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DRAFT EAST AFRICAN STANDARD

Etch primers (Single pack and two-pack) — Specification

EAST AFRICAN COMMUNITY

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

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Etch primer (single pack and 2-pack) — Specification

1 Scope

This Draft East African specifies the requirements, sampling and test methods, for single pack and two-pack etch primers intended for pre-treating metal surfaces to improve the adhesion of paint system applied to them.

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 F735-17, *Standard Test Method for Abrasion Resistance of Transparent Plastics and Coatings Using the Oscillating Sand Method*

ISO 1514, *Paints and varnishes — Standard panels for testing*

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

ISO 2431, *Paints and varnishes — Determination of flow time by use of flow cups*

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

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

ISO 3856-6, *Paints and varnishes — Determination of "soluble" metal content — Part 6: Determination of total chromium content of the liquid portion of the paint — Flame atomic absorption spectrometric method*

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

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

ISO 9117-1, *Paints and varnishes — Drying tests — Part 1: Determination of through-dry state and through-dry time*

ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests*

ISO 11127-4, *Preparation of steel substrates before application of paints and related products — Test methods for non-metallic blast-cleaning abrasives — Part 4: Assessment of hardness by a glass slide test*

ISO 11890-1, *Paints and varnishes — Determination of volatile organic compound (VOC) content — Part 1: Difference 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 definitions given in ISO 4618 and the following apply:

3.1 component

term used to describe each of two parts of the paint, which, when mixed together form single pack or two pack etch primers

3.2 pot life

the maximum time during which a coating material supplied as separate components should be used after they have been mixed together

3.3 Volatile organic compound content

the mass of the volatile organic compounds present in a coating material, as determined under specified conditions

3.4 volatile organic compound (VOC)

fundamentally, any organic liquid and/or solid that evaporates spontaneously at the prevailing temperature and pressure of the atmosphere with which it is in contact

3.5 ready for use

the state of a product, when it is mixed in accordance with the manufacturer's instructions in the correct proportions and thinned, if required, using the correct thinners so that it is ready for application by the approved method

4 Types

The etch primers shall be of two types:

4.1 Type 1

Single-pack etch primer.

4.2 Type 2

2-pack etch primer.

5 Requirements

5.1 General requirements

5.1.1 Composition

The material shall be of such a composition so as to satisfy the requirements of this standard.

5.1.2 Odour

The odour of the etch primers in the container, during and after application shall not be abnormally pungent, offensive or disagreeable.

5.1.3 Condition of material in container

5.1.3.1 When visually examined, etch primers shall be free from skins and lumps. The container shall be free from rust and moulds.

5.1.3.2 When the components of Type 2 primers are mixed in the recommended proportion as specified by the manufacturer, and the product is manually incorporated, a product of uniform consistence shall result.

5.2 Specific requirements

5.2.1 Wet coat

The wet mixed material ready for use shall also comply with the requirements given in the Table 1 when tested in accordance with the test methods specified therein.

Table 1 — Requirements for the etch primers

S/N	Characteristic		Requirement	Test method
i.	Total lead content, ppm, max.		90	ISO 6503
ii.	Solids content, %m/m, min.	Type 1	24	ISO 3251
		Type 2	15	
iii.	Skin formation		Shall show no skin formation	Annex A
iv.	Viscosity at 25 °C, s, max.	Type 1	20	ISO 2431
		Type 2		
v.	Pot life, h, for type 2, min.		4.	Annex B
vi.	Flash point, °C, min.		30	ISO 1523
vii.	Specific gravity at 25 °C	Type 1	0.90 ± 0.02	ISO 2811
		Type 2	0.95 ± 0.02	
viii.	Flexibility and adhesion on 12 mm mandrel		There shall be no visible damage or detachment of film	ISO 17132
ix.	Volatile organic content, g/l, max.		750	ISO 11890-1
x.	Fineness of dispersion, /Fineness of grind Hegman-Type Gage, µm, max.		30	ISO 1524
xi.	Scratch hardness using 15 N		No such scratches shall produce a bare metal	ISO 11127-4
xii.	Hard drying time at 25 °C ± 2 °C, h, max.	Type	1	ISO 9117-1
		Type 2	1/2	
xiii.	Chromium, ppm in dried paints, max.		5	ISO 3856-6

