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Specification for glass cleaner

Part 1:

Liquid-based glass cleaner

Rwanda Standards Board

Reference number

DRS 283-1: 2017

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Foreword

Rwanda Standards are prepared by Technical Committees and approved by Rwanda Standards Board (RSB) Board of Directors in accordance with the procedures of RSB, in compliance with Annex 3 of the WTO/TBT agreement on the preparation, adoption and application of standards.

The main task of technical committees is to prepare national standards. Final Draft Rwanda Standards adopted by Technical committees are ratified by members of RSB Board of Directors for publication and gazettment as Rwanda Standards.

DRS 283-1 was prepared by Technical Committee RSB/TC 011, *Cosmetics, Toiletries and Surface Active Agents.*

In the preparation of this standard, reference was made to the following standards:

1) KS 1455-1, *Specification for glass cleaner, Part 1. Liquid glass cleaner*

2) BIS IS 8540, *Glass Cleaner, Liquid*

3) KS 820, *Methods of test for waxes and polishes*

The assistance derived from the above source is hereby acknowledged with thanks.

Committee membership

The following organizations were represented on the Technical Committee on Cosmetics, toiletries and surface active agents (RSB/TC 011) in the preparation of this standard.

Alyvo Rwanda Ltd

Ameki Color Ltd

Better Home Ltd

Eden Business Center Ltd

Health Care Pharmacy

Institute of Agriculture, Technology and Education of Kibungo (INATEK)

Leo-Sawa Ltd

Ministry of Health

National Industrial Research and Development Agency (NIRDA)

Private Sector Federation/Beauty Makers Association (PSF/BMA)

Rwanda Biomedical Center (RBC)

Rwanda Environment Management Authority (REMA)

Rwanda National Police (RNP)

Rwanda Plastic Industry (RPI)

SULFO Rwanda Industries Ltd

The City of Kigali

Trust Industries Ltd

University of Rwanda (UR) — College of Education (CE)

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Introduction

Cleaning glass can be a bit difficult. It is very easy to get streaks and smears. A dedicated glass cleaner will help a lot. But even with the proper product it depends on how it is used.

There are several types of glass cleaners, and among others:

a) cleaning agents-based liquids;

b) IPA-based liquids;

c) foam in a spray can;

d) paste; and

e) wipes.

Most of them require a slightly different way of use.

Specification for glass cleaner — Part 1: Liquid-based glass cleaner

1 Scope

This Draft Rwanda Standard prescribes the requirements and the methods of test for liquid-based glass cleaner.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ASTM E2346/E2346M - 15. *Standard guide for sensory evaluation of household hard surface-cleaning products with emphasis on spray triggers*.

3 Terms and definitions

For the purposes of this standard, the following terms and definitions apply.

3.1

liquid-based glass cleaner

glass cleaner based on the same recipe that makes soap, only altered to work better on glass. The (often water based) formulation contains surfactants, emulsifiers and a carrier (which is often water)

3.2

glass cleaner

specific formula of cleaning fluid for glass surfaces

3.3

cleaner

product, either liquid or paste, used for cleaning floor, shoes, automobiles, hard surfaces and porcelain articles. In shoe care products, cleaner also stands as renovation

3.4

colour

aspect of the appearance of objects which depends upon the spectral composition of the light reaching the retina of the eye and upon its temporal and spatial distribution

4 Requirements

4.1 General requirements

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

4.1.2 The liquid glass cleaner shall not contain suspension of solid matter and shall acquire homogeneity on gentle shaking.

4.1.3 **Odour** – the cleaner shall not have any disagreeable odour.

4.1.4 **Colour** – the cleaner shall be tinted in suitable colour. It shall not stain to glass surfaces.

4.1.5 **Toxicity** – the cleaner shall have no injurious effect on the personnel when used for its intended purpose and shall be free from toxic ingredients.

4.1.6 **Stability** – It shall be stable in normal conditions of storage and handling.

