उत्पाद मानक PRODUCT STANDARD TR 10208-P

परिणामित्र TRANSFORMER

SHOP/ENGG INSTRUCTIONS

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OLD PR. SPEC. NO. BP 0674189

शीर्षक TITLE: OUTSIDE PAINTING OF TRANSFORMER RADIATORS WITH EXPOXY PRIMER (AA 56103) AND EPOXY FINISHING PAINTING (BP 56179)

1. GENERAL:

This standard details the process to be followed for painting of Transformer Radiators suitable for chemical and chlorine contaminated atmosphere, as well as corrosive atmospheres.

2. MATERIAL:

2.1	Etch Primer	: AA 56103
2.2	Chemical Resisting Epoxy Primer	: [redacted]
2.3	Chemical & Good Thermal Resistant Epoxy Enamel.	
-	Light Grey Shade No. 631 of IS: 5	: BP 56179
-	Dark admiralty Grey Shade No. 632 of IS: 5	do
2.4	Thinner for chemical Resisting Epoxy Primer and Finishing Paint	: AA 56708
2.5	White Spirit Gr. 145/205	: AA 56701
2.6	Hard Drying Clear Copal Varnish	: BP 27598

3. PREPARATION OF THE PAINTS:

3.1 Etch Primer (AA 56103)

AA 55103 Etch Primer as supplied consists of two separate ingredients viz primer base and accelerator. Shortly before use, mix together the primer base and accelerator in proportions as per the recommendation of the supplier. For both brushing as well as spraying the paint prepared as above does not require any thinning.

For approved suppliers mixing ratio is as below

Supplier's Name	Mixing Ratio in Parts by Vol
Alkali Chemical, Shalimar Asian Paints, Jenson & Nicholson	1:1

IMPORTANT NOTE:

After mixing, the paint shall be allowed to mature for 1/2 hour. The mixed paint shall be used within eight hours.

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01 SHEET REAFFIRMED AKG 26/2/03		तैयारकर्ता PR. TO / जारी किया ISSUED / दिनांक DATE

3.2 Mixing of the constituents of Epoxide Paints

The paints as supplied consist of two separate ingrediants, namely base and accelerator. Shortly before mixing and use, these shall be thoroughly stirred. The base and the accelerator shall be accurately mixed together in the proportions as given below.

Type	Shade	Supplier's Name	Grade	Mixing Ratio in parts by vol	
				Base	Accelerator
Primer	Primer Colour-Red	Berger Paints	Epilux 610	3	1
	Red	Shalimar Paints	Red Oxide Zinc Phosphate Primer) Product Ref:886/4	3	1
	Red	Asian Paints	Apcodur CP 684	3	1
	Yellow	Garware Paints	HPR 3971 (904 K4 306)	5	1
Finishing	Light Grey (No 631 IS:5)	Berger Paints	Epilux-4	3	1
		Shalimar Paints	Epigard-4	3	1
		Asian Paints	Apcodur CF 692	4	1
Finishing	Dark Grey (No 632/IS:5)	Berger Paints	Epilux-4	3	1
		Shalimar Paints	Epigard-4	2	1
		Asian Paints	Apcodur CF 691	4	1

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Accelerator should be added to the base and not the base to the accelerator. The paints shall be mixed with continuous stirring and shall be kept 1/2 hr for maturation of mixed paint until a uniform consistency is obtained.

3.2.1 Consistencies of the Paints

The paints mixed as per Cl. 3.1 shall be used at the consistencies as given below:

Description	Flow time of the Paint in cup No.4 of IS: 3944
	Spraying
1. Primer as well as finishing Paints	30 ± 2 Sec

The above consistencies shall be adjusted using epoxy thinner (cl.2.4) of these paints and flow time shall be maintained independently of temperature within normal shop variations.

IMPORTANT NOTE:

After mixing these paints shall be used within four hours.

Safety Precautions:

AA 56103 etch primer is liable to cause irritation to the skin. This may transpire into inflammation, swelling, rash or pustules on the hands, arms and occasionally on whole of the body.

Following precautions should be observed while handling this material.

a. Work place and storage rooms should be adequately veneti-lated.

b. Before starting the work, hands should be washed with soap and water and good barrier cream applied.

c. Maximum care should be taken to avoid splashes on the skin.

d. Splashings on the skin should be immediately washed with soap and water.

e. After the work, Hand, arms and Face should be washed with water.

3.3 Consistency of Copal Varnish 2.6):

Before application, any skin formed on the varnish in the container shall be carefully removed, and the varnish thoroughly stirred to ensure complete and uniform mixing of the consistituents. Care shall be taken to avoid entraining air into the varnish while stirring. The varnish shall be strained through muslin cloth or 60 mesh Nylon/metallic shieve. The consistencies of the varnish shall be adjusted to 50 ± 5 Secs, using white spirit (cl.2.5) as thinner, viscosity should be measured with flow cup no. 4 of IS: 3944 at the normal shop temperature.

