



DEAS 851:2023

ICS 87.040

DRAFT EAST AFRICAN STANDARD

Matt emulsion paint for interior and exterior use — Specification

EAST AFRICAN COMMUNITY

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Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the Principles and procedures for development of East African Standards.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

The committee responsible for this document is Technical Committee EASC/TC 070, *Paints, varnishes and related products*.

This second edition cancels and replaces the first edition (EAS 851: 2016) and amendment 1: 2019 which has been technically revised.

Attention is drawn to the possibility that some of the elements of this document may be subject of patent rights. EAC shall not be held responsible for identifying any or all such patent rights.

Matt emulsion paint for interior and exterior use — Specification

1 Scope

This Draft East African Standard specifies requirements, sampling and test methods for matt emulsion paint for interior and exterior use.

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.

EAS 31, *Laundry soaps — Specification*

ISO 591-1, *Titanium dioxide pigments for paints — Part 1: Specifications and methods of test*

ISO 1524, *Paints, varnishes and printing ink — Determination of fineness of grind*

ISO 2811 (all parts), *Paints and varnishes — Determination of density*

ISO 2813, *Paints and varnishes — Determination of gloss value at 20 degrees, 60 degrees and 85 degrees*

ISO 3251, *Paints varnishes and plastics — Determination of non- volatile content*

ISO 4618, *Paints and varnishes — Terms and definitions*

ISO 6503, *Paints, and varnishes — Determination of total lead — Flame atomic absorption spectrometric method*

ISO 6504-3, *Paints and varnishes — Determination of hiding power — Part 3: Determination of contrast ratio of light coloured paints at a fixed spreading rate*

ISO 9117-3, *Paints and varnishes— Drying tests— Part 3: Surface-drying test using ballotini*

ISO 9117-4, *Paints and varnishes — Drying tests — Part 4: Test using a mechanical recorder*

ISO 15528, *Paints, varnishes and raw materials for paints and varnishes — Sampling*

ISO 21207, *Corrosion tests in artificial atmospheres — Accelerated corrosion tests involving alternate exposure to corrosion-promoting gases, neutral salt-spray and drying*

3 Terms and definitions

For the purposes of this standard, the terms and definitions given in ISO 4618 shall apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

4 grades

Matt emulsion paints shall be classified as follows:

- a) Grade 1 (Premium);
- b) Grade 2 (Trade); and
- c) Grade 3. (Economy)

5 Requirements

5.1 General requirements

5.1.1 Composition

5.1.1.1 The paint shall be a medium consisting of any stable synthetic polymer emulsion in water containing pigments and suitable ingredients

5.1.1.2- The paint shall contain a suitable level of an effective non-mercurial or non-phenolic fungicide that shall not render the finish or its film hazardous to health.

5.1.2 Condition of the paint in the container

5.1.2.1 The paint shall have no irritating or offensive odour and shall be free from lumps and skins.

5.1.2.2 If any settling of the paint occurs, it shall be easily incorporated on stirring.

5.1.3 Application properties

When the paint is suitably applied, the resulting film shall show no pigment flocculation, coarseness or other undesirable characteristics.

5.1.4 Thinning

Ready-to-use paints, if thinned, shall not contain more than 15% (v/v) of water. The paint shall easily blend into a smooth, homogeneous state with minimal foaming. Any foaming that occurs shall dissipate quickly-

5.2 Specific requirements

The paint shall comply with the requirements specified in Table 1 when tested in accordance with the test methods therein.

Table 1 — Specific requirements for matt emulsion paint

S/N	Characteristic	Requirement			Test method
		Grade 1	Grade 2	Grade 3	
i.	Quantity of paint, %, of declared volume at 25 °C ± 2 °C.	± 2			Annex E
ii.	Specific gravity at 25 °C ± 2 °C*	1.1– 1.5			ISO 2811
iii.	Opacity in contrast ratio, %, min.	90	85	80	ISO 6504-3
iv.	Fineness of grind, µm, max	25	30	40	ISO 1524
v.	Solids content ^a , % (m/m), min.	50			ISO 3251
vi.	Drying time <ul style="list-style-type: none"> Surface drying time, at 25 °C, minutes, max. Hard drying time at 25 °C, h, max. 	30			ISO 9117
vii.	Colour	To pass test			Annex C
viii.	Temperature stability at 20 ± 1 °C and 60 ± 2 °C at 48h.	To pass test			Annex D
ix.	Gloss at 60 ° for at least 16 h , %, max.	8			ISO 2813
x.	Resistance to accelerated weathering	The paint film shall not exhibit any flaking, cracking, chalking or colour fading.			ISO 21207
xi.	Recoating properties	To pass test			Annex A
xii.	Fungal resistance	To pass test	To pass test	Not applicable	Annex B
xiii.	pH	8 – 9			Annex F
xiv.	Resistance to wet abrasion, cycles, min.	4000	2000	15	Annex G
xv.	Titanium dioxide content ^b , % (m/m) (for white paints), min.	18	13	5	ISO 591-1
xvi.	Lead content, ppm, max.	90	90	90	ISO 6503

