

SRI LANKA STANDARD 1145: 1996

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**SPECIFICATION FOR ZINC PHOSPHATE
PRIMING PAINT**

SRI LANKA STANDARDS INSTITUTION

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Gr. 5

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This standard does not purport to include all the necessary provisions of a contract.

Sri Lanka Standard
SPECIFICATION FOR ZINC PHOSPHATE PRIMING PAINT

FOREWORD

This standard was approved by the Sectoral Committee on Polymers and Polymer products and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 1996 - 11 -21.

Zinc phosphate priming paint covered by this specification is used as the first coat on iron and steel or non-ferrous surfaces to provide good protection against corrosion. The material is commercially known as zinc phosphate primer.

Guidelines for the determination of a compliance of a lot with the requirements of this standard based on statistical sampling and inspection are given in Appendix A.

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 an analysis, shall be rounded off in accordance with CS 102. The number of significant places retained in the rounded off value shall be the same as that of the specified value in this specification.

1 SCOPE

This specification prescribes the requirements and methods of test for zinc phosphate priming paint.

2 REFERENCES

- ISO 6503** Determination of total lead-Flame atomic absorption spectrometric method.
- CS 102** Presentation of numerical values.
- SLS 489** Glossary of terms for paints.
- SLS 523** Methods of sampling of paints.
- SLS 535** Methods of test for paints.
- SLS 1139** Zinc phosphate pigments for paints.

3 DEFINITIONS

For the purpose of this standard the definitions given in **SLS 489** shall apply:

4 REQUIREMENTS

4.1 Composition

4.1.1 The material shall consist of at least 20 per cent by mass of zinc phosphate conforming to **SLS 1139** together with suitable medium, thinner and driers in such proportions so as to satisfy the requirements of this specification. The pigment composition shall also consist of other rust inhibitors (other than lead pigments) or suitable extender. The addition of specifying pigments such as titanium dioxide or lithopone and/or suitable colour pigment in the case of tinted primer is permissible.

4.1.2 Gypsum and calcium sulphate shall not be used.

4.2 Consistency

The material shall not show excessive settling in a freshly opened can containing the specified quantity and shall be easily redispersed with a metal rod or spatula to a smooth, homogeneous consistency suitable for application by brushing without appreciable drag on the brush.

4.3 Colour

The colour of the material shall be as agreed to between the purchaser and the manufacturer.

4.4 Application properties and finish

The material when applied by brushing, after thinning as recommended by the manufacturer at a spreading rate of approximately 13 m²/l to a smooth, burnished steel panel conforming to **SLS 535: Part 3: Section 3.2** shall dry to a smooth and matt or eggshell flat film, free from sagging, wrinkling and excessive brush marks.

4.5 Quantity of material

The volume of the material when tested as prescribed in **SLS 535 : Part 1 : Section 1.7** shall not differ by more than ± 2 per cent of the declared volume at $27 \pm 2^{\circ} \text{C}$.

4.6 Keeping properties

The material when stored for one year and tested as described in Appendix B, shall show no signs of skinning, gelling, hard caking or curdling and shall be free from any extraneous matter.

NOTE

It is not necessary to carry out this test as a routine for all the samples. The test should be carried out only when required by the purchaser and the supplier.

4.7 Other requirements

The material shall also comply with the requirements given in Table 1, when tested according to the relevant test methods given in Column 4 of the table.

TABLE 1 - Requirements for zinc phosphate priming paint

Sl. No. (1)	Characteristic (2)	Requirement (3)	Method of test (4)
i)	Drying time; hard dry, h, max.	16	Appendix C
ii)	Uncombined water, per cent by mass, max.	0.5	SLS 535:Part 2: Section 2.2
iii)	Scratch hardness (under a load of 1 kg)	No scratch as to show the bare metal	SLS 535: Part 5: Section 5.2
iv)	Bending properties	No visible damage or detachment of film	SLS 535: Part 5: Section 5.3
v)	Protection against corrosion under conditions of condensation	No signs of corrosion	Appendix D
vi)	Resistance to continuous salt spray	No signs of corrosion	SLS 535 :Part 6: Section 6.2
vii)	Flash point, °C, min.	30	SLS 535: Part 2: Section 2.5
viii)	Lead content, per cent by mass, max.	1.5	ISO 6503

5 PACKAGING AND MARKING

5.1 Packaging

The material shall be packed in suitable containers in the following measures :

500 ml, 1 l, 4 l, and 5 l.

5.2 Marking

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

- a) The words "Zinc phosphate primer";
- b) Volume of the material, in ml or l ;
- c) Name and address of the manufacturer ;
- d) Batch or code number ;
- e) Date of manufacture ;
- f) Finish ;
- g) Instructions for thinning ; and
- h) Spreading capacity in m^2/l .

NOTE :

Attention is drawn to certification marking facilities offered by the Sri Lanka Standards Institution. See the inside back cover of this standard.

6 METHODS OF TEST

6.1 Tests shall be carried out as specified in ISO 6503, relevant sections of Part 1, Part 2, Part 3, Part 5 and Part 6 of SLS 535 and 4.2, Appendices B to D of this specification.

6.2 Unless specified otherwise, chemicals of analytical grade and distilled water shall be employed in tests.

APPENDIX A COMPLIANCE OF A LOT

This sampling scheme should be applied where compliance of a lot to the requirements of this standard is to be assessed based on statistical sampling and inspection.

