

भारतीय मानक मसौदा
काँच साफ़ करने वाला, द्रव — विशिष्टि
(आईएस 8540 का दूसरा पुनरीक्षण)

Draft Indian Standard
Glass Cleaner, Liquid — Specification
(*Second Revision of IS 8540*)

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ICS 71.100.40

Soaps and Other Surface Active Agents
Sectional Committee, CHD 25

Last date of comments: 31 August 2023

FOREWORD

(*formal clauses to be added later*)

The liquid glass cleaner is intended primarily for use on wind shields, windows, globes, shells, tablewares, glass mirrors, and the surfaces of other glasswares products. The material shall be capable of removing dust/dirt, road grime and other foreign materials commonly spoiling such glass surfaces. The glass cleaner is not intended for use on transparent plastic surfaces.

This standard does not provide any distinction between different type of detergent, that is, anionic, cationic or non-ionic. However, manufacturers are encouraged to indicate the type of detergent on the container.

This standard was originally published in 1977 and subsequently revised in 1986. In the first revision, the requirements for colour, toxicity, stability and application and performance were modified. The requirement for ingredients was also modified in line with latest technological development. Four new requirements, namely, for non-volatile matter, water content, corrosion and discolouration on aluminium panels were also incorporated in first revision. Moreover the requirement for residue on sieve was deleted.

In this second revision, the specification table has been revised and a type test for surface tension

has included. Further, the packaging and marking clause have also been updated.

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.

1 SCOPE

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

2 REFERENCES

The standards listed in Annex A 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 listed in Annex A.

3 TERMINOLOGY

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

4 REQUIREMENTS

4.1 Composition

The cleaner may contain synthetic detergent, colouring agent, water, monohydric and polyhydric alcohols and their derivatives, ammonia, amine and perfumes.

4.1.1 The cleaner shall be a clear and homogenous liquid or a suitable suspension of solid matter in the medium and shall acquire homogeneity on shaking.

4.2 Odour — The cleaner shall not have any disagreeable odour.

4.3 Colour — The cleaner may be tinted in suitable stable colour. It shall not impart stain to glass surfaces.

4.4 Toxicity — The cleaner shall have no injurious effect on the human skin and shall be free from toxic ingredients.

4.5 Stability — It shall be stable in normal conditions of storage and handling.

4.6 Application and Performance

The material shall be capable of smooth, uniform and easy application.

4.6.1 The material shall be applied to the glass surface by means of either a pad or soft cloth or an in-built spray device in the pack and rubbed gently with a circular motion of hand using a soft

cloth.

4.6.2 The applied film shall be easily removable within 3 to 4 min of application and shall leave the surface clean and shall produce an appearance equal to that produced by **an approved sample** when tested as described in **B-2**.

4.6.3 The cleaner shall not produce visible corrosion or discolouration on an aluminium panel, when tested as described in **B-3**.

4.7 The material shall also comply with the requirements given in Table 1 when tested according to the methods prescribed in relevant Indian Standard and Annex B reference to which is given in col 4 and 5 of Table 1.

Note - In case the material is sold as a concentrate then the diluted form of the concentrate (diluted as per the manufacturer's recommendation) shall be considered for assessment.

Table 1 Requirements for Glass Cleaner, Liquid
(Clause 4.7)

Sl. No.	Characteristic	Requirement	Method of Test, Ref to	
			Indian Standard	Annex
(1)	(2)	(3)	(4)	(5)
i)	Water including solvents content , percent by mass, <i>Min</i>	85.0	-	B-4
ii)	Flash point, <i>Min</i>	27 °C	IS 1448 (Part 20)	-
iii)	Non-volatile matters content, percent by mass, <i>Max</i>	1.0	-	B-5
iv)	pH value	2.0 to 11.5	7884 or 15557	-
v)	Surface tension, dyne/cm, Max (type test)	60	Refer relevant Indian standard (under preparation)	-

4.8 Keeping Quality

The cleaner shall not show any setting and separation into distinct layers. It shall retain the properties as specified from **4.1** to **4.7** and Table 1 for 2 years from the month and year of manufacture **or the period declared by the manufacturer for best before, whichever is more.**

5 PACKING AND MARKING

5.1 Packing

The glass cleaner shall be packed in glass, metal or suitable plastic containers with or without in-built spray device. No product shall be so packed that it will act on the container or be acted on by it.

5.1.1 The container shall be leak-proof and the spray device, if used, shall be protected against any damage during transit.