^aFor dark colors, solids content, % (m/m), min shall be 30

^bWhen titanium dioxide is used as a single opacifier, the above limits in the table shall apply.

6 Packaging

The paint shall be packaged in a suitable container that prevents it from deterioration during storage, transportation and normal handling.

7 Labelling

7.1 The labelling shall be either in English, Kiswahili or French or in combination as agreed between the manufacturer and the supplier. Any other language shall be optional.

7.2 The paints shall be packaged in containers that are legibly and indelibly marked with the following information:

- a) name of the product as "Matt emulsion paint";
- b) manufacturer's name physical address and/or registered trade mark;
- c) indication of colour/colour code;
- d) grade
- d) date of manufacture;
- e) net content;
- f) batch or lot number
- g) country of origin;
- h) best before date; and
- i) instructions for use, safety and disposal

8 Sampling

Sampling shall be done in accordance with ISO 15528.

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Annex A (normative)

Determination of recoating properties

A.1 Apparatus

A.1.1 **Aluminium metal**, flat sheets of size 300 mm x 100 mm x 4 mm

A.1.2 **Soft hair brush**, a clean soft hair brush with a width of about 1 cm and a hair length of about 2 cm

A.1.3 **Glass stirrer**, long enough to stir the paint without dipping the hands into the paint

A.2 Procedure

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

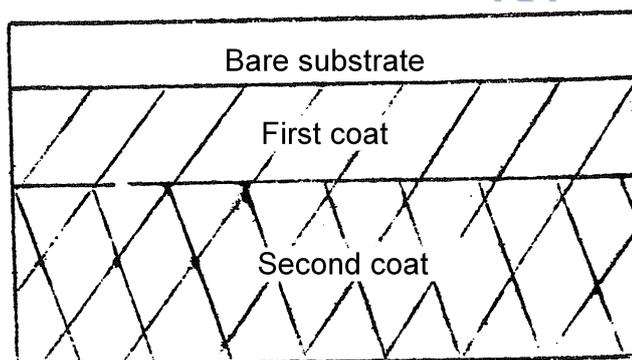


Figure A.1 — Suitable method of step coating

Annex A.3

Results: The paint shall be deemed to have passed the test if the paint show no any lifting or softening of the underlying coat and exhibit no colour separation, sagging, pitting, flaking or cracking.

Annex B (normative)

Determination of fungal resistance

B.1 Principle

Aluminium 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.

B.2 Apparatus

B.2.1 Exposure rack shall usually support the panels at an angle of 45° to the horizontal.

B.2.2 The rack shall be so situated that the specimens are not protected or overshadowed by neighbouring objects.

B.2.3 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.

B.2.4 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 B.1. If panels are supported in grooves, the suitable drainage holes shall be provided to prevent accumulation of water.

B.3 Procedure

Apply 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.

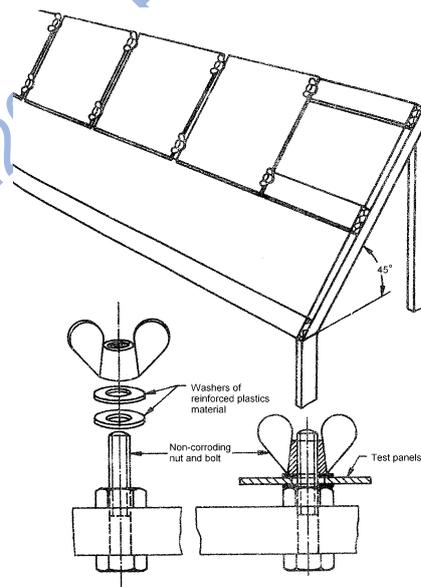


Figure B.1 — Suitable method of mounting panels

B.4 Results

The paint shall be deemed to have passed the test if the paint panels are free from surface fungal growth.

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Annex C (normative)

Determination of colour

C.1 Principle

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

C.2 Procedure

C.2.1 Apply the paint using a film applicator 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, apply 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.