Where compliance with this standard is to be assured based on manufacturer's control systems coupled with type testing and check tests or any other procedure, appropriate schemes of sampling and inspection should be adopted.

A.1 LOT

In any consignment all the containers of the same size and colour of paint belonging to one batch of manufacture or supply shall constitute a lot.

A.2 GENERAL REQUIREMENTS OF SAMPLING

The method of drawing representative samples of the material shall be as specified in the relevant clauses of SLS 523.

A.3 NUMBER OF TESTS

A.3.1 Each container selected as in 7.2.1(e) of SLS 523 shall be tested/inspected for the requirement specified in 4.2, 4.5 packaging and marking.

A.3.2 After testing as in 7.2.1, an equal quantity of material shall be taken from each container and mixed thoroughly to form a composite sample. The composite sample shall be transferred to a sample container. Composite sample shall be tested for the requirements given in 4.7 .

A.3.3 The remaining portion of material in each container of 7.2.2 shall be individually tested for the requirement given in 4.4 .

A.4 CRITERIA FOR CONFORMITY

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

A.4.1 Each container tested/inspected as in A.3.1 satisfies the relevant requirements.

A.4.2 Tests results on the composite sample tested as in A.3.2 satisfy the relevant requirements.

A.4.3 Each individual sample tested as in A.3.3 satisfies the relevant requirement.

APPENDIX B DETERMINATION OF KEEPING PROPERTIES

B.1 PROCEDURE

B.1.1 Store the material under cover in a dry place in the original sealed containers and under normal temperature conditions.

B.1.2 The material properties as prescribed for the specified period after the date of manufacture should retain and also should not show signs of skinning, gelling, hard caking or curdling and any extraneous matter.

APPENDIX C DETERMINATION OF HARD DRYING TIME

Two methods have been specified for determination of hard drying time. Method specified in C.1 is the reference method and shall be carried out in case of any dispute.

C.1 METHOD 1

Carryout the test as specified in SLS 535 Part 3 : Section 3.5 .

C.2 METHOD 2

Apply the material by brushing as specified in SLS 535 Part 3 : Section 3.3 on a 150-mm x 150-mm burnished steel panel conforming to SLS 535 Part 3 : Section 3.2 and allow to air dry under standard conditions (temperature 27 ± 2 °C and relative humidity of 65 ± 5 per cent). After the specified period examine the material for hard dry (see SLS 489) .

APPENDIX D DETERMINATION OF PROTECTION AGAINST CORROSION UNDER CONDITIONS OF CONDENSATION

D.1 PRINCIPLE

This test is carried out by suspending the painted panel after a specified period of drying in a corrosion cabinet maintained at 100 per cent relative humidity and a temperature of 42 °C for seven days and examining it for any signs of deterioration and corrosion of metal surface.

D.2 APPARATUS

D.2.1 Closed chest, in which the relative humidity is maintained at about 100 per cent and the temperature continuously cycles over a range from 42 °C to 48 °C. There should be copious condensation of water on test panels positioned vertically within the chest. The apparatus may be of any design, but it should satisfy the following essential conditions :

a) Humidification

Humidity should be maintained by evaporation of grease or oil free water from a reservoir situated at the bottom of the cabinet.

b) Heating

The cabinet should be heated through the medium of water by a heater placed immediately below the water reservoir or a heater completely immersed in water.

c) Temperature cycles

Heating arrangement should be thermostatically controlled in such a way that the temperature of the air space cycles vary continuously from 42 °C to 48 °C and back to 42 °C in a total period of not less than 45 minutes and not more than 75 minutes. The time required for heating and cooling should be approximately equal.

d) Air circulation

The air in the cabinet should be kept in circulation by means of a fan and ensure that the temperature in any part of the air space does not differ by more than 0.5 °C at any given moment.

e) Spacing of test panels

Test panels should not be placed less than 40 mm apart, or less than 40 mm from any side of the cabinet.

f) Suspension of panels

If suspended, the panels should be held by non-metallic supports. If placed on metal racks, the panels should be suitably insulated at points of contact with the metal surface.

D.3 PROCEDURE

D.3.1 Apply one coat of the material on both sides of a 150-mm x 100-mm x 1.25-mm burnished steel panel as described in C.2 . Allow to air dry for 24 h and then dry at a temperature of 60 °C to 65 °C for one hour. Cool the panel to room temperature and protect the edges to a depth of 5 mm with paraffin wax and then suspend it vertically in a corrosion cabinet satisfying the conditions prescribed under D.2.1 . After exposure under these conditions for seven days, remove the panel and examine for signs of deterioration of the paint film. Remove a 25 mm strip of the film from the centre of the panel carefully with a suitable paint remover and examine the exposed metal for signs of corrosion neglecting 25 mm portion of the exposed surface from each end.

D.3.2 The metal surface should show no signs of corrosion. Changes in appearance and condition of the paint film should not be taken into consideration.

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.



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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The development and formulation of National Standards is carried out by Technical Experts and representatives of other interest groups, assisted by the permanent officers of the Institution. These Technical Committees are appointed under the purview of the Sectoral Committees which in turn are appointed by the Council. The Sectoral Committees give the final Technical approval for the Draft National Standards prior to the approval by the Council of the SLSI.

All members of the Technical and Sectoral Committees render their services in an honorary capacity. In this process the Institution endeavours to ensure adequate representation of all view points.

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