5.1.2 The containers shall be packed in cardboard or fibreboard or wooden boxes with suitable nests or as agreed to between the purchaser and the manufacturer.

5.2 Marking — The containers shall be marked with the following information:

- a) Manufacturer's name or its recognized trade-mark, if any;
- b) Name of the material;
- c) Net content of the material when packed;
- d) Directions for use;
- e) Batch No. on the package;
- f) Month and year of manufacture.

NOTE

Any other marking required under Legal Metrology (Packaged commodities) Rules 2021 may also be given.

5.2.1 BIS Certification Marking

The product may also be marked with the Standard Mark.

5.2.1.1 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 thereunder, and the products may be marked with the standard mark.

6 SAMPLING AND CRITERIA FOR CONFORMITY

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

ANNEX A

(Clause 2)

LIST OF REFERRED INDIAN STANDARDS

<i>IS No.</i>	<i>Title</i>
IS 229 : 2021	Ethyl acetate — specification (<i>fourth revision</i>)

IS 231 : 1957	Specification for amyl acetate
IS 736 : 1986	Specification for wrought aluminium and aluminium alloy plate for general engineering purposes (<i>third revision</i>)
IS 737 : 2008	Wrought aluminium and aluminium alloy sheet and strip for general engineering purposes — Specification (<i>fourth revision</i>)
IS 878 : 2008	Laboratory glassware — Graduated measuring cylinders (<i>second revision</i>)
IS 1070 : 2023	Reagent Grade Water — Specification (<i>fourth revision</i>)
IS 1448 (Part 20) : 2019	Methods of test for petroleum and its products [p : 20] determination of flash point - Abel closed - Cup method (<i>third revision</i>)
IS 4905 : 2015	Random sampling and randomization procedures (<i>first revision</i>)
IS 8171 : 1992	Glossary of terms relating to polishes and related materials (<i>second revision</i>)

ANNEX B

(Clause 4.7 and Table 1)

METHODS OF TEST FOR GLASS CLEANER, LIQUID

B-1 QUALITY OF REAGENTS

B-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 analysis.

B-2 TEST FOR CLEANING EFFICIENCY

B-2.1 Procedure

To test the cleaning and polishing property of the glass cleaner, it is recommended that both sides of the glass panel should be **suitably** prepared for application of the cleaner.

B-2.2 Take two panels of clear, plate glass $150 \times 75 \times 1.5$ mm. Dust them with pulverized clay (e.g. **Kaolin**) until a thin uniform coating is obtained. Spray a mist coat of water on each panel to wet the clay and allow to dry for 6 h. Apply a similar coat of clay on the other side of the glass panels. Further apply a mist coat of carbon tetrachloride containing 10 percent mineral oil on both sides of the panels. Allow the panels to air dry for 24 h. To one panel, apply the sample by spreading over the surface with a rag and immediately wipe off and polish with a clean cloth. Similarly treat the other side of the panel. Using the same conditions of test, clean the other panel with the **approved sample** and compare the two panels for cleaning properties. The efficiency of the sample shall not be inferior to that of the approved sample.

B-3 TEST FOR CORROSION OR DISCOLOURATION

B-3.1 Procedure

Place approximately 3 ml of the cleaner on a cleaned, grease free surface of $75 \times 50 \times 1$ mm aluminium panel (*see* IS 736 or IS 737) and cover with a watch glass. At the end of 6 h, remove the watch glass, rinse panel with distilled water and air dry at room temperature. Inspect the panel for any attack or discolouration.

B-4 DETERMINATION OF WATER CONTENT

B-4.1 Outline of the Method

The material is heated under reflux with an organic solvent which is immiscible with water. The carrier liquid distils into a graduated receiver carrying with it water which then separates to form the lower layer, the excess carrier liquid overflowing from the trap and returning to the still.

B-4.2 Apparatus

The Dean and Stark apparatus used for determination of water content has the following essential features.

B-4.2.1 *Flask*

Capacity of 500 ml, as shown in Fig. 1, and made of hard resistance glass, well annealed and as free as possible from striae and similar defects. **Alternatively, a metal flask may be used.**

B-4.2.2 *Condenser*

Made of hard resistance glass, well annealed and as free as possible from striae and similar defects, with shape and dimensions as shown in Fig. 2.

