

**SAUDI STANDARDS, METROLOGY AND
QUALITY ORGANIZATION**

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Zinc Phosphate Epoxy Primer

ICS 87.040.00

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Zinc Phosphate Epoxy Primer

1. SCOPE AND FIELD OF APPLICATION

This SASO standard specifies two components polyamide cured zinc phosphate epoxy solvent-based primer. It is suitable for anti-corrosion protection of steel structures.

2. COMPLEMENTARY REFERENCES

- 2.1 **SASO ISO4618:2014** paints and varnishes - terms and definitions.
- 2.2 **SASO/ISO15528:2015** Paints and Varnishes – Sampling.
- 2.3 **SASO ISO 1513:2014** Paints and Varnishes – Examination and Preparation of samples for Testing
- 2.4 **SASO ISO 6745** Zinc Phosphate contents (to be discussed with Eng. Ubad)
- 2.5 **SASO ISO 2811-4:** “Paint and varnish” determining the density of paints, using a pressure.
- 2.6 **SASO ISO 3251:** Paint and Varnishes-Determination of Non-Volatile matter of Paints, Varnishes and Binder for Paint and Varnishes.
- 2.7 **SASO ISO 2431** “Paint and Varnishes” Determination of flow time by use of flow cup.
- 2.8 **SASO ISO 1524** “Paints, varnishes and printing inks - Determination of fineness of grind
- 2.9 **SASO ISO 9117-4:** Paint and Varnishes – Drying test – Part 4: Test using a mechanical recorder.
- 2.10 **SASO 2706** “Paint and Varnishes- Determination of Salt Spray Resistance”.
- 2.11 **SASO ISO 6503:** “Paint and Varnishes” – Determination of Total Lead – Flame Atomic Absorption Spectrometric Method.
- 2.12 **SASO 593** “Paint & Varnishes - Determination of Flexibility & Adhesion”.
- 2.13 **SASO 2708** “Paint and Varnishes - Determination of Adhesion by Cross Cut Method”.
- 2.14 **SASO-ISO 6272-2** “Paint and Varnishes - Rapid Deformation-Impact Resistance test
- 2.15 **SASO 868** “Paints and Varnishes - Determination of Flash Point”.

3. DEFINITIONS

3.1 **Primer:** Coating used over an unpainted surface.

3.3 **Undercoat:** Coating used over primed surfaces

3.4 **Pigment:** Particles insoluble in paint, which give to the thin dry layer the properties in color, opacity (relative variation) and protection from rust.

3.4 Vehicle

The vehicle shall consist of a suitable binder or mixture based on the type of the primer, thereof, a suitable solvent or mixture of solvent and additives will be used.

4. REQUIREMENTS

The following requirements shall be fulfilled by the two pack polyamide cured epoxy primer

4.1 Composition

4.1.1) **Base Component:** The component of the paint consisting the epoxy resin, pigments, suitable solvents and additives.

4.1.2) **Hardener Component:** The hardener shall consist of a blend of Polyamide, mixture of Solvent and additives.

4.2 Vehicle

The vehicle shall consist of a epoxy resin in a suitable solvent.

4.3 Pigments

The pigment shall consist of Zinc Phosphate and an extender may be used, provided the resulting product conforms to the requirements of this standard.

4.4 Conditions in container

The paint shall be free of grits, skins or lumps and shall show no more pigment settling or caking than can readily be reincorporated to a smooth homogeneous state. The paint shall mix readily with a suitable thinner, in accordance with the manufacturer's recommendations, to a smooth homogeneous state.

4.5 Zinc Phosphate contains

The paint shall contains Zinc Phosphate pigments shall not be less than 15% by weight when tested as per 2.4 .

4.6 Pot Life

The mixed paint should have a pot life of not less than 4 hours when tested at $(23 \pm 1)^{\circ}\text{C}$.

4.7 Non-Volatile Content

The non-volatile content shall not be less than 60% by weight when tested as per clause 2.6.

4.8 Consistency

The paint shall be in such a condition that stirring readily produces a smooth uniform mixture of good consistency. It shall have a viscosity not less than 75 Kneb Units (KU) at $23 \pm 2^{\circ}\text{C}$ when tested according to clause no. 2.7

4.9 Fineness of grind

The indicator number of fineness shall not be more than $50\mu\text{m}$ when tested according to clause no. 2.8.

