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## DRAFT EAST AFRICAN STANDARD

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**Matt solvent-borne 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, varishes and related products*.

This second edition cancels and replaces the first edition (EAS 852:2016), 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 solvent-borne paint for interior and exterior use — Specification

## 1 Scope

This Draft East African Standard specifies requirements, sampling and test methods for matt solvent-borne paint intended 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.

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

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

ISO 2884 (all parts), *Paints and varnishes — Determination of viscosity using rotary viscometers*

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

## 3 Terms and definitions

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

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

— ISO Online browsing platform: available at <http://www.iso.org/obp>

## 4 Requirements

### 4.1 General requirements

#### 4.1.1 Condition of the paint in the container

The paint shall be free from gel, coarse particles, foreign matter and skin and shall be in such a condition that at the time of delivery by stirring produces a homogenous product of uniform consistency

#### 4.1.2 Finish

When two coats of paint are applied at a minimum of 12 h interval to a test panel of paper-faced plasterboard, the film when dry shall be of uniform colour and appearance with a matt finish.

### 4.2 Specific requirements

The Matt solvent-borne paint shall comply with the specific requirements given in Table 1 when tested in accordance with the methods therein.

**Table 1 — Specific requirements for matt solvent-borne paints**

S No.	Parameter	Requirement	Test method
(i)	Fineness of grind, $\mu\text{m}$ , max.	25	ISO 1524
ii	Fastness to light	To pass the test	Annex A
iii	Brushing properties	To pass the test	Annex B
iv	Rolling properties	To pass the test	Annex C
v	Solids content, %m/m, min.	50	ISO 3251
vi	Skin formation	To pass the test	Annex D
(vii)	Viscosity, KU	80-100 <sup>a)</sup>	ISO 2884
(viii)	Drying times at 25 °C $\pm$ 2 °C, h: • Surface drying time, max • Hard drying time	3 4 - 12	ISO 9117-3 ISO 9117-4
(ix)	Gloss <sup>b)</sup> , %, max.	8	ISO 2813
(x)	Opacity, contrast ratio, %, min.	90	ISO 6504-3
(xi)	Resistance to washing, gloss change, max.	4	Annex E
(xii)	Resistance to yellowing (dark chamber) (for white paints only) on grey scale, max.	8	Annex F
(xiii)	Total lead content, ppm, max.	90	ISO 6503
<p>a) When using a rotating paddle viscometer, results for viscosity are dependent on the spindle number and the speed of the spindle.</p> <p>b) After drying for 16 h and tested using a 60° head gloss meter.</p>			

## 5 Packaging

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

## 6 Labelling

**6.2.1** 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.

**6.2.2** The paints shall be packaged in containers that are legibly and indelibly marked with the following information: the name of the product as “Matt solvent-borne paint”;

- a) manufacturer’s name and physical address /or registered trade mark;
- b) indication of colour/colour code;
- c) date of manufacture;
- d) net content;
- e) batch/code number;
- f) country of origin;
- g) expiry date or best before date;
- h) instructions for use and safety precautions.
- i) storage conditions; and
- j) disposal instructions.

## 7 Sampling

Sampling shall be done in accordance with ISO 15528.

## Annex A (normative)

### Fastness to light test

#### A.1 Apparatus

A.1.1 **Test panels**, two sealed cardboard panels, each 10 cm x 5 cm

A.1.2 **Geometric grey scale**, for assessing colour change

#### A.2 Procedure

Coat the panel and air-dry for 24 h. Fix one panel approximately 2 cm from a clean window pane, using a suitable adhesive tape, with the painted side facing the glass. The pane shall be of common, transparent window glass, approximately 2 mm thick, and shall be vertical, facing a direction unshaded by buildings and trees.

Place the other panel in darkness, for example, in a closed black envelope. After 28 days, measure the contrast between the panels using the Geometric Grey scale.

#### A.3 Results

There shall be no visible difference between the two panels.

## Annex B (normative)

### Brushing properties test

#### B.1 Apparatus

**B.1.1 Brush**, a good quality pure bristle brush for paint, 4 cm - 6 cm wide

**B.1.2 Test panel**, paper-faced plasterboard panel not smaller than 50 cm x 50 cm, placed vertically or nearly so and rigidly held (for example, fixed to a solid backing) to prevent movement during testing

#### B.2 Procedure

Wet the brush with the paint properly and apply the paint to the test panel by criss cross strokes across a section of the panel and then, where appropriate, lay off the coat with vertical strokes using the tip of the brush. Coat the next section in the same manner and continue this procedure until three quarters of the panel is covered as evenly as practicable, noting the ease or difficulty of lapping until the whole panel is coated.