B-4.2.3 *Spray Tube*

Made of glass, sealed at one end, having four small holes equidistantly placed around the wall near the closed end of the tube, with the shape and dimensions as shown in Fig. 2

B-4.2.4 *Two-Millilitre Receiver*

Made of hard resistance glass, well annealed and as free as possible from striae and similar defects, provided with ground glass joints, and of shape and dimensions given in Fig. 3. It consists essentially of the upper chamber together with the tube and ground joint leading to the flask and the graduated tube. When a metal flask is used, care shall be taken to provide an air-tight connection between the flask and the receiver. The graduated portion shall have a capacity of 2 ml at 20 °C when filled to the highest graduation mark.

The scale shall cover the range of 0.1 ml to 2 ml and shall be divided into intervals of 0.05 ml. The graduation marks corresponding to 0.5 ml, 1.0 ml, 1.5 ml and 2.0 ml shall be numbered. The

numbered graduation marks shall be carried completely round the tube. The graduation marks corresponding to 0.15 ml, 0.25 ml, 0.35 ml and so on up to and including 1.95 ml, shall be carried half way round the tube.

The remaining graduation marks shall be intermediate in length and shall project equally at each end beyond the shortest graduation marks. The error at any point on the scale shall not exceed ± 0.03 ml and the difference between the errors at any points shall not exceed 0.03 ml.

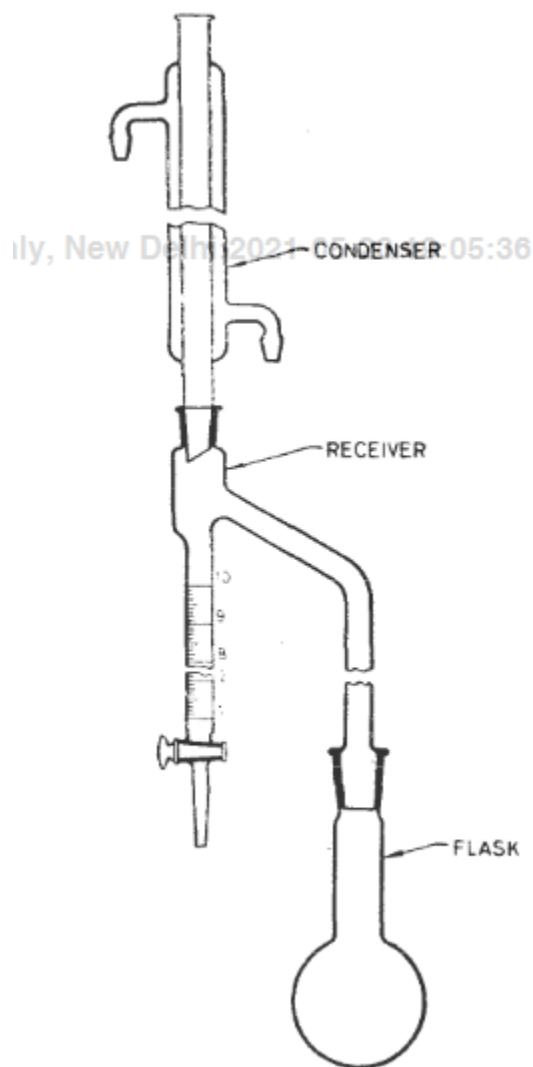
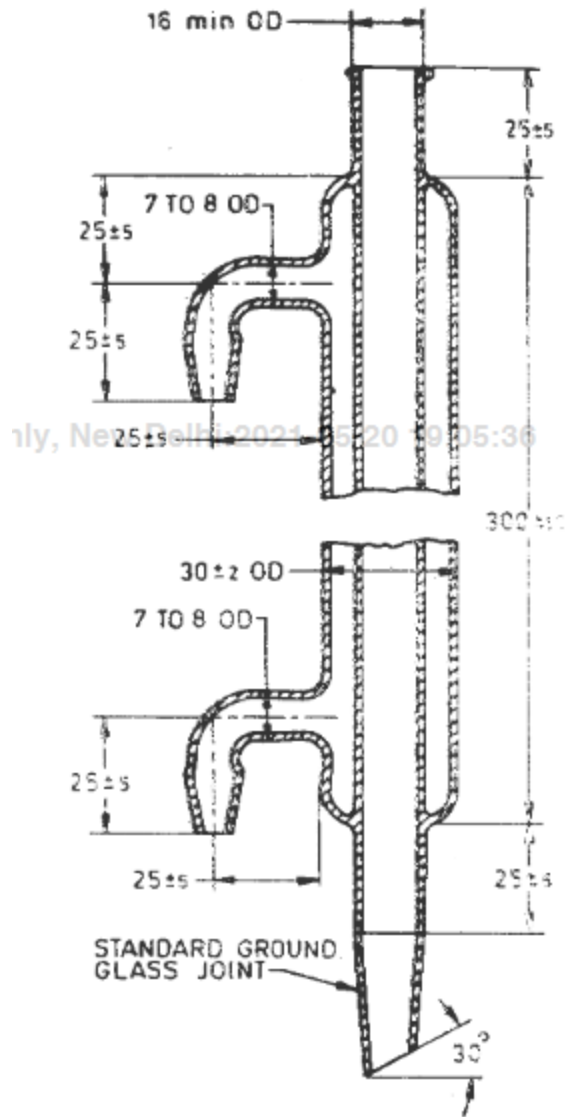


