

**Specification for silk (sheen) emulsion
paints for interior and exterior use**

(Second Revision, 2012)

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**Specification for silk (sheen) emulsion paints
for interior and exterior use**

(Second Revision, 2012)

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Foreword

This Kenya Standard was prepared by the Technical Committee on Paints and Allied Products under the guidance of the Standards Project Committee and is in accordance with the procedures of the Bureau.

During the revision of this standard, it was observed that manufacturers market this product under the trade names of silk emulsion, sheen emulsion or egg shell emulsion paint. The committee adopted a common name for this product as silk (sheen) emulsion paints for interior and exterior use to avoid confusion.

The committee also dealt at large on the durability aspect of the paint taking into consideration the laboratory results and foreign standards from Zimbabwe and German and decided to specify limits on resistance to wet abrasion and titanium dioxide content.

During the preparation of this standard, reference was made to the following documents:

SAZA 357 Zimbabwe Standard, Emulsion paints for exterior use.

DIN 53778 Part 1 German Standard, Emulsion paint for interior use.

The assistance obtained from these sources is highly acknowledged.

KENYA STANDARD**Specification for silk (sheen) emulsion paints for interior and exterior use**

(Second Revision, 2012)

1. Scope

This Kenya Standard specifies requirements for silk (sheen) emulsion paints for interior and exterior use.

2. Requirements

2.1 Composition — The paint shall be a medium consisting of any stable synthetic polymer emulsion in water containing pigments and suitable ingredients as may be necessary to produce a paint so as to satisfy the requirements of the specification.

A suitable level of an effective non-mercurial or non-phenolic fungicide Annexroved by Pest Control Products Board shall be used.

2.2 Condition in the Container — Condition in the container shall be such that:

- (i) the paint shall have no irritating or offensive odour;
- (ii) there shall be no evidence of corrosion or fungae growth in the container;
- (iii) the paint shall be free from lumps, skins and the condition of the paint shall be such that settling, if any shall be easily incorporated on stirring.

2.3 Thinning — Paints are made ready for use. If thinned, not more than 15 per cent (v/v) of water shall be used. The paint shall mix readily with a minimum amount of foaming to a smooth homogenous state. The foaming, if any, shall dessipate rapidly.

2.4 Other Requirements — The paint shall also satisfy all other requirements specified in Table 1.

3. Packaging and marking

3.1 Packaging — The paint shall be packaged in suitable containers in the following measures: 20 litres, 4 litres, 1 litre, ½ litre.

3.2 Marking — Each container sealed with the manufacturers seal shall be labelled legibly and indelibly with the following:

- (a) colour and colour code;

- (b) the words silk (sheen) emulsion paint;
- (c) name, address of the manufacturer and/or registered trade mark;
- (d) quantity of paint;
- (e) instructions for use;
- (f) date of manufacture.

Table 1: Requirements for silk (sheen) emulsion paints

| SI no | Characteristic | Requirement | Method of test |
|--------|--|---|--------------------------------|
| (i) | Annexication properties | The paint shall be suitable for Annexication by brush or roller. The resulting film shall not show pigment flocculation, coarseness or other undesirable characteristics. | Visual |
| (ii) | Recoating properties | The paint shall not show any lifting or softening of the underlying coat. It shall not exhibit colour separation, sagging pitting, flaking or cracking. | Annex. A |
| (iii) | Quality of material | Shall be not less than 5 % of declared volume at 23 ± 2 °C. | Annex. B |
| (iv) | Resistance to accelerated weathering | The paint film shall not exhibit any flaking, cracking, chalking or colour fading. | Annex. C |
| (v) | Fungus resistance | Paint panels shall be free from surface fungae growth | Annex. D |
| (vi) | Gloss | Not more than 45 % when dried for 2 h and not less than 20 % after further drying for 16 h at 60° gloss meter angle. | KS 03-161: Part 6* |
| (vii) | Specific gravity at 23 ± 2 °C | 1.2 – 1.3 | KS 03-161: Part 4 [†] |
| (viii) | Opacity μm | 90 max. | Cryptometer method |
| (ix) | Fineness of grind, μm | 20 max. | KS 03-161 Part 7 [‡] |
| (x) | Solids content % (m/m) | 50 min. | KS 03-161 Part 5 [§] |
| (xi) | Surface drying time, Hours at 25 ^o c. | 1-2. | Annex. E |
| | Hard drying time, hours at 25 ^o c | 2-3. | Annex. E |