During application, note such properties as the brushing, flowing, spreading levelling and setting up of the paint. Allow the film to dry for 24 h and examine test area of lapping and that adjacent for differences in gloss and/or other defects.

#### B.3 Results

The paint film when dry shall not show signs of sagging, running or streaking, and shall be free from brush marks.

## Annex C (normative)

### Rolling properties test

#### C.1 Apparatus

**C.1.1 Roller coater**, of size 10 cm - 15 cm

**C.1.2 Commercial roller tray**

**C.1.3 Test panels**, paper-faced plasterboard panels not smaller than 1 m x 1 m, placed vertically or nearly vertically and rigidly held to prevent movement during the test

#### C.2 Procedure

**C.2.1** Saturate the roller with paint using the roller tray. Remove the excess paint by rolling on the subsidiary panel. Apply paint to a section of the test panel.

**C.2.2** Continue the steps in C.2.1 until three quarters of the panel is covered evenly, noting the ease or difficulty of lapping until the whole panel is coated. During application, note such properties as rolling, flowing, spreading, levelling, bubbling, dripping, clogging and fly-off.

**C.2.3** Allow the film to dry for 24 h and examine the area of lapping and that adjacent for differences in gloss and/or other defects.

#### C.3 Results

The paint shall show no rolling, spreading, levelling and lapping properties with no more than slight transient bubbling, dripping, clogging or flay-off of paint from the roller.

## Annex D (normative)

### Examination of skin formation

#### D.1 Apparatus

D.1.1 **Container**, one metal container of 250 mL with a tight-fitting lid

D.1.2 **Spatula**

#### D.2 Test conditions

The test shall be carried out at a temperature of  $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$  and a relative humidity of  $65\% \pm 2\%$ .

#### D.3 Procedure

Pour 125 mL - 130 mL of the paint into the container, place the lid on tightly and momentarily invert the container to seal the lid. Allow the container to stand upright for seven days. Open the container and test the surface of the paint with a spatula for any skin formation. Examine the walls and the lid for the presence of skin.

## Annex E (normative)

### Resistance to washing test

#### E.1 Principle

The paint to be tested is applied to the test panels. After drying and conditioning, the paint films are mechanically washed over a specified number of cycles with a sponge, soaked in soap solution. The resistance of the paint film to washing is assessed, particularly in respect to changes in colour and gloss, by comparing it to unwashed control film.

#### E.2 Apparatus

**E.2.1 Paint washable machine**, (see Figure E.1), consisting essentially of a mechanism which imparts a lengthwise reciprocating motion to a metal box fitted with a sponge, across the surface of a fixed test panel. The total mass of the dry sponge and its metal box shall be  $45.0 \text{ g} \pm 15 \text{ g}$ . The reciprocating mechanism shall not impart any vertical force to metal box.

The length of stroke of the sponge over the test surface shall be about 30 cm.

A constant rate of travel of the sponge over the test surface shall be maintained in the range of 30 cycles/min - 40 cycles/min.

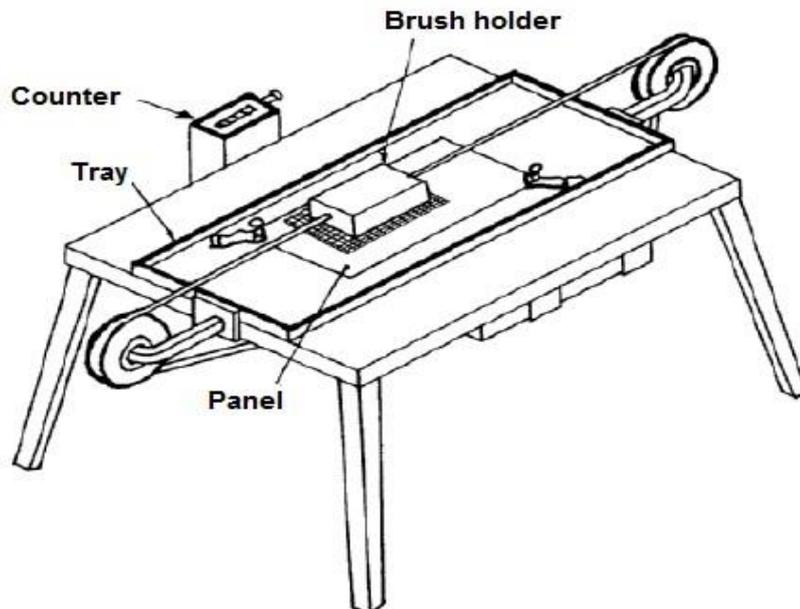


Figure E.1 — Wet abrasion tester

**E.2.2 Sponge**, a pre-shrunk sponge cut to a dry size of approximate dimensions 10 cm x 7.5 cm x 4 cm

**E.2.3 Drip feed**, a constant drip of soap solution shall be applied to the test surface throughout the test period on an area which will not be used for gloss measurements

