SRI LANKA STANDARD 455:1979
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SPECIFICATION FOR
WATER COLOURS

BUREAU OF CEYLON STANDARDS

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SLS 455 : 1979

Gr. 4

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SRI LANKA STANDARD
SPECIFICATION FOR WATER COLOURS

FOREWORD

This Sri Lanka Standard Specification has been prepared by the Drafting Committee of the Bureau on Water Colours. It was approved by the Agricultural and Chemicals Divisional Committee of the Bureau of Ceylon Standards and was authorised for adoption and publication by the Council of the Bureau on 1979-06-28.

This specification requires reference to the following Sri Lanka Standards:

CS 102	Presentation of numerical values.
SLS 311	Determination of lead.
SLS 312	Determination of arsenic.
SLS ...	Rubber erasers (under preparation).
SLS 489	Glossary of terms for paints.
SLS 428	Random sampling methods.

Water colours are a range of artists' colours which may vary from transparent to opaque in character. They are made in paste form which are called moist water colours and in cake and powder form which are called semi-moist water colours. Cakes and powder colours are produced by compression and contain very small proportions of water in the form of moisture, and hence they are called semi-moist. The properties and end uses of both

varieties are the same. Moist colours are worked directly from tubular containers or bottles whereas semi-moist water colours are rubbed with water to form paste.

The standard values in this specification are given in SI units.

For the purpose of deciding whether a particular requirement of this specification is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with CS 102. The number of significant places retained in the rounded off value should be the same as that of the specified value in this specification.

In the preparation of this specification, the assistance obtained from the publications of the Indian Standards Institution is gratefully acknowledged.

1 SCOPE

This specification prescribes the requirements and methods of sampling and tests for water colours in paste form (moist water colours, that is:tube and poster colours), and cake and powder form (semi-moist water colours) for students' use.

2 TERMINOLOGY

For the purpose of this specification, the definitions given in SLS 489 shall apply.

3 REQUIREMENTS

3.1 Description

3.1.1 The material shall be in the form of a semi-viscous paste or cake or powder. It shall consist of a binder, a pigment or pigments, an extender, a hygroscopic agent, a plasticizer and a preservative.

3.1.2 The pigment shall be finely ground, free from grit and shall not separate from the vehicle.

3.2 Lead content

The material shall contain not more than 250 mg/kg of lead when tested in accordance with the method prescribed in SLS 311.

3.3 Arsenic content

The material shall contain not more than 150 mg/kg of arsenic when tested in accordance with the method prescribed in SLS 312.

3.4 Flocculation

The vehicle shall not cause flocculation of the pigment when tested in accordance with the method prescribed in Appendix B.

3.5 Transparency/Opacity

The material shall be transparent/opaque when tested according to the method prescribed in Appendix C.

3.6 Miscibility

The material shall be readily dispersible with water, shall be easily wetted and shall not dry out or crack when applied on drawing paper.

3.7 Colour

In a set, the following eight colours shall be compulsory:

a) Purple;
b) Prussian blue;
c) Deep green;
d) Golden yellow;
e) Vermillion;
f) Brown;
g) Black; and
h) White.

3.8 Performance

The material shall comply with the requirements of the test prescribed in Appendix D.

3.9 Growth of mould

When tested according to the method prescribed in Appendix E the material shall not show any growth of mould.

3.10 Mass

The minimum mass of the material shall be 5 g for tube colours, 25 g for poster colours, 2.5 g for cake colours and 25 g for powder colours.

4 KEEPING QUALITY

The material shall not dry when stored in the original containers for a minimum period of two years from the date of manufacture. It shall also satisfy the requirements of the test prescribed in Appendix F.

5 PACKAGING AND MARKING

5.1 Packaging

A set of colours shall be packed as follows:

5.1.1 *Tube colours*

These shall be packed in collapsible tubes. Not less than 8 such tubes (consisting of the 8 colours specified in 3.7) shall be packed in a suitable package. The cap of each tube shall be securely fixed.

5.1.2 *Poster colours*

These shall be packed in suitable glass containers or any other packaging as agreed to between the buyer and the seller. Not less than 8 such containers (consisting of the 8 colours specified in 3.7) shall be packed in a suitable package. The cap of each container shall be securely fixed.

5.1.3 *Cake colours*

These shall be packed in such a way that there are at least 8 cakes (consisting of the 8 colours specified in 3.7), within a suitable container.

5.1.4 *Powder colours*

These shall be packed in polyethylene bags or other suitable packs so that there are at least 8 such packs (consisting of the 8 colours specified in 3.7) within a suitable package.

5.2 Marking

Each container/package containing a set of colours as described in 5.1 shall be marked with the following particulars:

a) Name of the material;
b) Name and address of manufacturer and/or recognised trade mark;

c) Batch number; and
d) Net mass in grams, of the contents of each enclosed pack.

6 SAMPLING

The method of drawing representative samples of the material shall be as prescribed in Appendix A.

7 TESTS

Tests shall be carried out as prescribed in Appendices B,C,D,E and F of this specification.

8 CRITERIA FOR CONFORMITY

8.1 A lot shall be declared as complying with the requirements of this specification if the following conditions are satisfied:

8.1.1 The number of defective items found in sub-sample 1 (see A.2.6.1) is less than or equal to the corresponding permissible number of defectives, specified in Column 4 of Table A.1.

8.1.2 The sub-sample 2 (see A.2.6.2) tested in accordance with A.3.2 satisfies the requirements given in 3.1 to 3.9 individually.