4.1.7 **Application and performance** – The product shall be capable of smooth, uniform and easy application.

4.1.7.1 The product shall be applied to the glass surface by means of a pad of soft cloth and rubber gently with circular motion of hand.

4.1.7.2 The product shall be easily removable within 3 to 4 minutes of its application. At the same time, it shall not present any difficulty in removal if the film is left a longer period.

4.1.7.3 When the product is properly applied to glass surface and polished, it shall leave the surface free from dust, grime and ordinary soil material and shall produce an appearance equal to that produced by an approved sample when tested as described in A.2.

4.1.8 **Storage** – The glass cleaner shall not show any setting and shall be easily dispensable on shaking. It shall also retain the properties specified in this standard for two years from the date of manufacture when stored in its original containers under normal conditions.

4.2 Specific requirements

The product shall also comply with the requirements given in Table 1 when tested according the methods given therein.

Table 1 — Requirements for glass cleaner, liquid

S/N	Parameters	Requirements	Test method
1.	Water content, percent by mass, Max	88	A.4
2.	Non-volatile matters content, per cent by mass, max	1.0	A.5
3.	pH	6.5 – 10.0	A.6
4.	Flash point ^{0}C, min	27.0	A.7
5.	Specific gravity at 60°C, g/cc	0.9854	A.8

5 Packing and marking

5.1 Packing

The liquid glass cleaner shall be packed in suitable containers. No product shall be so packed that it shall act on the container or be acted upon.

5.2 Marking

The containers shall be marked with the following information:

a) manufacturer's name, address and trade mark, if any;

b) net content of the product when packed;

c) name of the product;

d) directions for use; and

e) date of manufacture.

6 Sampling

Samples shall be collected from the market, place of manufacture, or anywhere else and tested as per this standard.

Annex A
(normative)

Methods of test for based-liquid glass cleaner

A.1 Quality of reagents

Unless specified otherwise, pure chemicals and distilled water shall be used in tests.

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

A.2 Test for cleaning efficiency

A.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.

A.2.2 Take two panels of clear, plate glass 150 *x* 75 *x* 1,5 mm. Dust them with pulverized clay 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 hours. 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 hours. 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.

A.3 Test for corrosion or discolouration

Procedure - Place approximately 3 ml of the cleaner on a cleaned, grease free surface of 75 x 50 *x* 1 mm aluminium panel and cover with a watch on a panel glass. At the end of 6 hours, remove the watch glass, rinse panel with distilled water and air dry at room temperature. Inspect the panel for any attack or discoloration.

A.4 Determination of water content

A.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.

A.4.2 Apparatus - The Dean and Stark apparatus used for determination of water content has the following essential features.

A.4.3 *Flask* of 500 ml capacity, as shown in Fig. 1, and made of hard resistance glass, well annealed and as free as possible from striaeand similar defects. Alternatively, a metal flask may be used.

A.4.4 *Condenser* - made of Lard resistance glass, well annealed and as free as possible from striae and similar defects, with shape and dimensions as shown in Fig. 2.

A.4.5 *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.

A.4.6 *Two-Milliliter 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.

A.4.7 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 i 0’03 ml and the difference between the errors at any points shall not exceed 0.03 mL.

