DEAS 926: 2018

ICS 87.040

DRAFT EAST AFRICAN STANDARD

Varnishes for Interior surfaces — Specification

EAST AFRICAN COMMUNITY

First Edition 2018

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.*

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.

During the preparation of this Standard, reference was made to the following document:

…….

Acknowledgement is hereby made for the assistance derived from this source.

Varnishes for Interior surfaces — Specification

1 Scope

This Draft East African Standard specifies the requirement and methods of sampling and test for varnishes used on interior surfaces such as wood, concrete, stones, metals etc.

This Standard covers two types of varnishes namely type I and type II.

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 -18, *Paints and varnishes — Method of test — Part 18: Determination of fineness of grind*

ISO 2813, *Paints and varnishes — Determination of specular gloss of non-metallic paint films at 20°, 60° and 85°*

ISO 4618, Paints and varnishes — Terms and definitions

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

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

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

ISO 17132, *Paints and varnishes — T-bend test*

3 Terms and definitions

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

3.1
batch
definite quantity of a material which was produced under uniform conditions

3.2
varnish
a clear coating material which when applied to a substrate forms a transparent film.

4 Types of varnishes

The varnish shall be of two types namely:

a) Type I

General purpose glossy or matt.

b) Type II

Solvent, heat and chemical-resistant glossy or matt varnish.

5 Requirements

5.1 General requirements

5.1.1 Condition in the container

5.1.1 Freshly opened containers of the material shall show no sign of livering or instability. Glossy varnish and its components shall be clear, transparent and free from sediment.

5.1.2 Any sediment present in matt varnish or its component shall be capable of being easily and rapidly dispersed with a stirrer to a smooth homogeneous state. Type I varnish shall be free from skins and lumps.

5.2 Specific requirements

The varnish shall comply with requirements in Table 1.

Table 1 — Specific requirements for Varnishes for Interior surfaces

Sl. No.	characteristic	Type of varnish	Requirement	Test method
i)	Pot life	II	No signs of separation, incompatibility or gelation	Annex A
iii)	Resistance to skinning	I	should not skin	Annex B
iv)	Fineness of grind, µm ,max	Matt	25	ISO 1524
v)	Application properties	I	Shall comply	Annex C
		II	Shall comply	
vi)	spraying properties	All	Shall comply	Annex D
vii)	Recoating properties	I II	Brushing; 16 h Spraying; 16 h Brushing; 6 h Spraying; 6 h	Annex E
viii)	Drying time			ISO 9117-3
	a) Surface dry	a) I	4 h, max.	

		b) II	1 h, max.	
	b) Hard Dry	a) I b) II	16 h, max. 8 h, max.	ISO 9117-1
ix)	Scratch resistance	All	Shall comply	Annex F
x)	Flexibility	All	Shall not crack or show loss of adhesion when bent through 180^0 over a 4-mm diameter mandrel.	ISO 17132
xi)	specular gloss(Gloss units)			ISO 2813
	a) 20˚	I and II, gloss	85, min.	
		I and II, matt	–	
	b) 60˚	I and II, gloss	–	
		I and II, matt	0 – 20	
xii)	Yellowing	All	Shall comply	Annex G
xiii)	resistance to cold water	All	Shall comply	Annex H
xiv)	Solvent resistance	II	Shall comply	Annex J
xv)	Heat resistance	II	Shall comply	Annex K
xvi)	chemical resistance	II	Shall comply	Annex L
xvii)	Lead content, max.	All	90ppm	ISO 6503

6 Packaging and labelling

6.1 Packaging

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

6.2 Labelling

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

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

a) the name of the product shall appear as "Gloss" or "Matt" varnish ;

b) the words, " varnish for interior use",

c) name and address of the manufacturer or brand name or both;

d) the type;

e) recommended thinner;

f) Net content in litres;

g) date of manufacture;

h) batch number;

i) best before date; and

j) instruction for use; disposal and safety precautions.

7 Sampling

Sampling shall be done in accordance to ISO 15528.

8 Quality of reagents

Unless otherwise specified, analytical grade reagents and distilled water or de-ionized water of equivalent purity shall be used in all tests.

Annex A
(normative)

Determination of pot life for Type 2 varnish

A.1 Apparatus

A.1.1 **Tin container**, 500-ml .

A.2 Procedure

A.2.1 Fill a clean 500-ml tin plate container with freshly mixed varnish, cover the container with tight fitting lid and invert momentarily.

A.2.2 Store in an upright position at temperature of 25 ˚C ± 2 ˚C for a period of 8 h minimum (measured at the time of mixing), during this period do not agitate or disturb it.

A.2.3 At the end of the period, inspect and test the contents of the container for compliance.

A.3 Report

The varnish shall show no signs of separation, incompatibility or gelation.

Annex B
(normative)

Resistance to skinning of Type I varnish

B.1 Apparatus

B.1.1 Container, 500-ml with airtight lid

B.1.2 Spatula

B.1.3 Porcelain spot plate

B.2 Procedure

Fill the tin to three quarters of its capacity, with well mixed sample. Put the lid on securely, invert the tin for a few seconds and the allow it to stand undisturbed in the normal upright position for 48 h. Open the lid and observe for skinning.