* Methods of test for paints, varnishes, lacquers and enamels — Part 6. Measurement of specular gloss for non-spellings paint films.

[†] Part 4. Determination of density.

[‡] Part 7. Determination of fineness of grind.

[§] Part 5. Determination of volatile and non-volatile matter.

| | | | |
|--------|------------------------------------|--|------------------------------------|
| (xii) | Colour | Close match with the colour in the colour chart, specified in KS 03-163 [†] . | Annex. F |
| (xiii) | pH | 8 - 9 | Annex. G |
| (xiv) | Resistance to wet abrasion, cycles | 5 000 min. | Annex. H |
| (xv) | Temperature stability | To pass test | Annex. J |
| (xvi) | Titanium dioxide content %, m/m | 18 min. | KS 03-162 [‡] Annex. A |
| (xvii) | Lead content %, m/m | 0.045 max. | KS 03-162 Annex. M |

4. Sampling

Representative samples of the paint shall be taken randomly from the factory, market or elsewhere and tested for compliance with the requirements of the standard.

5. Quality of reagents

Analytical grade reagents and distilled water or deionized water of equivalent purity shall be used for the Annex appropriate tests.

[†] Standard colours for ready mixed paints.

[‡] Specification for road marking paints.

**AnnexA
(normative)
Determination of recoating properties**

A1. Apparatus

A1.1 Aluminium Metal — Flat sheets of size 300 mm x 100 mm x 4 mm.

A1.2 Soft Hair Brush — A clean soft hair brush with a width of about 1 cm and a hair length of about 2 cm.

A1.3 Stirrer — A glass stirrer long enough to stir the paint without dipping your hands into the paint.

A2. Procedure

Suitably thin the paint where necessary and Annexly one coat of the paint onto a dry panel and leave to dry for 2 h at ambient temperature. By a step-coating method, Annexly a second coat and examine for recoating properties after drying for 30 min. Figure 1 shows how step coating is Annexlied.

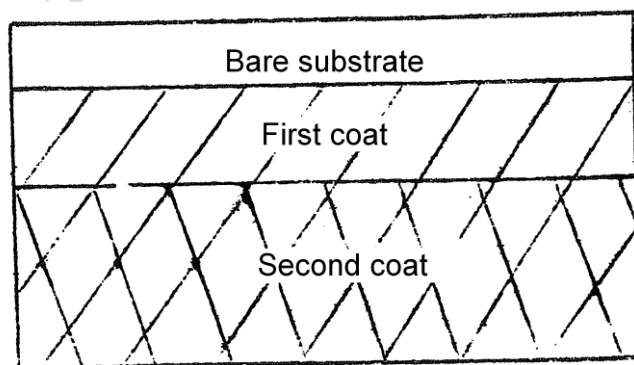


Fig. 1. Suitable method of step coating

Annex B
(normative)
Determination of the quantity of material

B1. Apparatus

B1.1 Graduated measuring cylinder.

B1.2 Empty container.

B2. Procedure

Measure out the volume of the paint by pouring it into the measuring cylinder and emptying the paint into empty container.

Measure out until all the paint is finished and record the total volume of the paint by adding up the volume.

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Annex C
(normative)
Determination of resistance to accelerated weathering

C1. Principle

An aluminium metal or mild steel panel is evenly coated with three coats of the paint by brushing, and air dried for a specified period and tested in an artificial weathering Annexaratus for uniform and controlled exposure to the effects of heat, light and water.

