National Research Centre
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المركز القومى للبحوث
وحدة البويات والبلاستيك والمطاط والمواد اللاصقة
شارع التحرير - الدقى - القاهرة
ت مباشر وفاكس: ٣٣٣٥٥١٤٦

Report on
Two Component Zinc-Rich Epoxy Primer Sample (Solvent-Base) under the trade name SILOX EGYPT ZR 88 Manufactured and Supplied by SILOX-Germany Building Materials

A two-component solvent-based zinc-rich epoxy primer sample, trade name "**SILOX EGYPT ZR 88**", was received by the Paints, Plastics, Rubber, and Adhesives Unit at the National Research Centre (NRC). The primer sample was manufactured and submitted by SILOX-Germany Building Materials, accompanied by a letter dated October 19, 2025, requesting an evaluation of certain physical properties of the primer sample.

The followings are the general description of the received sample and the test results:

1. General Description of the Delivered Sample "SILOX EGYPT ZR 88":

- The zinc-rich epoxy primer sample, "SILOX EGYPT ZR 88," was delivered in two sealed metal containers: Base-Component A (0.8 liters) and Hardener-Component B (0.1 liters).
- Both container labels listed the trade name, production date (October 2025), shelf life (one year), volume, and company name.
- Base-Component A contains epoxy resin mixed with zinc pigment. A thick, grey liquid was observed, with the zinc pigment settling softly at the bottom of the container. The settled pigment was readily dispersed by thorough mechanical mixing.
- Before application, the contents of A and B were mixed at 8:1 (A: B) volume ratio and stirred mechanically. The primer was then applied to the steel substrate, forming a smooth, matte, defect-free dry film.
- According to the product's technical datasheet, the primer can be applied on the metallic substrate using a brush, roller, or airless spray.
- The zinc-rich epoxy primer sample, "SILOX EGYPT ZR 88,"is intended for use as a first coat on steel surfaces to provide corrosion protection.

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2- Tests of the zinc rich epoxy primer (SILOX EGYPT ZR 88) Supplied by SILOX-Germany Building Materials

Tests	Results
1. Paint Color	Dark Grey
2. Non-volatile content by weight (%)	88.15
3. Volatile content by weight (%)	18.85
4. Density (g/cm³) at 25°C ▪ Component A (Base) ▪ Component B (Hardener) ▪ Comp. A + Comp. B (A: B= 8: 1 by volume)	 1.8 0.91 1.69
5. Drying Time at 25°C [1] a) Touch dry (hrs) b) Thorough dry (hrs) c) Full dry (days)	 1 6 7
6. Gloss of dry paint film at angle 60° (GU)	20 (egg shell luster)
7. Coverage rate (m²/kg) [2] ▪ For liquid paint film with wet film thickness 100 µm ▪ For liquid paint film with wet film thickness 200 µm	 7.2 4.3
8. Adhesion strength to metal substrate (MPa)[3]	> 3.2 Paint film failure observed without detachment from the metal surface

[1] Drying time depends on temperature, humidity, surface roughness, porosity, and film thickness.

[2] Coverage rate varies with paint film thickness and substrate texture.

[3] The adhesion strength of the dry paint film on the metal surface was measured using pull-off test method (ASTM D4541:2022), with a dry film thickness of approximately 200 µm. The pull-off test indicated that dry paint failure occurred without detachment from the metal surface. This means that the adhesion strength of the dry paint film exceeds 3.2 MPa.

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Comments on Results:

- These results represent the zinc-rich epoxy primer SILOX EGYPT ZR 88 sample supplied by **SILOX-Germany Building Materials** to the Paints, Plastics, Rubber, and Adhesives Unit at the National Research Centre. NRC is not responsible for product supply or distribution.

Tests conducted by

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