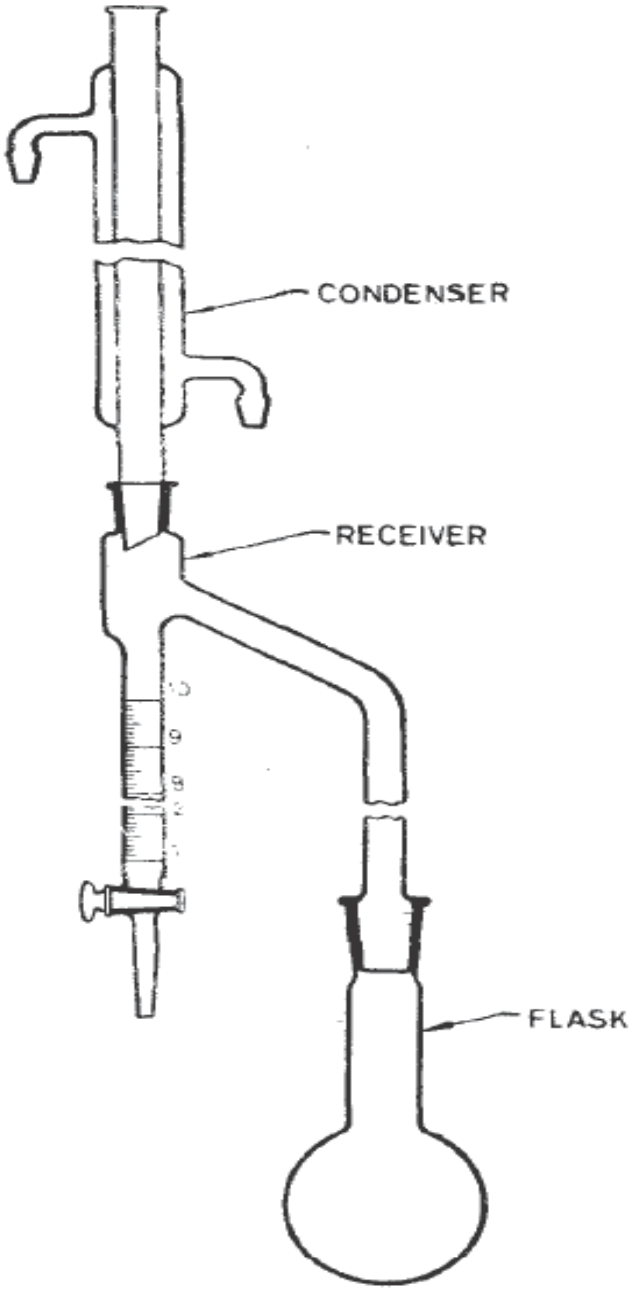
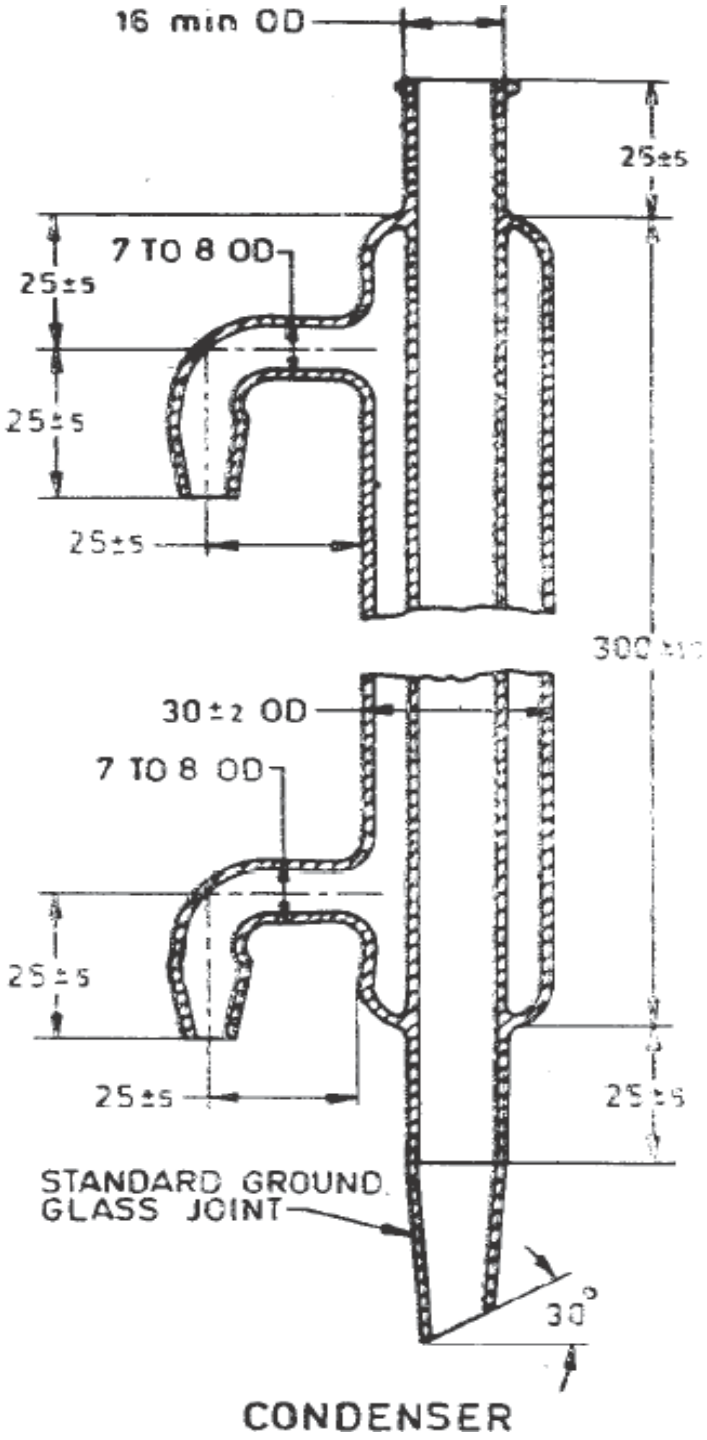