FIG. 1. DEAN AND STARK ASSEMBLY (WITH 10 ml RECEIVER)



All dimensions in millimetres.

FIG. 2 CONDENSER AND SPRAY TUBE (DEAN AND STARK APPARATUS)

condenser tube, if any, by increasing the rate of distillation by a few drops per second. Wash droplets of water which adhere to the lower end of the condenser tube into the receiver with petroleum hydrocarbon solvent, using the spray tube.

B-4.4 Note the number of millilitres of water in the receiver at the temperature at which the sample was measured. Assuming the density of 1.000 g/ml for the water collected in the receiver, calculate the percentage of water (by mass) in the material.

B-5 DETERMINATION OF NON-VOLATILE MATTER

B-5.1 Procedure

Weigh accurately a 50 g sample of the cleaner into a tared glass beaker and heat on a steam bath to dryness. Place the beaker in an oven at 100 °C to 105 °C and dry to constant mass. (If decomposition or discolouration of the solids occurs, carry out the drying in a vacuum oven at 45 °C to 50 °C.) Report the mass of the residue as a percentage by mass of the cleaner.

B-5.2 Calculation

$$\text{Non-volatile matter, percent by mass} = \frac{B-C}{A-C} \times 100$$

where

A = mass in g of the sample taken for test and beaker,

B = mass in g of the beaker and solids after drying, and

C = mass in g of the beaker.

B-6 DETERMINATION OF pH VALUE

B-6.1 Procedure

Determine the pH on the undiluted sample by a suitable pH meter using glass electrode. (see IS 7884 or IS 15557).

When tested as per IS 7884, determine the pH of undiluted sample of Glass Cleaner Liquid at temperature of $27 \pm 2^\circ\text{C}$.

ANNEX C

(Clause 6.1)

SAMPLING OF GLASS CLEANER, LIQUID

C-1 GENERAL REQUIREMENT OF SAMPLING

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

C-1.1 Samples shall be taken in a place not exposed to dust or soot.

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

C-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.

C-1.4 Samples shall be placed in clean, dry and air-tight glass containers nor other suitable containers on which the material has no action.

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

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

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

C-2 SCALE OF SAMPLING

C-2.0 For determining conformity of a consignment to this specification, sample shall be selected so as to be representative of the consignment. Samples drawn in compliance with an agreement between the purchaser and the manufacturer shall be held to be representative of the consignment. In case of dispute, the following scheme is recommended to serve as guide.

C-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 different sizes of containers, the containers belonging to the same batch and size shall be grouped together and each group shall constitute a separate lot.

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

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.

Table 2 Number of Containers to be Selected
(Clause C-2.3)

Lot Size (<i>N</i>) (1)	No. of Containers to be Selected (<i>n</i>) (2)
Up to 500	10
501 to 1 000	15
1 001 and above	20

C-2.3 These containers shall be chosen at random from the lot and in order to ensure the randomness of selection, a random number table shall be used. In case such tables are 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 . Every r th container thus counted shall be withdrawn to give sample for test.

NOTE - For details of this procedure as well as other methods of random selection, reference may be made to IS 4905.

C-3 PREPARATION OF COMPOSITE SAMPLE

C-3.1 Shake well each of the containers selected according to **C-2.3** and pour out quantity of liquid 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 the selected containers so as to form composite sample. Divide the composite sample into three parts, each sufficient for carrying out the intended tests and transfer them to thoroughly clean and dry sample containers. Send one each of these to the purchaser and the supplier. Reserve the third composite sample 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 manufacturer.

C-4 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

C-4.1 Tests for all the characteristics shall be done on the composite sample.

C-4.2 The lot shall be declared as conforming to this specification if the test results satisfy the corresponding requirements laid down in this specification.