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Crayon and Pastel — 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 079, *Scholastic Materials*.

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.

Crayon and Pastel — Specification

1 Scope

This Draft East African Standard specifies the requirements, sampling, and test methods for crayons and pastels used for drawing purposes."

This standard does not cover crayons and pastels used for marking on timber and fabrics, pastel pencils and water-soluble pastels.

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 8124-3, *Safety of toys — Part 3: Migration of certain elements*

Council Directive 67/548/EEC of 27 June 1967 *on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances*

3 Terms and definitions

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

— IEC Electropedia: available at http://www.electropedia.org/

3.1
crayon
stick of colored wax or chalk used for drawing and coloring.

4 Requirements

4.1 General requirements

4.1.1 Crayons and pastels shall have an acceptably smooth finish and shall show no evidence of grit, flint, sandy, particles and blowholes.

Note Crayons and pastels may be circular, square or hexagonal in cross-section

4.1.2 Whenever it is necessary, each crayon or pastel of crayons and pastels shall be securely wrapped with a suitable paper material to prevent damages to crayon or pastel and colour penetration from crayon or pastels to users.

4.1.3 Crayons and pastels shall colour on drawing material without scratching, able to colour uniformly without unevenness on drawing materials, easy overlapping of colours when drawing.

4.2 Colour

4.2.1 A container shall contain minimum of 6 crayon or pastels with one crayon or pastel from each basic colour as shown in Table 1. Colour shall be determined by the method prescribed in Annex A.

4.2.2 When a container contains more than 6 crayon or pastels, the additional colours shall be as agreed to between the purchaser and the supplier.

4.2.3 The general exclusion list for crayon and pastel colourants is given in Annex B.

Table 1 — Requirements for basic colours of crayons and pastels

Sl. No.	Colour	Requirements		
		Hue (H)	Value (V)	Chroma (C)
i.	Black	-	N 2.5 max.	1.0 max.
ii.	Blue	2.5 – 6.25 PB	3 - 5	10 - 14
iii.	Brown	2.5 – 7.5 YR	2 - 3	4 – 8
iv.	Green	2.5 – 5 G	4 – 5	8 min.
v.	Red	5 – 7.5 R	3 – 4	12 min.
vi.	Yellow	2.5 7.5 Y	8 – 9	12 min.

4.2.4 Crayons and pastels shall colour on drawing material without scratching, able to colour uniformly without unevenness on drawing materials, easy overlapping of colours when drawing.

4.2.5 Crayons and pastels shall colour on drawing material without scratching, able to colour uniformly without unevenness on drawing materials, easy overlapping of colours when drawing.

4.3 Toxic substances

The amount of toxic substances migration from crayons and pastels shall not exceed the limits shown in Table 2 when tested in accordance with Annex C.

Table 2 — Requirements for toxic substances of crayons and pastels

Toxic substances	Requirements ppm max.	Test Method
Arsenic, As	5.0	Annex C
Lead, Pb	5.0	
Chromium, Cr	5.0	
Antimony, Sb	5.0	
Mercury, Hg	1.0	
Selenium, Se	5.0	
Cadmium, Cd	5.0	

4.4 Transverse breaking force

The transverse breaking force of crayons and pastels shall be minimum of 6.0 N when tested in accordance with Annex E.

4.5 Stability

Crayons and pastels shall not show appreciable bending or deterioration when tested in accordance with Annex D.

4.6 Dimensions

Crayons and pastels shall also comply with the dimensions prescribed in table 3.

Table 3 — Dimensions

Sl. No.	Characteristic	Requirement
i.	Diameter, mm, min.	7.5
ii.	Length, mm, min.	60

Note 1: For crayons and pastels of square or hexagonal cross-section, the diameter shall be measured between diametrically opposed corners.

Note 2: Dimensional measurements shall be taken after removing the wrapper.

5 Packaging and marking

5.1 Packaging

5.1.1 At least six crayon or pastels shall be packed in a container.

5.1.2 Containers shall prevent leakage of the contents during normal handling and transportation.

5.2 Marking

5.2.1 The wrapper of each crayon or pastel packed individually shall be legibly, and indelibly labelled in English, Kiswahili or French with the following:

a) name of colour; and

b) brand name

5.2.2 The following information shall be legibly and indelibly labelled in English, Kiswahili or French on the container of crayon or pastel:

a) name of the product as; “Crayons or Pastels”;

b) name and physical address of the manufacturer including country of origin;

c) registered trademark;

d) number of crayon or pastels in the container;

e) batch no.;

f) best before date;

g) date of packaging of containers;

h) safety precaution;

i) disposal information; and

j) list of ingredients

5.2.3 The following information shall be legibly and indelibly labelled in English, Kiswahili or French on each carton of crayons and pastels:

a) name of the product as; “Crayons or Pastels”;

b) name and physical address of the manufacturer including country of origin;

c) registered trademark;

d) number of crayon or pastels in the container;

e) number of containers in a carton;

f) batch no.;

g) expiry date;

h) date of packaging of containers;

h) safety precaution;

i) disposal information; and

j) list of ingredients

6 Sampling

6.1 Scale of sampling

6.1.1 The number of containers to be selected from a batch shall be in accordance with table 4.

Table 4 — Scale of sampling

Number of containers in the batch.	Number of containers
Up to 400	6
401 to 800	7
801 to 1 000	8
1 001 to 4 000	9
4 001 and above	10

6.1.2 If the containers are packed in cartons, 10 % of the cartons subject to minimum of three cartons shall be selected and as far as possible an equal number of containers shall be randomly drawn from each carton so selected to form a sample as given in table 4.