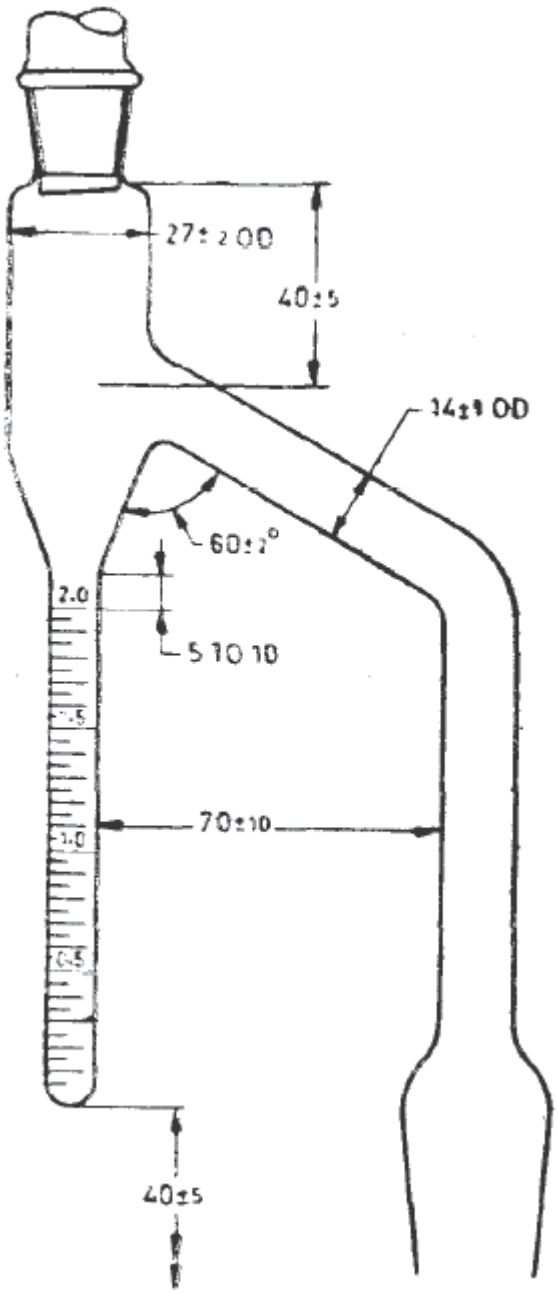


