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RDSO Specification for Epoxy based Mastic Filler (Two pack)			

**RDSO SPECIFICATION No.
M&C / PCN /112 /2020
(Rev 1.0)**



**SPECIFICATION FOR EPOXY
BASED MASTIC FILLER
(TWO PACKS)**

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0. FOREWORD:

This standard was originally adopted in the year 1996. In this revision, requirement limit of epoxy equivalent, drying time and pot life has been revised in the light of technological advancement & experience gathered. The test for stopping property and minimum temperature of the surface to be painted has been incorporated. Methods of test have been specified as per revised IS: 101.

1. SCOPE:

This standard specifies requirements and methods of testing of Epoxy Based Mastic Filler supplied in Two Packs, intended to be used over Zinc Phosphate (Epoxy Based) primer in the Exterior Painting of Coaches, Diesel & Electric Locomotive and other Industrial Applications.

NOTE: “Firm should comply Make in India Policy and Public Procurement (Preference to Make in India) Order-2017 under this specification” and subsequent Amendment done time to time.

2. TERMINOLOGY:

- 2.1 For the purpose of this standard apart from the Glossary of Terms given in IS 1303 - 1983, Reaffirmed 2017 or its latest version and as per Clause.2 of IS: 9162-79, Reaffirmed 2016 the following shall also apply. Rounding off, of observed values on different tests shall be in accordance with IS: 2-1960, Reaffirmed 2016 or its latest version.

2.1.1 PACK:

The term used to describe each of the Two Packs of the paint which when mixed together, form Epoxy Based Mastic Filler.

2.1.2 PAINT:

The mixture of the Two Packs in the proportion shall be recommended by Manufacturer/Supplier. The mixing of the Two Packs shall be done with the heavy-duty mechanical stirrer for 15 minutes Max. the rise in temperature shall not be more than 5°C.

3. REQUIREMENT:

- 3.1 The mixing ratio of the Pack ‘A’ and Pack ‘B’ shall be in simple ratio by weight or volume as recommended by the Manufacturer/Supplier.

3.2 COMPOSITION:

The paint shall consist essentially of Two Packs, namely Pack ‘A’ and Pack ‘B’.

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3.2.1 **PACK 'A':** Normally referred to as base, shall consist of Epoxy Resin, Pigment and other suitable additives.

3.2.1.1 In the formulation of the paint, Epoxy Resin of the following grade shall be used.

SN	Characteristics	Requirement	Method of Test
1.	Weight per Epoxy equivalent on Non-volatile vehicle content basis	150-600	Cl 2.2 & 4 of IS: 9162-79 Reaffirmed 2016 or its latest version

3.2.1.2 The material shall be of such composition as to satisfy the requirements of this standard in order to obtain satisfactory rubbing properties. Use of slate powder along with suitable extenders and pigments, as may be necessary, is recommended.

3.2.2 **PACK B:**

Normally referred to as Hardener, shall be liquid type such as an Aliphatic Amine, an Aliphatic or Aromatic Amine adducts, a Polyamide or Amido Polyamine or any other suitable Hardener. It shall react with Epoxy Resin at normal ambient temperature.

4. **PROPERTIES**

4.1 **GENERAL:** The paint shall comply with the requirements specified in TABLE-I of this specification.

4.2 Unless otherwise specified, the following testing conditions shall apply.

4.2.1 The preparation of metal panels shall be in accordance with IS 101 (Part 1/Sec.3) -86, Reaffirmed 2012 or its latest version.

4.2.2 All the tests shall be conducted at room temperature ($27^{\circ} \pm 2^{\circ}\text{C}$) and a Relative Humidity at $65 \pm 5\%$ in a well-ventilated chamber free from draughts and dust. The temperature of the surface to be painted must be at least 3°C above the dew point to prevent moisture condensation.

4.2.3 For the preparation of painted panels for conducting different tests mentioned in TABLE-I, the details given in TABLE-II, shall be followed.

4.2.4 **CONDITION IN CONTAINER:**

Each Pack as delivered shall be free of gel, coarse particle, skins, foreign matter and sediments. Any sediment, that does form must be easy to stir up with a power driven mechanical stirrer again in order to give a homogenous paint.