C2. Apparatus

C2.1 Aluminium metal or mild steel panels 300 mm x 100 mm.

C2.2 Paint brush

C2.3 Xenotester Annexaratus

C3. Procedure

Select Annexroximately a 300 mm x 100 mm flat aluminium panel. Brush one coat of the paint suitably thinned (Annexroximately 10 per cent by volume). Air dry for 4 h and Annexly a third coat of the paint. Air dry for 16 h and test in a xenotester Annexaratus for 42 h by carefully following the instructions in the manual.

**Annex D
(normative)
Determination of fungus resistance**

D1. PRINCIPLE

Alluminium metal panel is evenly coated with two coats of the paint by brushing and then air-dried for a specified period. The panel is exposed on an exposure rack for a specified period and the intensity of fungal growth is observed.

D2. Exposure rack

D2.1 Exposure rack shall usually support the panels at an angle of 45° to the horizontal.

D2.2 The rack shall be so situated that the specimens are not protected or overshadowed by neighbouring objects.

D2.3 The construction of the racks shall be such that the backs of the specimens are freely exposed to the atmosphere and such that water drainage does not occur from one panel to the other.

D2.4 Specimens shall not be in electrical contact with metals, nor as far as possible in direct contact with wood or other porous material. A suitable method of mounting panels is shown in Figure 2. If panels are supported in grooves, the suitable drainage holes shall be provided to prevent accumulation of water.

D3. Procedure

Annexly two coats of the paint by brushing on a 300 mm x 150 mm x 4 mm clean, dry, aluminium panel with ½ h drying between coats. The edges and back of the panels shall be coated with protective paint. Expose the panels on the exposure rack and examine the fungal growth on the panels monthly, for six months.

Annex E
(normative)
Determination of drying time

E1. Apparatus

- (i) Drying time recorder.
- (ii) Glass panels 50 mm x 100 mm.

E2. Procedure

Determine the surface and hard drying times of the paint film by using a drying recorder and by carefully following the instruction manual of the equipment.

