



**The Israel Electric Corporation
Operation Division
Chief Chemist's Department**

Spec / Procedure No. 1500

Issue 2

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Subject: Specification for Electrostatic Painting of Electrical Cabinets or other equipment constructed from mild steel.

1. **General**

This specification is designed for electrostatically applied power coating of panels from mild steel (pickled) designed for internal and external location. Please note the different requirements in the specification for internal or external location in clauses: 1.1, 2.1, 3.6, 3.7.

1.1 **Type of power**

For panels designed for internal location- pure polyester powder or polyester epoxy.

For panels designed for external location- pure polyester powder only.

1.2 **General appearance**

Colour and finish to be according to requirements (in ISRAEL it is customary to use the RAL card), and appearance to be in accordance with the requirement "without surface imperfections" such as bubbles, pinholes, "craters" etc.

Colours chosen by the Network- RAL - 7001.

External painting:

External location: - RAL - 7001.

Internal location: - RAL - 7032.

Internal painting: - RAL - 7032 - or - RAL - 9010 according to the
manufacturer's practice.

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2. **Surface preparation**

2.1 For internal location there are three options:

2.1.1 Abrasion blast cleaning until a "commercial" surfaces is obtained according to grade Sa 2 of the Swedish standard, or according to the American standard SSPC- SP 6.

Oils must be removed before commencement of surface preparation. When cleaning is completed, removal of dust must be ensured using dry compressed air.

Painting must take place on the same day, and in any event before the appearance of signs of rust.

Depth of anchor: 20-25 microns.

2.1.2 Chemical treatment to obtain zinc phosphate coating between 2-5 microns thickness. Because of the sensitivity of the powder, the materials for chemical treatment should not be altered without first checking that they match the requirements of this specification.

2.1.3 Chemical treatment to obtain iron phosphate coating.

2.2 For external location There are two options:

2.2.1 Abrasion blast cleaning until "near white" surface is obtained according to grade Sa 2 112 of the Swedish standard, or according to the American standard SSPC- SP 10.

Oils must be removed before commencement of surface preparation. When cleaning is completed, removal of dust must be ensured using dry compressed air.

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Painting must take place on the same day, and any event
before appearance of signs of rust.

Depth of anchor: 20-25 microns.

2.2.2 Chemical treatment to obtain zinc phosphate coating between
2-5 microns thickness.

Because of the sensitivity of powder, the materials for chemical
treatment should not be altered without first checking that they
match the requirements of this specification.

3. **Technical requirements**

Laboratory tests will be carried out on panels measuring 100x150x0.7 mm,
except those needed for Q.U.V cabinet.

3.1 Thickness of coating The test to be according ISO 2808.

3.1.1 For abrasion cleaning: between 90 to 120 microns.

3.1.2 For zinc phosphate coating: between 70 to 90 microns.

3.1.3 For iron phosphate coating: between 70 to 90 microns.

3.2 Adhesion Measured by tape test.

Adhesion to metal to be 100% as per ASTM D 3359- method B, equal
to grade O according to ISO 2409, or grade 5A according to
AS1MD 3359, method A.

3.3 Hardness Hardness of coating to scratching: 4000 Gram according to
ISO R 1518.

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3.4 Impact

according to ASTM D 2794: 25 kg/m. There shall be no cracking of the coating, nor any detachment from the substrate.

3.5 Distensibility

According to ISO 1520 - ERICHSEN cupping: 6 mm without cracks or detachments.

3.6 Resistance to salt spray (Fog) According to AS1M B-117 standard.

3.6.1 For internal location: 3 panels will be placed in a salt spray chamber for 168 hours, after being cross - cut with an "X". At the end of this period, no bubbles or rust spots must appear.

Spread of rust from the cut may not exceed 3 mm.

3.6.2 For external location: 3 panels will be placed in a salt water chamber for 500 hours, after being cross-cut in the center of the plate with an "X" 50-70 mm long.

After drying for 24 hours at room temperature, adhesion to the cross - cut will be examined.

Spread of rust across the cuts and separation of the coating must not exceed 2 mm.. There must be no bubbles or rust spots on the surface remote from the cut and the edges of the plate.

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3.7 Resistance to artificial weathering for panels designed for external location (A.S.T.M. G 53).

The test will be carried out for 500 hours in a Q.U.V. appliance with a 340 Λ lamp, at test cycles of 8 hours radiation at a temperature of $60^{\circ}\text{C} \pm 2$, and 4 hours at 100% relative humidity at $50^{\circ}\text{C} \pm 2^{\circ}$.

Requirements: 75% gloss retention which will be tested according to the gray - scale - ISO 105 Λ 02.

The scale is divided into 5 grades, where number 5 indicates resistance with no change of colour. Fading of the color as far as No. 4 is permitted.

The color may be examined with a spectrophotometer. Requirement $\Delta E \leq 1$.

4. Quality assurance

4.1 Quality assurance is based on approval of the process and the factory with regard to its ability to provide panels which will comply with the requirements of clause 3.

During manufacture only the thickness of the coating will be checked.

No measurement may be less than the thickness determined in clause 3.1.

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