6.2 Number of tests

6.2.1 Each carton and container selected shall be inspected for packaging and marking requirements

6.2.2 Five crayon or pastels from each container selected shall be measured for dimensions.

6.2.3 Two containers, if the lot contains 1 000 or less containers shall be drawn and all the crayon or pastels in these containers shall be tested for colour

6.2.4 Three containers, if the batch contains more than 1 000 or less containers shall be drawn and all the crayon or pastels in these containers shall be tested for colour.

6.2.5 The same crayon or pastels used in 6.2.3 or 6.2.4 shall be tested for grit and properties of drawing.

6.2.6 Four containers shall be selected from the remaining containers and the crayon or pastels in these containers shall be tested for breaking force (4.4) and stability (4.5), taking two containers for one requirement.

6.2.7 From the crayon or pastels tested as in 6.2.3 or 6.2.4, a sufficient number of crayon or pastels of each colour shall be drawn and tested for requirements of each toxic substance.

6.3 Criteria for conformity

A batch shall be declared as conforming to the requirements of this specification if the following conditions are satisfied:

6.3.1 Each carton and container inspected as in 6.2.1 satisfies the relevant requirements.

6.3.2 The value of the expression $\bar{X} - 1.2s$, calculated using the test results on dimensional requirements when tested as in 6.2.2 is not less than the relevant specification limits.

Notes:

1. Mean $(\bar{X}) = \frac{Sum\ of\ the\ observed\ values}{Number\ of\ values}$

2. Standard deviation (s) = $\sqrt{\frac{x-\bar{x}}{N-1}}$

3. Standard deviation is the positive square root of the quotient obtained by dividing the sum of squares of the deviations of the test results from their arithmetic mean by one less than the number of test results.

6.3.3 The crayons or pastels tested as in 6.2.3 and 6.2.3 satisfy the relevant requirements.

6.3.4 The value of the expression, $\bar{X} - 1.2s$,, calculated using the test results on breaking force when tested as in 6.2.6 is not less than the relevant specification limit.

6.3.5 Each crayon or pastel tested for stability as in 6.2.6 satisfies the relevant requirement.

6.3.6 All the test results on the content of toxic substances when tested as in 6.2.7 satisfy the relevant requirement.

Annex A
(normative)

Determination of colour

A.1 Procedure

Colour a piece of white paper, for example, Whatman No. 41 filter paper, with the crayon or pastel using normal manual force, until the intensity of the colour reaches a level beyond which further colouring does not increase the intensity of the colour. By referring to the Munsell books of colour, determine the Munsell colour notation corresponding to the colour of the prepared paper.

Annex B
(informative)

General exclusion list for crayons and pastels

B.1 The following substances shall not be present as ingredients or contaminants in crayons and pastels.

B.1.2 Toxic substance classification

Substances classified and labelled as toxic or highly toxic according to the Chemicals Regulations (Hazard Information and Packaging for Supply), which implement Directive 67/548/EEC, and subsequent amendments and adaptations.

B.1.2 Dye and colourants

a) Auramine (Basic Yellow 2 – CI 41000)

b) Azo dyes which can decompose in the body to bioavailable aromatic amines that are classified as Category 1 or 2 carcinogens, according to Directive 67/548/EEC.

c) Chrysodine (Basic orange 2 – CI 11270)

d) Cresylene Brown (Basic Brown 4 – CI 21010)

e) Induline (Solvent Blue 7 – CI 50400)

f) Fuschine (Basic Violet 14 – CI 42510)

Annex C
(normative)

Determination of toxic substances

C.1 Reagents

Use the reagents given in clause 6 of ISO 8124-3.

C.2 Reagents

Use the apparatus given in clause 7 of ISO 8124-3.

C.3 Preparation of test samples

Prepare the test solution as described in subclause 9.7.1 and subclause 9.7.4 of ISO 8124-3.

The following methods of analysis are recommended, but other methods may be used, provided that the limits of detection complying with the requirements of clause 10 of ISO 8124-3.

C.4 Procedure

The following methods of analysis are recommended, but other methods may be used, provided that the limits of detection comply with the requirements of clause 10 of ISO 8124-3.

C.4.1 For determining the antimony content in the order of 10 ppm in the material (0.2 mg/l in the resulting solution), hydride generation atomic absorption spectrophotometry employing background correction can be used.

C.4.2 For determining the arsenic content in the order of 5 ppm in the material (0.1 mg/l in the resulting solution), hydride generation atomic absorption spectrophotometry employing background correction can be used

C.4.3 For determining the cadmium content in the order of 15 ppm in the material (0.3 mg/l in the resulting solution), flame atomic absorption spectrophotometry employing an air/acetylene flame and background correction can be used.