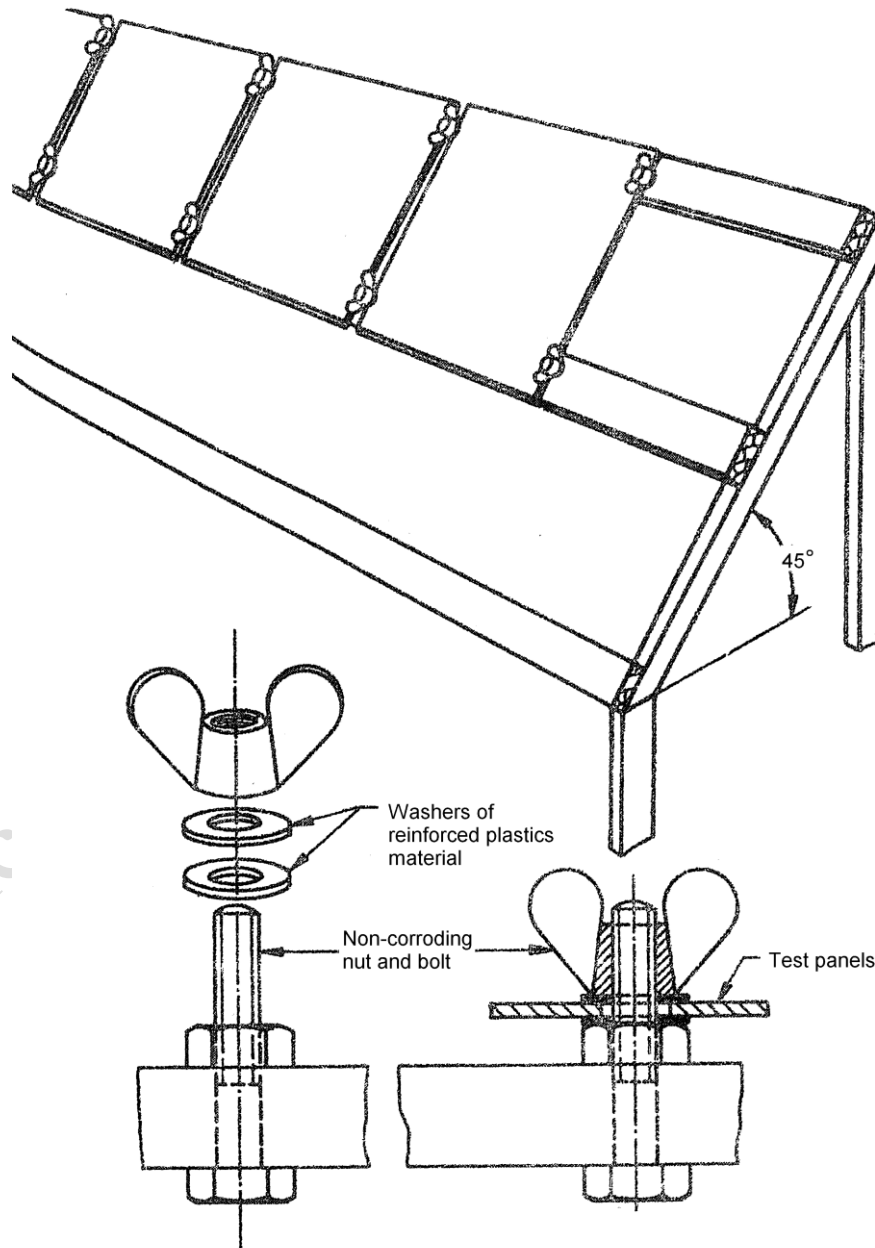


Fig. 2. Suitable method of mounting panels

Annex F
(normative)
Determination of colour

F1. Principle

The colour of the paint Annexlied on a white unglazed art paper is compared visually in diffused daylight with that of the standard.

F2. Procedure

F2.1 Annexly the paint using a film Annexlicator to give a wet film thickness of 50 µm on a 150 mm x 150 mm white unglazed art paper. Air-dry the film for 4 h in a well ventilated room in a horizontal position. When the film is dry, Annexly a second coat of the paint to give again a combined wet film thickness of 50 mm and air dry. After 16 h, compare the colour of the film with that of the standard colour visually in diffused daylight.

F2.2 The paint shall be deemed to have passed the test if the colour of the paint matches with the standard colour.

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Annex G
(normative)
Determination of pH

G1. Principle

The paint is mixed with freshly boiled water to remove the carbon dioxide and the hydrogen ion concentration is measured using a pH meter.

G2. Procedure

Weigh 5.00 ± 0.01 g of the paint. Place it in a 150-mL beaker and add 50 g, freshly boiled, distilled water. Mix well by means of a glass rod and cool to 23 ± 2 °C. Measure the pH with a pH meter using glass calomel electrode by carefully following the instructions of the meter.

Annex H (normative) Determination of resistance to wet abrasion

H1. Principle

The painted panels are subjected to wet rubbing in the abrasion test Annexaratus at a specified speed and load of the brush. The panels are examined at the end of the stipulated oscillations for film defects.

H2. Apparatus

H2.1 Wet abrasion tester, as shown in Figure 3 and having the following accessories:

- (a) Washing unit, of such a construction as to hold the brush in a box or holder, which moves backwards and forwards in a straight line across the test panels at the rate of 38 ± 2 strokes per minute. The trays shall be watertight to hold the panels.
- (b) Brush a pad made out of polyurethane foam of density 25 kg/m^3 and of size $85 \text{ mm} \times 36 \text{ mm} \times 12 \text{ mm}$. The total mass of the brush and the holder shall be 500 g.
- (c) Fractional horse power motor, of suitable speed to regulate the oscillations of the brush.