**E.2.4 Paint applicator**, having a gap of approximately 100 µm and producing paint films approximately 12 cm wide

**E.2.5 Geometric grey scale**

### **E.3 Soap solution**

A 5 g/L solution of anhydrous sodium oleate made up with distilled water or deionized water of equal purity will be required.

### **E.4 Test conditions**

The test shall be carried out at a temperature of  $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$  and a relative humidity of  $65\% \pm 2\%$ .

### **E.5 Test panels**

Two test panels made of tin plate will be required. The test panel to be used for the washability testing (Panel A) shall have typical dimensions of 15 cm x 45 cm and the control panel (Panel B) shall have dimensions not less than 15 cm x 25 cm.

### **E.6 Preparation of panels**

Place the panels on a flat surface. Apply a film of paint to the panels by means of the applicator. Air-dry the panels for 24 h. Allow the panels to stand upright for seven days.

### **E.7 Procedure**

**E.7.1** By use of a gloss meter, measure the specular gloss of Panel A using a  $85^{\circ}$  exposure head when the  $60^{\circ}$  gloss of the paint is less than 30.

**E.7.2** Secure panel A in the tray of the washability apparatus and adjust the drip feed so that the soap solution falls onto the test surface at a rate of 0.5 mL/min - 0.75 mL/min (approximately 10 drops/min - 15 drops/min).

**E.7.3** Soak the sponge in distilled water or deionized water for 5 min, remove from the water and squeeze, with one hand, until no water drips from the sponge.

**E.7.4** Pour 50 mL of the soap solution uniformly over the sponge and attach the wet sponge to the metal box, minimizing solution loss.

**E.7.5** After ensuring that the attached counting device has been set to zero, start up the machine.

**E.7.6** After 500 cycles, turn the machine off and remove panel A from the apparatus.

**E.7.7** Rinse panel A under running tap water for 1 min and then give it a final rinse with distilled or deionized water. Allow it to stand vertically under ambient conditions for 2 h.

**E.7.8** At the end of this time, inspect the panel, noting any signs of integrity failure.

**E.7.9** Measure the gloss on the washed surface of Panel A using the same geometry as was used in the original measurement.

**E.7.10** Compare the colour of the washed area of Panel A with that of Panel B using the geometric grey scale

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## Annex F (normative)

### Yellowing resistance test

#### F.1 Apparatus

**F.1.1 Container**, light-proof container such that the painted panels stored therein have free access to air, e.g., a ventilated locked drawer.

**F.1.2 Panels**, sealed white cardboard of dimensions not smaller than 10 cm x 50 cm.

**F.1.3 Artificial daylight unit**, having two sources of illumination. The daylight source shall have a correlated colour temperature of 6 300 K – 7 500 K and the incandescent source shall have a colour temperature of 2 300 K – 3 000 K. The illumination in the viewing area shall be between 1 000 lux – 1 750 lux and the internal surroundings of the cabinet shall have the Munsell neutral grey colour N6 to N7.

**F.1.4 Geometric grey scale**, for assessing degree of staining.

#### F.2 Test conditions

The test shall be carried out at a temperature of  $25\text{ °C} \pm 1\text{ °C}$  and a relative humidity of  $65\% \pm 2\%$ .

#### F.3 Preparation of test panels

**F.3.1** Apply three coats of the paint at a recoating interval of 1 h. Retain some paint for the preparation of control test panels.

**F.3.2** Allow the final coat to dry for 24 h in conditions specified in Clause F.2.

#### F.4 Procedure

**F.4.1** Place the panels in the light-proof container and store for 28 days.

**F.4.2** From the retained paint, prepare test panels as in Clauses F.3.1 and F.3.2, such that the end of the drying interval for the final coat coincides with the end of the storage period.

#### F.5 Assessment of yellowing

Place the panels of the stored and freshly prepared paint film side by side in the same plane and the grey scale in the adjacent position in the same plane. Examine under the artificial daylight unit. Rate the degree of the stored film from ten to zero by doubling the corresponding grade on the grey scale.

## Bibliography

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