C.4.4 For determining the chromium content in the order of 25 ppm in the material (0.5 mg/l in the resulting solution), flame atomic absorption spectrophotometry employing a nitrous oxide/acetylene flame and background correction can be used.

C.4.5 For determining the lead content in the order of 50 ppm in the material (1.0 mg/l in the resulting solution), flame atomic absorption spectrophotometry employing an air/acetylene flame and background correction can be used.

C.4.6 For determining the mercury content in the order of 5 ppm in the material (0.1 mg/l in the resulting solution), cold vapour generation atomic absorption spectrophotometry employing background correction can be used.

C.4.7 For determining the selenium content in the order of 50 ppm in the material (1.0 mg/l in the resulting solution), hydride generation atomic absorption spectrophotometry employing background correction can be used.

C.5 Analytical correction

The analytical results obtained in accordance with C.3 shall be adjusted by subtracting the analytical correction in Table C.1 to obtain an adjusted analytical result.

Table C.1 — Analytical correction

Sl. No.	Toxic substances	Analytical correction %
1	Arsenic, As	60
2 3	Lead, Pb	30
4 5	Chromium, Cr	30
6	Antimony, Sb	60
7	Mercury, Hg	50
8	Selenium, Se	60
9	Cadmium, Cd	30

Example:

An analytical result for lead of 120 ppm was obtained. The necessary analytical correction taken from table C.1 is 30 %. Therefore, the adjusted analytical result is

$$120 - \frac{120\ x\ 30}{100} = 120 - 36 = 84\ ppm$$

Annex D
(normative)

Determination of stability

Place the crayon or pastel without wrapper in a chamber maintained at a temperature of 37 ºC ± 2 ºC. After one hour, the crayon or pastel shall not show any bending or deterioration.

Annex E
(normative)

Determination of transverse breaking force

Procedure

The apparatus as shown in figure E.1 shall be of such construction that a crayon or pastel can be supported at two points 50 mm apart, and a can suspended from the crayon or pastel midway between the supports into which lead shots could be poured in gradually. Place the crayon or pastel on the two supports in such a way that an equal length of the stick projects out from bot supports. Suspend the can from the test specimen midway between the two supports and pour lead shots gradually until the crayon or pastel breaks. The transverse breaking force of the test specimen shall be based on the total mass of the can and the lead shots in it.

Note: if the crayon or pastel is wrapped, test should be carried out without removing the wrapper.

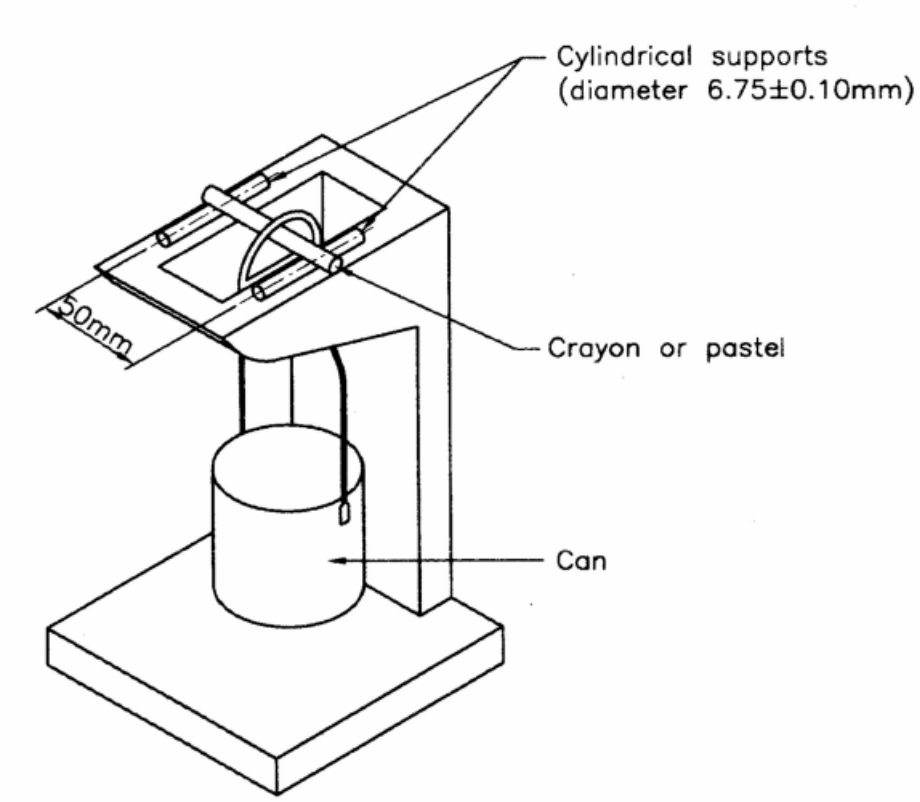

Figure E.1 — Apparatus for determination of transverse breaking force

Bibliography

[1] SLS 777:2009, *Specification for crayons and pastels*