Fig.1 Dean and Stark assembly (with 10-ml receiver)



All dimensions in millimeters.

Fig 2 Condenser and Spray tube (dean and stark apparatus)



All dimensions in millimeters

Fig 3 - 2-mL receiver (Dean and stark apparatus)

A.4.8 ***Graduated cylinder -*** 100 mL.

A.4.9 **Procedure -** Weigh 100 g of the material in the flask, add 100 mL of dry petroleum hydrocarbon solvent (boiling point 75 to 85°C) and 1 mL of dry ethyl acetate, or amyl acetate and thoroughly mix the contents of the flask. Pour petroleum hydrocarbon solvent into the receiver up to the level of the side tube. Attach the flask to the Dean and Stark condensing and collecting system and heat the flask at such a rate that the condensate falls from the end of the condenser at a rate of two to five drops per second. Continue the distillation until condensed water is no longer visible in any part of the apparatus except at the bottom of the graduated tube and until the volume of water collected remains constant. Remove the persistent ring of condensed water in the 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.

A.4.10 Note the number of milliliters 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.

A.5 Determination of non-volatile matter

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 to 105°C and dry to constant mass. (If decomposition or discoloration of the solids occurs, carry out the drying
in a vacuum oven at 45 to 50°C) Report the mass of the residue as a percentage by mass of the cleaner.

A.5.2 Calculation

Non-volatile matter, percent by mass = [(B-*C)/(A-C)]*× 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.

A.6 Determination of pH value

Procedure - Determine the pH on the undiluted sample by a suitable pH meter using glass electrode.

A.7 Determination of pH value

A.7.1 General

These methods determine the flash point of waxes, polishes and related materials.

A.7.2 Procedures

A.7.2.1 *Method A* — Determine the flash point using the tag closed tester, but maintain the surface of the sample just below the thermometer bulb so that the latter indicates the temperature of the vapour.

A.7.2.2 *Method B* — Determine the flash point by the Pensky-martens closed tester. Obtain the material for the test by allowing a separate portion of the well-mixed sample to stand for at least 30 minutes and decanting the required amount of fluid.

A.7.2.3 *Method C*— Dilute a sample of polish of sufficient size to yield at least 60 mL of solvent with enough water to make the whole slurry completely fluid. Add concentrated HCI dropwise, with agitation, until separation from the remaining mixture occurs and wash twice with equal volumes of distilled water. Carefully separate the solvent from the water and test flash point using the tag-closed tester.

A.8 Determination of specific gravity

A.8.1 Apparatus

A.8.1.1 Specific gravity bottle, 25 mL capacity, with a well-fitting ground glass stopper with a capillary

A.8.1.2 Water bath, maintained at 60 °C ± 1 °C

A.8.2 Procedure

A.8.2.1 Clean and dry the specific gravity bottle, and weigh it. Then fill it with water, insert the stopper and immerse in the water bath at 60 °C ± 1 °C. Keep the entire bulb completely immersed in water and hold at that temperature for 1 h. Carefully remove any water which has exuded from the capillary opening. Remove from the bath, wipe completely dry, cool to room temperature and weigh.

A.8.2.2 Melt approximately 40 g of the material in a porcelain dish and fill the dry specific gravity bottle with it. Keep the bottle for 1 h in a water bath at 60 °C ± 1 °C. Carefully remove any material which exudes from the capillary opening, wipe the bottle dry and cool at room temperature and weigh.

A.8.3 Calculation

$$\text{Specific gravity } 60°C/60°C = \frac{m_1 - m_2}{m_3 - m_2}$$

Where

m_1 is the mass, in grams, of specific gravity bottle with the material

m_2 is the mass, in grams, of the specific of the gravity bottle

m_3 is the mass, in grams, of the specific gravity bottle with water

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