B.3 Report

Type I varnish shall not skin.

Annex C
(normative)

Application properties

C.1 Apparatus

C.1.1 Wooden panels, 450 mm x 450 mm

C.2 Procedure

C.2.1 For Type I, apply varnish on the wooden panels described in Annex F at 12.3 m^2/L to 14.3 m^2 /L and allow a wet edge of 5 min.

C.2.2 For Type II, apply as type I but starting in a top corner in a criss-crossing manner to the area stated above and lay of slightly with curved stokes. Continue application along the edges in this area in the same way.

C.2.3 Keep the edges wet and in each case lay off into the previously varnished portion until the entire surface of the panel is covered with varnish.

C.3 Report

C.3.1 Type 1 shall show good spreading, joining and leveling properties. The dried film shall be uniform in gloss and shall be free from brush marks, nibs, sags, wrinkles and other undesired properties.

C.3.2 Type II shall show no shall show no cissing or tendency to blush. The dried film shall be uniform in gloss and shall be free from bubbles, nibs, brush marks, sags and other undesirable properties.

Annex D
(normative)

Spraying properties

D.1 Apparatus

D.1.1 Wooden panels, 450 mm x 450 mm

D.1.2 Applicator

D.2 Procedure

D.2.1 Use varnish as supplied or after thinning nine parts of the varnish with more than one part of the thinner recommended by the manufacturer.

D.2.2 Apply the varnish at wet film thickness of 65 µm to 75 µm and allow no wedge time. Examine the wet film, and after allowing the film to dry (with the panels in vertical position) for the appropriate period specified in Table 2.

D.3 Report

The varnish shall spray well and show no cissing, bubbling or tendency to blush, sag, creep, run or produce an orange peel effect

Annex E
(normative)

Recoating properties

E.1 Procedure

Allow panels used in Annexes D and F for appropriate period (2) specified in Table 2. Apply second coat in the same manner, and inspect immediately after application.

E.2 Report

The panel shall cause no wrinkling, blistering or lifting of the first coat and shall show no other defects

Annex F
(normative)

Scratch resistance

F.1 Apparatus

F.1.1 Panels

F.1.1.1 Clear glass panels, of thickness approximately 6 mm and superficial size 70 mm x 150 mm unless different size is specified in the test method.

F.1.1.2 Plane polished black glass panels, of thickness 6 mm and superficial size 70 mm x 15 mm.

F.1.1.3 Corrosion-free cold rolled steel panels, of superficial size 70 mm x 150 mm and thickness of 0.6 to 0.90 mm.

F.1.1.4 Tin plated panels, of size 150 mm x 70 m x 0.31 mm.

F.1.1.5 White glazed porcelain tiles, of size 150 mm x 150 mm, and with reflectance of at least, 80%.

F.1.1.6 Pine veneer-faced laminated wooden panels, of size at least 150 mm x 300 mm.

F.1.2 Degreasing

Clean test panels to remove grease before use. If steel panels are not to be used immediately, store them in the desiccator until they are required.

F.1.3 Application of films

Apply the varnish with an applicator blade at film thickness of 70 µm to 80 µm, unless otherwise specified.

F.1.4 Air Drying a

Immediately after application of the film, place panels in horizontal position in standard test conditions for drying.

Air-dry test panels in standard test conditions for a period of 168 h.

F.2 Report

F.2.1 Type II varnish shall not be marked when a mass of 500 g is applied.

F.2.2 The scratch produced on type I varnish by application of a mass of 1500 g and on type II varnish by application of 1800 g, shall be free from jagged edges and shall not penetrate to the underlying surface

Annex G
(normative)

Yellowing

G.1 Reagents

Reference varnish, will consist of the following:

G.1.1 Resin, sunflower-oil-modified alkyd resin with phthalic anhydride content of 24 % (by mass) and an oil length of 65% (by mass).

G.1.2 Solvent, petroleum spirit of low aromatic content, enough to give varnish consistency with similar application properties as samples under test.

G.1.3 Driers, grams per 100g of the resin:

G.1.3.1 Cobaltnaphtenate, 0.05 g (expressed as Co)

G.1.3.2 Calcium naphtenate, 0.25 g (expressed as Ca)

G.2 Procedure

G.2.1 Type I varnish

G.2.1.1 Prepare tiles in accordance with Annex F and using 50-mm applicator blade to apply the reference varnish to one of a panel and varnish under test to other half. Air dry for 24 h.

G.2.1.2 Store the panel in the dark cupboard and in standard test conditions for a period of six weeks. Do not open the cupboard during the test.

G.2.1.3 At the end of this period asses the degree of yellowing of each film by comparing its colour (visually) with that of a 24 h old film of the same varnish (i.e reference or test varnish, as relevant) for compliance with G.3.