H3. Reagents

H3.1 **Soap Solution** — Dissolve 0.5 g of laundry soap complying with KS 03-81*, weighed to the nearest 0.001 g (previously dried at $105 \pm 2 \text{ }^\circ\text{C}$ for 30 min) in distilled water to give 0.5 per cent (m/v) solution.

H4. Procedure

H4.1 Preparation of the panel. Clean a glass panel, $415 \text{ mm} \times 120 \text{ mm}$. Annexly coat of the undercoating enamel to give a wet film thickness of $35 \text{ }\mu\text{m}$ to $38 \text{ }\mu\text{m}$ and store at $120 \text{ }^\circ\text{C}$ for 30 min. Rub down with an emery paper and wipe until the gloss is removed completely.

Annexly a coat of the paint by use of a brush or film Annexicator to give a wet film thickness of $150 \text{ }\mu\text{m}$. Allow this to air dry for 16 h.

H4.2 Dip the brush in distilled water at $25 \text{ }^\circ\text{C}$ for 30 min. to a depth of 12 mm. Shake off excess water and soak in the soap solution for 5 min. Fix the painted test panel in the tray in position with painted surface upwards. Mix the brush in its holder, having a total load of 0.5 kg and adjust the stroke in such a way that not less than 10 mm of the film is left free on both ends. Start the oscillations of the brush.

Keep the panel wet by adding soap solution at the rate of 10 to 12 drops per minute in the path of the brush. Wash with water, allow to dry, and examine the film for any defects and note the number of oscillations when these defects start showing.

* Specification for laundry soap.

Annex J
(normative)
Determination of temperature stability

J1. Principle

The paint is subjected to extremes of temperature and then tested for thinning and Annexication properties.

J2. Procedure

J2.1 Fill two clean 500-mL metal containers with paint leaving the usual ullage and seal tightly. Keep one of the containers at 20 ± 1 °C and the other at 60 ± 2 °C for 48 h. Keep these two containers at room temperature for 24 h thereafter. Subsequently, examine the paint in the two containers.

J2.2 The paint shall be deemed to have passed this test if it is free from lumps, skins, settling and is capable of thinning suitably for Annexication by method.

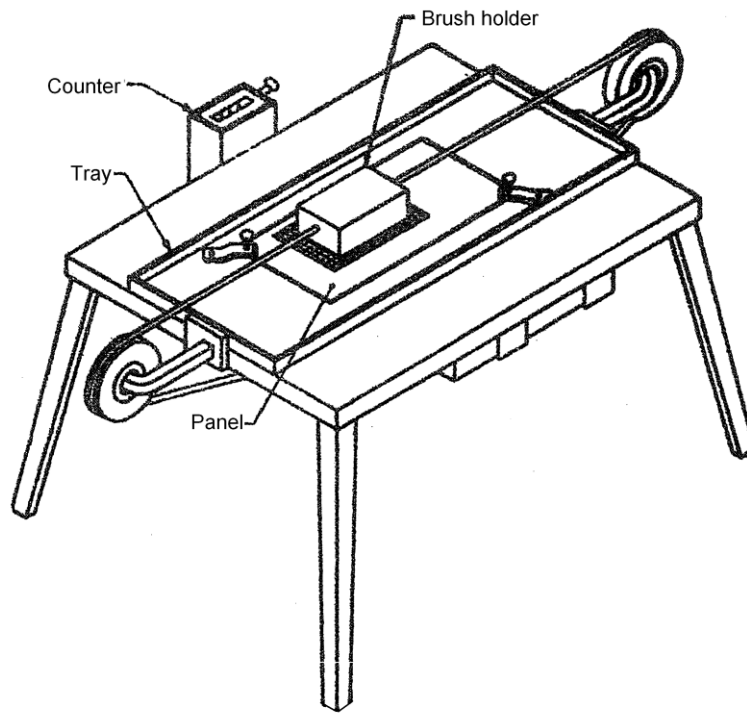


Fig. 3. Wet abrasion tester

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