C.2.2 The paint shall be deemed to have passed the test if the colour of the paint matches with the standard colour.

C.3 Results

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

Annex D (normative)

Determination of temperature stability

D.1 Principle

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

D.2 Procedure

D.2.1 Fill two clean 500-mL metal containers with paint leaving the usual ullage and seal tightly. Keep one of the containers at $20\text{ °C} \pm 1\text{ °C}$ and the other at $60\text{ °C} \pm 2\text{ °C}$ for 48 h. Keep these two containers at room temperature for 24 h thereafter. Subsequently, examine the paint in the two containers.

D.3 Results

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 application by method.

Annex E (normative)

Determination of the quantity of paint declared in the container

E.1 Apparatus

E.1.1 Graduated measuring cylinder

E.1.2 Empty container

E.2 Procedure

Measure out the volume of the paint by pouring it into the measuring cylinder and emptying the paint into an empty container. Measure out until all the paint is finished and record the total volume of the paint by adding up the volume.

E.3 Calculation

The measured volume shall be expressed as follows:

% of volume measured is

$$\frac{V - V_1}{V} \times 100$$

Where,

V_1 is the total measured volume; and

V is the declared volume

E.4 Results

The declared volume shall be $\pm 2\%$.

Annex F (normative)

Determination of pH

F.1 Apparatus and materials

F.1.1 Beaker, 150-ml

F.1.2 pH meter with glass calomel electrodes

F.1.3 Analytical balance

F.1.4 Glass rod

F.1.5 Distilled water

F.2 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.

F.3 Procedure

Weigh $5.00 \text{ g} \pm 0.01 \text{ g}$ 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 $23 \text{ }^\circ\text{C} \pm 2 \text{ }^\circ\text{C}$. Measure the pH with a pH meter using glass calomel electrode by carefully following the instructions of the meter.

Annex G (normative)

Determination of resistance to wet abrasion

G.1 Principle

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

G.2 Apparatus

Wet abrasion tester, as shown in Figure G.1 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; and
- c) Fractional horse power motor, of suitable speed to regulate the oscillations of the brush.

G.3 Reagents

Soap solution, dissolve 0.5 g of laundry soap complying with EAS 31 weighed to the nearest 0.001 g (previously dried at $105 \text{ }^\circ\text{C} \pm 2 \text{ }^\circ\text{C}$ for 30 min) in distilled water to give 0.5 % (m/v) solution.

G.4 Procedure

G.4.1 To prepare the panel, clean a glass panel, $415 \text{ mm} \times 120 \text{ mm}$. Apply a coat of the undercoating enamel to give a wet film thickness of $35 \text{ } \mu\text{m} - 38 \text{ } \mu\text{m}$ 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. Apply a coat of the paint by use of a brush or film applicator to give a wet film thickness of $150 \text{ } \mu\text{m}$. Allow this to air dry for 16 h.

G.4.2 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.

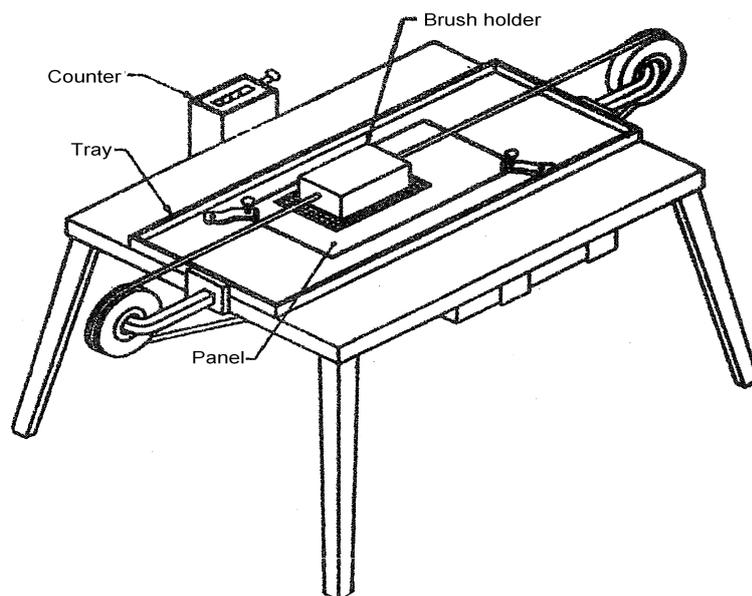


Figure G.1 — Wet abrasion tester

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Bibliography

EAS 851:2016, Matt emulsion paint for interior and exterior use — Specification

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