TABLE-I: REQUIREMENTS FOR EPOXY BASED MASTIC FILLER (TWO PACK)

SN	Characteristics	Requirements	Test Method
1.	Drying time a) Surface Dry, Max. b) Hard Dry, Max c) Hard Dry at 70°C, Max.	2 Hours 8 Hours 2 Hours with 30 minutes flash off time.	IS:101(Part 3/Sec1)-86, Reaffirmed 2017 or its latest version --do-- --do--
2.	Consistency	Smooth, uniform and suitable for Knife application.	IS:101(Part 1/Sec5)-89, Reaffirmed 2019 or its latest version
3.	Finish	Smooth and matt to eggshell flat	IS: 101(Part3/Sec4)-87, Reaffirmed 2019 or its latest version
4.	Colour	Grey	IS: 101(Part4/Sec2)-89, Reaffirmed 2019 or its latest version
5.	Dry Film Thickness per coat, Min.	300 microns	IS:101(Part3/Sec2)-89, Reaffirmed 2019 or its latest version / By Elcometer
6.	Flash Point for both Packs A & B	Above 20° C	IS:101(Part1/Sec6)-87, Reaffirmed 2019 or its latest version
7.	Keeping Properties	Not less than 6 months	IS:101(Part6/Sec2)—89, Reaffirmed 2019 or its latest version
8.	Rubbing Properties	Shall not show defects viz. roughness, scratches, cracks and pinholes.	IS 5083: 1988 (Second Revision), Reaffirmed-2019 or its latest version
9.	Hold- Out Properties	Shall have uniform finish & equal absorption.	IS 5083: 1988 (Second Revision) Reaffirmed 2019 or its latest version
10.	Adhesion and Compatibility in paint system	Shall have uniform finish & good adhesion with primer and finish coat.	IS 5083: 1988 (Second Revision), Reaffirmed 2019 or its latest version
11.	Pot life, a) at 27 ±2° C Min. b) at 40 ±2° C Min	1 Hour 30 Minutes	See Note below.

NOTE: Pot life is taken as the duration up to which the mixed paint is still in a usable condition, starting from the time of mixing.

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**TABLE-II: DETAILS OF PREPARING PAINTED PANELS FOR TESTING
OF EPOXY BASED MASTIC FILLER (TWO PACK)**

SN	Test	Type of Metal Panel	Size in mm	Painting Detail	DFT in microns	Method of application	Duration of Air Drying Before Commencement of test
1.	Drying time	M.S.	150x100x1.25	One coat of Epoxy Mastic Filler	300 microns	Knife/ Spatula	-
2.	Finish	-do-	-do-	-do-	-do-	-do-	24 hrs.
3.	Colour	-do-	-do-	-do-	-do-	-do-	-do-.
4.	Dry film thickness	-do-	-do-	-do-	-do-	-do-	-do-
5	Stopping Property	-do-	300x150x0.90	One coat of Zinc Phosphate Primer(allow it to air dry for 18hrs)followed by four coats of Epoxy Based Mastic Filler after interval of 8 hrs.	60 & 1200	-do-	18 hrs & 24 hrs
6	Rubbing Property	-do-	-do-	One coat of Epoxy Zinc Phosphate Primer (Allow it to air dry for 18hrs) followed by one coat of Epoxy Based Mastic Filler	60 micron & 300 microns	Air less Spray Knife/ Spatula	18 hours & 24 hours
7	Hold out Property.	-do-	300x150x0.90	One coat of Epoxy Zinc Phosphate Primer (allow it to air dry for 18 hrs), followed by four coats of Epoxy Based Mastic Filler (giving interval of 12 hrs between successive applications), followed by two coats of Full Gloss PU Finish or one coat of PU finish semi-gloss, followed by one coat of clear PU varnish.	60 microns + 1200 microns + 80 microns.	-do-	-do-
8	Adhesion & Compatibility in paint system	-do-	150x100x1.25	-do-.	-do-	-do-	-do-