4.10 Thinning

The paint shall be thinning with the suitable thinner as per manufacture recommendation.

4.11 Drying Time

The paint when applied at $(23 \pm 2)^{\circ}\text{C}$ and relative humidity of $(50\% \pm 5)$ the paint shall become surface dry in not more than 3 hours, and shall become hard dry in not more than 6 hours when tested as per 2.9.

4.12 Application Properties

The paint shall have satisfactory application properties when used as per the manufacturer's recommendations and shall give a film free from surface defects such as running and sagging. The paint after thinning should be suitable for application by spray.

4.13 Appearance of dried film

The dried paint film shall have a smooth finish, free from sagging or wrinkling and shall not be inferior to a film prepared in the same way and at the same time from the reference sample.

4.14 Salt spray test

The paint when applied at DFT of 50-60 μm , in accordance with the manufacturer's instructions, on an abraded and degreased panel, shall not show any corrosion or rust or any other problems after 500 hours, when tested according to clause no. 2.10

4.15 Lead Content

The lead content of the paint shall not exceed 0.009% of the total mass of the paint when tested as per clause 2.11.

4.16 Flexibility and Adhesion

The mixed paint when applied at DFT of 50-60 μm , in accordance with the manufacturer's instruction, on degreased & lightly abraded tin plate & allowed to dry for 7 days at $(23 \pm 1)^\circ\text{C}$. and at a relative humidity of not more than $(50\% \pm 5)$ shall withstand a bending test using a 6 mm diameter mandrel. The paint film shall be firmly adherent and shall show no cracking or peeling when tested as per clause 2.12.

4.17 Adhesion - Cross Cut

The mixed paint when applied at DFT of 50-60 μm , in accordance with the manufacturer's instructions, on an abraded and degreased panel, & allowed to dry for 7 days at $(23 \pm 1)^\circ\text{C}$. and at a relative humidity of not more than $(50\% \pm 5)$ shall exhibit a minimum adhesion loss of not more than 5 % when tested in accordance with clause 2.13, using a 2 mm cutting tool.

4.18 Impact Test

the mixed paint when applied at DFT of 50-60 μm , in accordance with the manufacturer's instructions, on an abraded & degreased panel & allowed to dry for 7 days at $(23 \pm 1)^\circ\text{C}$. and at a relative humidity of not more than $(50\% \pm 5)$ shall withstand a direct impact of 500 gms weight from 400 mm height. There should not be any cracking or peeling of the paint. when tested as per clause 2.14.

4.19 Flash Point

The flash point shall not be less than 25°C when tested as per clause 2.15

5. Properties keeping at storage

The paint shall attain its properties, being kept in its original airtight containers at $(23 \pm 2^\circ\text{C})$ or at manufacturer's recommendations storage conditions, for a period not less than 12 months without the formation of peeling on the surface or precipitated within this period. and the paint shall be homogenized.

6. Sampling

A representative sample of not less than 1 liter according to item 2/2 shall be taken from the paint in accordance with Saudi Standard mentioned in 2/3.

7. Test Methods:

The following tests shall be carried out on samples according to item (2).

7.1 . Examination of the apparent state of paint in the container (packing and data)

7.2 conditions in container

7.3 Zinc Phosphate contains

7.4 Pot life

7.5 Non-Volatile Content

7.6 Consistency

7.7 Drying Time

7.8 Appearance of dried film

7.9 Fineness of grind

7.10 Thinning

7.11 Salt spray test

7.12 Lead Content

7.13 Flexibility and Adhesion

7.13 Adhesion - Cross Cut

7.14 Impact Test

7.15 Flash point

8. PACKAGING

The paint shall be packed in clean, dry, airtight suitable containers to accommodate the mixing of two pack product.

9. MARKING

Each container shall be legibly and indelibly marked with the following information in Arabic or (Arabic and English).

6.1) Name, Type and Color of the Paint.

6.2) Name of Manufacturer and / or Trademark.

6.3) Country of Origin and whether manufactured under license to a named Brand / Manufacturer.

6.4) Batch Number.

- 6.5) Date of Production in Month and Year.
- 2.6) Mass and / or Volume of the Paint.
- 6.7) Application Instructions.
- 6.8) Warning relating to flammability and toxicity where required.

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4) REFERENCES:

1. Relative products specification.

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