APPENDIX A
(See 6)

SAMPLING OF WATER COLOURS

A.1 GENERAL REQUIREMENTS OF SAMPLING

In drawing, storing and handling test samples, care shall be taken that the properties of the material being sampled are not affected.

A.2 SCALE OF SAMPLING

A.2.1 lot: All items (tubes/cakes/poster colour bottles/powder packets) containing material of the same colour from the same batch of manufacture shall constitute a lot.

A.2.2 Samples shall be tested from each lot for ascertaining the conformity of the material to the requirements of the specification.

A.2.3 The number of items to be selected from a lot shall depend on the number of items in the lot (N) and shall be in accordance with Columns 1 and 2 of Table 1.

A.2.4 These items shall be chosen at random from the lot, and to ensure randomness of selection, a random number table as specified in SLS 428 shall be used.

A.2.5 All the items drawn as above shall be divided into two equal parts. One of these parts is intended for testing and the other for reference.

A.2.6 The part intended for testing shall be divided at random into 2 sub-samples as follows:

A.2.6.1 A sample of the corresponding size specified in Column 3 of Table 1 (sub-sample 1).

TABLE 1 - Scale of sampling

Number of items in the lot N (1)	Number of items to be selected (2)		Size of sub-sample-1 (3)		Permissible number of defectives (4)	
	Tubes/ Cakes	Poster colour bottles/ powder packets	Tubes/ cakes	Poster colour bottles/ powder packets	Tubes/ Cakes	Poster colour bottles/ powder packets
Up to 500	20	4	5	2	0	0
501 to 1000	30	6	8	3	1	0
1001 to 3000	40	10	13	5	1	0
3001 and above	50	16	20	8	2	1

A.2.6.2 A sample consisting of the remaining items (sub-sample 2).

A.3 TESTING OF SAMPLES

A.3.1 All the items in sub-sample 1 shall be tested for the requirement given in 3.10. Any item failing in this requirement shall be considered a defective.

A.3.2 Approximately equal quantities of the material shall be taken from each of the items in sub-sample 2 and mixed together thoroughly. The resulting sample shall be tested for the requirements specified in 3.1 to 3.9.

APPENDIX B
(See 3.4)

TEST FOR PIGMENT FLOCCULATION IN VEHICLE

B.1 PROCEDURE

Mix thoroughly one gram of the paste or cake or powder with 30 g of the vehicle and observe a portion under a microscope of x5 or x10 power.

B.1.1 The material shall show no sign of pigment particles aggregating to form small scattered bunches.

APPENDIX C
(See 3.5*)*

TEST FOR TRANSPARENCY/OPACITY

C.1 PROCEDURE

Draw with an artist's brush filled with sable or squirrel tail hair, a stripe 10-mm wide and 50-mm long with drawing ink, black, waterproof. Lift with a wetted brush the required quantity of coloured material and draw a stripe 20-mm wide over the black stripe.

C.1.1 The material shall be classed as transparent or opaque depending on whether the black stripe shows clearly or not through the coloured stripe.

APPENDIX D
(See 3.8*)*

TEST FOR PERFORMANCE

D.1 PROCEDURE

Paint out the colour in the usual manner on a white drawing paper 50-mm wide and 100-mm long. The amount of paint taken up by the brush can be adjusted to yield uniform intensity of colour in a single coat. Cut this paper in three equal strips breadthwise and use one strip as control and the other two strips for tests in D.1.1 and D.1.2.

D.1.1 Ten minutes after the paint has been drawn on the drawing paper, rub one of the strips with the dry finger tips and then with an eraser conforming to Type 2 of SLS ...*, There shall be no blurring or

*SLS ... *Rubber erasers (under preparation).*

smudging and no tendency to flake off when compared with the control strip.

D.1.2 The third strip containing the coloured band shall be exposed to bright sunlight for a minimum period of 8 hours. The material shall be considered to satisfy the requirements of the test if all colours show no appreciable evidence of fading when compared with the control strip.

APPENDIX E
(See 3.9)

TEST FOR GROWTH OF MOULD

E.1 PROCEDURE

Transfer five grams of the material into a 50-ml beaker, dilute it with an equal volume of water, stir it uniformly with a glass rod. Inoculate with a mixture of spores of

a) *Aspergillus niger*,
b) *Pullularia pullulans* (or an alternative mould), and
c) *Penicillium pinophilum* (or an alternative mould).

Keep in a moist chamber for two weeks at 37 ± 1 °C. After the expiry of this period the material shall not show any growth of mould or separation of pigments.

APPENDIX F

(See 4)

TEST FOR KEEPING QUALITY

F.1 PROCEDURE

Keep the material stored in the original containers in an air-oven for two weeks at 50 ± 1 °C. After the expiry of this period the material shall not dry to a hard mass.

SLS CERTIFICATION MARK

The Sri Lanka Standards Institution is the owner of the registered certification mark shown below. Beneath the mark, the number of the Sri Lanka Standard relevant to the product is indicated. This mark may be used only by those who have obtained permits under the SLS certification marks scheme. The presence of this mark on or in relation to a product conveys the assurance that they have been produced to comply with the requirements of the relevant Sri Lanka Standard under a well designed system of quality control inspection and testing operated by the manufacturer and supervised by the SLSI *which includes surveillance inspection of the factory, testing of both factory and market samples.*

Further particulars of the terms and conditions of the permit may be obtained from the Sri *Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.*

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SRI LANKA STANDARDS INSTITUTION

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The principal objects of the Institution as set out in the Act are to prepare standards and promote their adoption, to provide facilities for examination and testing of products, to operate a Certification Marks Scheme, to certify the quality of products meant for local consumption or exports and to promote standardization and quality control by educational, consultancy and research activity.

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