4. **SURFACE PREPARATION:**

4.1 Dressing & Grinding:

After welding, all welds and flame cut edges shall be dressed and any major surface imperfections removed by grindings, if necessary.

4.2 Radiator Element

4.2.1 Degreasing:

Single radiator element after air pressure testing under water shall be wiped with clean dry cloth/pieces to remove water and shall be degreased using cloth/pieces moistioned with white spirit (cl.2.5).

4.3 Radiator Assembly

All support and bracing details including header and header cover etc. shall be shot blasted to Swedish standard SIS 055900 SA 2.5

4.4 One coat of etch primer (Cl.2.1) shall be applied within 8 hours after shot blasting.

NOTE: Before application of etch primer coat, compressed air should be passed through the opening of radiator element as well as outside surface to remove dust etc, if any.

5. **PAINTING:**

5.1 Brush/Spray painting of support and bracing details for radiator elements and radiator header and outside of header cover

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All supports and bracing details for radiator elements as well as radiator header and outside of header cover shall be brush/spray painted with one coat of Etch primer (C.2.1). The minimum air drying time shall be 4 hours at shop temperature. Thereafter two coats of epoxy priming paint (Cl. 2.2) shall be applied by brush at the surface between the flutes. Drying time after each coat shall be 24 hours.

Header inside shall be brush painted with one coat of hard drying clear copal varnish (Cl.2.6) by brushing at the specified viscosity as per clause 3.3 Varnish Coating is to be applied before welding of elements to the header and to nipple.

After welding of elements with header, damaged varnish coating, to be touched up. Alternately, a second coat of copal varnish to be applied. After welding of the nipple also damaged varnish coating to be touched up, wherever necessary.

NOTE:

During fabrication of radiator, operators have to wear breathing mask in order to protect themselves from fumes emitted by burning of paint on welding spots.

5.2 Assembly of radiators

The radiators shall be assembled after application of etch primer and epoxy priming paints on radiator elements, degreasing & rust removal of all support & bracing details for radiator elements as well as radiator header & outside of header.

5.3 Painting of assembled radiators

Assembled radiator after air pressure testing shall be painted with epoxide priming paint (Cl.2.2) and epoxide finishing (Cl.2.3) paint by Spraying.

5.3.1 First Coat of epoxy Priming Paint (Cl.2.2)

First coat of epoxy priming paint shall be applied by spraying. Thickness of this coat shall be around 30 microns.

The painted surface shall be allowed to air dry for 16 hours.

5.3.2 Second Coat of Epoxy Priming Paint:

The second coat of primer shall be applied as in clause 5.3.1 above. The painted surface shall be allowed to air dry for 16 hours before the first coat of finishing paint is applied.

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5.4 Painting of assembled radiators with Epoxide Finishing Paint (Cl.2.3) by Spraying:

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5.4.1 First Coat with Epoxide Finishing Paint (Cl.2.3):

First Coat of Epoxide Finishing Paint (Cl. 2.3) in Light Grey/Dark Grey a (as required) shall be applied at the appropriate viscosity as per clause 3 by spraying. The painted surface shall be allowed to air dry for 16 hours.

5.4.2 Second coat with Epoxide Finishing Paint (Cl.2.3)

This shall be carried out as per the clause 5.4.1 above.

NOTE:

1. In case desired dry film thickness is not achieved additional coats of finishing paint shall be applied as per Cl.5.4.1.

2. If patches of epoxy priming paint are seen than these locations will be touched up with finishing paint.

3. The painted surface shall be allowed to Air Dry at shop temperature for 4 days before shipping.

4. If it is required the radiators should then be force dried in an heating oven at a temperature of 50° - 70°C for about 2 hours.

6.0 INSPECTION FOR PROCESS CONTROL:

6.1 Thickness:

The average total dried paint film thickness after 4 coats shall be within 80 to 150 microns. However at certain local points, dry paint film thickness upto 300 microns shall be acceptable.

6.2 Adhesion Test:

This test is carried out by applying & removing pressure sensitive adhesive tape over cuts made in the paint film to ensure that adhesion of paint film to metallic substrate is adequate.

The test shall be carried out generally in line with ASTM D3359 except that pressure sensitive Adhesive Tape of 25 mm width, shall conform to IS: 2880.

Method A of ASTM D 3359 shall be followed in case thickness of film is greater than 125 microns & acceptance criterion shall be "4A" and Method B of ASTM D 3359 shall be followed when thickness of paint film is between 50 to 125 microns and acceptance criterion shall be "4B".

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