G.2.2 Type II varnish claimed to be non-yellowing

Prepare and edge two panels as described in G.2.1. Store one tile in the dark as described in G.2.1.2 and expose the other tile (indoors) to normal ambient and seasonal conditions of diffuse daylight and darkness at the same period. At the end of the exposure period asses as described in G.2.1.3.

G.3 Report

G.3.1 The yellowing of type I varnish shall exceed that of the reference varnish tested at the same time.

G.3.2 Type II varnish if claimed to be non-yellowing, shall not exceed that of the reference varnish tested at the same time.

Annex H
(normative)

Resistance to cold water

H.1 Apparatus

H.1.1 Panels

H.1.1.1 Clear glass panels, of thickness approximately 6 mm and superficial size 70 mm x 150 mm unless different size is specified in the test method.

H.1.2 Preparation of the panel

Apply a coat of varnish to glass panel at spreading rate of 12.3 m^2 /L to 14.3 m^2 /L and allow a wet edge time of 5 min. Age the first coat for 6 h and apply a second coat at same film thickness.

H.2 Procedure

H.2.1 Immerse the panels in distilled water maintained at 25 °C ± 2 °C for,

a) Type I varnish 24 h

b) Type II varnish 168 h

H.2.2 Examine films immediately after removal from water and again after relevant recovery period under test conditions

H.3 Report

H.3.1 Type I film shall show no lifting (either between coats or away from substrates) or other visible defects except slight whitening or dulling or both and not more than slight softening. After a 4-hour recovery period, it shall be free from whitening, dulling, softening and other defects.

H.3.2 Type II film shall show no lifting (either between coats or away from substrates) or other visible defects. After 1 hour of recovery period, it shall be free from softening and other defects.

Annex J
(normative)

Resistance to solvent for Type II varnish

J.1 Reagents

J.1.1 Methyl iso-butyl ketone

J.2 Material

J.2.1 Cotton wool

J.2.2 Clear glass panels, of thickness approximately 6 mm and superficial size 70 mm x 150 mm unless different size is specified in the test method.

J.3 Procedure

J.3.1 Prepare and age glass panel in accordance with Annex F. Soak a swab of cotton wool in methyl iso-butyl ketone, place it upon the film, cover the swab with a watch glass, and leave it in position for 15 min at 25 ˚C ± 2 ˚C.

J.3.2 Inspect the varnish film immediately after removal of the swab again after 4 h recovery period under standard test conditions.

J.4 Report

Type II varnish film shall show no blistering, wrinkling, or lifting. After a 4 hours recovery period, the exposed portion of the film shall show no softening.

Annex K
(normative)

Heat resistance of Type II varnish

J.1 Apparatus

K.1.1 Panels

K.1.1.1 Clear glass panels specified in Annex F, but at least 150 mm in superficial size.

K.1.1.2 Container, a suitable 500-mL tin plate container (with a lid) of diameter approximately 90 mm.

K.2 Procedure

K2.1 Draw down a 100-mm wide film of the varnish as described in F.1.3 and allow it to age for 48 h.

K.2.2 Fill the container with boiling water, replace the lid and immediately place the container in the varnish film.

K.2.3 Allow the container to remain undisturbed on the film until the water has cooled to room temperature.

K.2.4 Remove the container and note whether the varnish film adheres to the container and whether the container has produced a mark on the surface of the film.

K.3 Report

Type II varnish shall show no tendency to adhere to the container and the container shall leave no visible mark on the film.

Annex L
(normative)

Chemical resistance of Type II varnish

L.1 Reagents

L.1.1 **Ethanol,** one volume mixed with one volume of distilled water.

L.1.2 **Acetic acid solution**, five volumes mixed with 95 volumes of distilled water.

L.1.3 **Sodium hydroxide solution,** 5 g in 95 ml of distilled water.

L.1.4 **Beverage,** a coca-cola type beverage.

L.2 Procedure

L.2.1 Prepare and age 4 glass panel in accordance with Annex F.

L2.2 Place the panels in a horizontal position and, using a separate panel for each reagent, form small pool of the reagent on the film and cover with a watch glass.

L.2.3 Allow the reagent to remain in contact with the film at 25 °C ± 2 °C for the relevant period of time below.

L.2.3.1 Alcohol, 16 h

L.2.3.2 Acid, sodium hydroxide, 6 h

L.2.3.3 Beverage, 16 h

L2.3.4 At the end of the exposure period, wipe off reagent, wash the panel with mild soap under running water (using a soft sponge) and the gently wipe with a piece of chamos leather. Inspect each panel immediately and again after 2 h of recovery period under standard test condition

L.2.3.5 After 24 h recovery period under standard test conditions, test the exposed portions of the film

L.3 Report

Type II varnish after exposure to the action of an alcohol, an acid, alkali or beverage shall immediately after removal of reagents, show no blistering, wrinkling or loss of adhesion, and not more than slight softening or change of colour.

Bibliography

[1] KS 2581:2015, Paints and varnishes — Varnish for wooden surface — Specification