicant or other suitable dessicants;

g) Sulphamic acid;

h) Sodium sulphate; and

j) Sodium chloride.

ANNEX B

(*Table* 1 and *Clause* 4.2)

METHODS OF TEST FOR TOILET CLEANER POWDER

B-1 TEST FOR ACIDITY

B-1.1 Reagents

B-1.1.1 *Standard Sodium Hydroxide Solution* — 0.1 N

B-1.1.2 *Methyl Red Indicator Solution*

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

B-1.2 Procedure

Weigh accurately 50 g of the powder into a 500 ml beaker and add 250 ml demineralised water and stir to dissolve the powder. Transfer the solution to 500 ml standard flask. Rinse the beaker with demineralised water and make up the volume to 500 ml. Pipette out 10 ml of this solution into a 250 ml conical flask and add 50 ml of demineralised water. Titrate with N/10 NaOH solution until the colour changes from pink to yellow, using methyl red indicator.

B-1.3 Calculation

$$\text{Acidity} = V \times \text{N}$$

where

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

N = normality of standard sodium hydroxide solution used.

B-2 DETERMINATION OF *p*H

B-2.1 Apparatus

B-2.1.1 100 ml beaker and 1 ml pipette.

B-2.1.2 *Procedure*

Add 100 ml of demineralized water to 1 ml of the test solution (*see* **B-1**) to be pipetted out into a 100 ml beaker. Stir well and then check the *p*H using the previously calibrated *p*H metre.

B-3 TEST FOR EFFICIENCY

B-3.1 Apparatus

B-3.1.1 *Porcelain Plate* — unglazed porcelain streak plate

B-3.2 Reagent

B-3.2.1 *Ferric Chloride Solution* — 5.0 percent approximately of the anhydrous salt

B-3.3 Procedure

B-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 °C for 2 h.

B-3.3.2 Sprinkle the sample powder over the stain to cover the stain and put few drops of water to wet the powder and allow the sample to react for 5 min and gently wipe off. Note the colour of the plate. The original white appearance of the plate should be restored.

B-4 TEST FOR EFFECT ON PORCELAIN ENAMEL

B-4.1 Apparatus — porcelain enamel plate

New 70 mm × 70 mm white porcelain acid-resistant enameled steel plate. The enamel-ling shall be 1 mm.

B-4.2 Procedure

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

B-5 LOSS ON DRYING

B-5.1 Procedure

Take 1 g of the sample in a previously weighed petri dish. Heat the sample at (105 ± 2) °C for 1 h. Cool and weigh. Repeat the heating and cooling till the last two weighings differ by not more than 1 mg.

B-5.2 Calculation

Percent loss on drying, percent by mass

$$= \frac{B \times 100}{A}$$

where

B = loss, in g, of the mass; and

A = mass, in g, of the sample taken.

B-6 WATER INSOLUBLE SUBSTANCE

B-6.1 Procedure

Weigh accurately about 10 g of the material in a 250 ml beaker and add 50 ml of demineralized water, mix well for one minute. Pass the entire solution through No. 4 filter paper and collect the insoluble substance on the filter paper. Dry the filter paper in an oven maintained at (105 ± 2) °C for one hour. Cool and weigh. Repeat until the difference between the two consecutive weighings is not more than 1 mg.

B-6.2 Calculation

Percent of water insoluble substance, percent by mass

$$= \frac{B \times 100}{A}$$

where

B = mass, in g, of water insoluble substance; and

A = mass, in g, of the sample taken.

ANNEX C

(*Clause* 6)

SCALE OF SAMPLING AND CRITERIA FOR CONFORMITY

C-1 GENERAL REQUIREMENTS FOR SAMPLING

C-1.1 In drawing, preparing, storing and handling test samples, the following precautions and directions shall be observed.

C-1.1.1 Samples shall be taken in a protected place not exposed to damp air, dust or soot.

C-1.1.2 The sampling instrument shall be clean and dry when used.

C-1.1.3 Precautions shall be taken to protect the samples, the material being sampled, the sampling instrument and the container for samples from adventitious contamination.

C-1.1.4 The samples shall be placed in clean, dry and airtight glass or other suitable containers on which the material has no action.

C-1.1.5 The sample containers shall be of such a size that they are almost completely filled by the sample.

C-1.1.6 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.

C-1.1.7 Samples shall be stored in such a manner that the temperature of material does not vary unduly from the ambient temperature.

C-2 SCALE OF SAMPLING

To determine the conformity of a consignment of toilet cleaner powder 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.

C-2.1 Lot

C-2.1.1 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.

C-2.1.2 Samples shall be tested for each lot for ascertaining the conformity of the material to the requirements of this standard.

C-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 2.

C-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 2 Number of Containers to be Selected

(*Clause* C-2.2)

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

C-3 PREPARATION OF COMPOSITE SAMPLE

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

C-4 CRITERIA FOR CONFORMITY

A lot shall be declared as conforming to the requirements of this standard if the test results of the composite sample satisfy the requirements prescribed under 4.

ANNEX D

(*Foreword*)

COMMITTEE COMPOSITION

Soaps, Detergents, and Surface Active Agents Sectional Committee, CHD 25

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This Indian Standard has been developed from Doc No.: CHD 25 (21977).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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Published by BIS, New Delhi