5.2.2 Dry coat

Table 2 — Requirements for the dry coat

S/N	Characteristic	Requirement	Test method
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i.	Dry film thickness per coat, μm	15 - 25	Mikro test method
ii.	Finish	Matt	Visual examination
iii.	Scratch hardness using 15 N	No such scratches shall produce a bare metal	ASTM F735-17
iv.	Flexibility and adhesion using 12 mm mandrel	There shall be no visible damage or detachment of film after 48 h	ISO 17132
v.	Salt spray test	The film shall not show signs of blistering, staining, loss of adhesion or creep of corrosion from scratch	ISO 9227

5.2.3 Quantity of material

The quality of material shall not be less than the declared volume at $25\text{ }^{\circ}\text{C} + 2\text{ }^{\circ}\text{C}$ when tested in accordance with Annex C.

6 Packaging and marking

6.1 Packaging

The paint shall be packed in suitable containers that prevents it from deterioration during storage, transportation and normal handling.

6.2 Marking

6.2.1 Marking on the container

6.2.1.1 The marking 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.

6.2.1.2 Each container shall be marked legibly and indelibly with the following:

- a) the name of the product as “Etch primer Single pack” or “Etch primer Single 2-pack”;
- b) manufacturer’s name and physical address

NOTE The name, physical address of the distributor/supplier and trademark may be added as required.

- c) net content in L;
- d) date of manufacture;
- e) instructions for use;
- f) pot-life life at $25\text{ }^{\circ}\text{C}$ for type 2; and
- g) an indication of flammability.

6.2.2 Marking on the label of the container

Each label of the container shall be marked legibly and indelibly with the following:

- a) Date of manufacture;
- b) Instructions for use;
- c) Pot-life for type 2;
- d) Shelf life;
- e) Colour; and
- f) Batch number.

7 Sampling

Sampling shall be done in accordance with ISO 15528.

Annex A (normative)

Examination of skin formation

A.1 Apparatus

The following apparatus are required:

A.1.1 Container, one metal container of 250 ml with a tight fitting lid.

A.1.2 Spatula

A.2 Test conditions

The test shall be carried out at a temperature of $23\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ and a relative humidity of 65 ± 2 per cent.

A.3 Procedure

The procedure shall be as follows:

A.3.1 Stir and pour 125 ml to 130 ml of the paint into the container, place the lid on tightly and momentarily invert the container to seal the lid.

A.3.2 Allow the container to stand upright for 7 days.

A.3.2 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 the skin.

Annex B (normative)

Determination of pot life

B.1 General

The time taken to double the viscosity from the original value shall be considered the pot life of the material.

B.2 Apparatus

Test panels, complying to ISO 1514.

B.3 Reagents

Component parts, i.e. base and hardener or catalyst.

B.4 Procedure

B.4.1 Thoroughly mix component parts in the ratio specified by the paint manufacturer to give a sample of 200 mL by volume.

B.4.2 Within 10 min of mixing, determine the viscosity using a rotating paddle viscometer.

B.4.3 Allow the mixed sample of paint to stand in a suitable airtight container and determine viscosity at the end of the specified time.

B.5 Report

Report whether viscosity has doubled at 25 °C within 6 h.

Annex C (normative)

Determination of the quantity of material

C.1 Apparatus

C.1.1 Graduated measuring cylinder

C.1.2 Empty container

C.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.

C.3 Calculation

The measured volume shall be expressed as follows:

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

% of volume measured is =

where

V_1 is the total measured volume; and

V is the declared volume.

Bibliography

KS 1985-7:2007, *Marine paints — Specification — Part 7: Etch primers (single pack and two-pack)*

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