

**Duly filled Technical Pre-Qualification Requirements to be submitted
along with the offer by vendor**

[For uploading with enquiry]

Ref No: TME/PQR/Primer, Intermediate & Finish paint/IM3004 rev.02

Dated: 26/08/2026

**Technical Pre-Qualification Requirements (PQR) for
“Primer, Intermediate & Finish paint”**

Vendor should comply with the following clauses in order to qualify for supply of Primer, Intermediate & Finish paint (duly filled PQR shall be submitted along with the offer by vendor):

Cl. No.	Description	Vendor to comment	
		Complied / Not complied	Supporting relevant document to be submitted along with offer
1.	Vendor shall supply Primer, Intermediate & Finish paint as per specification & description mentioned in the enquiry.	Yes/No	Not Required
2.	Paint Manufacturer should have experience of successfully manufacturing & supplying at least 500 liters each of following paints, in preceding 5 years from enquiry opening date:- i) <u>Primer paint:</u> Two pack/component high build primer paint, Minimum volume solid 70±5%. Paint with properties as per specification TM23617 or equivalent. High Salt spray resistance up to 3000 hrs, without any defect as per ASTM B117. ii) <u>Intermediate paint:</u> Fluoropolymer resin-based under coat, Approx. volume solid 47%. Paint with properties as per specification TM23617 or equivalent. Product should be passed as per JAS JIS K 5659 standard. iii) <u>Finish paint:</u> Fluoropolymer resin-based finish coat. Approx. volume solid 38%. Paint with properties as per specification TM23617 or equivalent. Product should be passed as per JAS JIS K 5659 standard. Note: Above paints shall comply with standard EN45545 R7 HL-3 for Fire prevention measures. Vendor to ensure that documents submitted for b), c), d), e) & g) shall correlate with the submitted P.O. copy.	Yes/No	a. PO copies. b. Specification of paints. c. Material TC of paints. d. Test report as per ASTM B117 for primer paint. e. Test report as per JAS JIS K 5659 for Intermediate & finish paints. f. Test report for R7 HL3 compliance. g. Supply proof i.e. invoice.

3.	For verification of information furnished by vendor, additional documents, proofs etc. may be required by BHEL. Vendor to confirm providing the same.	Yes/No	Not Required
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Notes:

1. Compliance of all the points in above T-PQR is mandatory. In absence of compliance of above & non-submission of documents required against the T-PQR, the vendor's offer is liable to be rejected.
2. Information / compliance / documents submitted by vendor shall be authentic in all aspects. In case any deviation / false information / forged documents are observed, BHEL is free to initiate appropriate punitive proceeding against the supplier.

Important: This document is to be filled and submitted along with the offer. This document must be signed by authorized representative of the vendor and should contain the name of representative & seal of the company.

SPECIFICATION FOR PRIMER, INTERMEDIATE & FINISH PAINTS FOR VANDE BHARAT TRACTION MOTOR

1) PRIMER PAINT (EPOXY HB COATING 123 OR EQUIVALENT):

PRODUCT DESCRIPTION

Two component, high build polyamineadduct cured epoxy coating

FEATURES AND RECOMMENDED USE

- Designed as a specialized coating for railway coaches where superior corrosion resistance needed under severe corrosive environment
- Suitable for application on interior of coaches like lavatory area, turn under etc.
- Excellent resistance to industrially polluted atmospheric exposure
- Excellent resistance to acid, alkali and water
- Good scratch resistance and flexibility
- Compatible with polyurethane and fluoropolymer based finish coat
- Product complies with RDSO specification M&C/PCN/123/2018
- High salt spray resistance up to 3000 hrs. without any defect as per ASTM B 117

TECHNICAL DATA

Colour	: Grey
Gloss	: Satin
Volume Solids	: 70±5 %
Recommended DFT / Coat	: 100 - 200 microns
Theoretical Coverage Capacity	: 7sq.mtr/ ltr @ 100 microns DFT 3.5sq.mtr/ ltr@ 200 microns DFT
Drying Time at 30°C	: Surface dry : 2 hour Hard dry : 8 hours Full cure : 7 days
Overcoating interval at 30°C	: Min. : 8hours

The data given is for guideline only. The physical values are subject to normal manufacturing tolerances, colour and testing variances

The volume solids indicated are as per ASTM D 2697 air drying method.

The actual drying time/ overcoat interval may be shorter or longer, depending on film thickness, ventilation, humidity, temperature etc. The information provided above is at 30° C and 65% relative humidity.

DIRECTIONS FOR USE

Surface Preparation

General

- Surfaces must be dry, clean and free from contaminants
- Ensure removal of dirt, dust, oil and all other contaminants that could interfere with adhesion of the primer. Oil and grease should be removed as per SSPC-SP1 solvent cleaning with aromatic solvents.
- Surface should be checked and treated in accordance with ISO 8504 prior to priming

Primed Surfaces

- Steel, abrasive blast clean to min. Sa 2 1/2 or SSPC –SP6. In case oxidation has occurred between blasting and application of EpoxyPrimer, the surface should be re-blasted.
- A blasting profile of (Rz) 30 - 50 microns is recommended.

Application Conditions

- Substrate temperature should be at least 3°C above dew point but not above 50° C.
- Relative humidity should be below 85%
- Good ventilation is required in confined areas to ensure proper curing

Mixing

- EpoxyPrimer is supplied in two packs. Stir the base and hardener separately. If settling is observed in the base or hardener, loosen the settled material with the help of hand stirrer followed by power driven stirrer (at lower RPM) for quick homogenous mixing.
- Mix hardener gradually into the base under continuous stirring as per the mixing ratio. Once the unit has been mixed, it should be consumed within the working pot life. In case of part mixing (which should be avoided), close the lids of containers tightly to avoid contact with atmospheric moisture.
- Thinner should be added after mixing the components and post the induction time. Addition of excessive thinner will lead to reduced sag resistance.

Mixing Ratio (By volume)	Base : Hardener 2 : 1
Induction Time	15 Minutes
Pot Life at 30°C	2.30 hours

Application

Air Spray

Recommended thinner	: T 141
Volume of thinner	: 5 - 20 %
Nozzle Orifice	: 1.5 - 3.0 mm
Nozzle Pressure	: 0.3- 0.4 MPa (= approx 3-4 atm; 43-57 p.s.i.)

Airless Spray

Recommended thinner	: T141
Volume of thinner	: 0 - 10%
Nozzle orifice	: 0.33 - 0.41 mm (13 – 16 Thou)
Nozzle pressure	: 16-20 MPa (= approx. 160 – 200 atm; 2300 - 2800 p.s.i.)
Cleaning Thinner	: T 141

Brush / Roller

Suitable for stripe coating and small areas.	
Recommended thinner	: T 141
Volume of thinner	: 0 - 10%

Cleaning

- Do not allow the product to remain in hoses, gun or spray equipment. Clean all equipment's immediately after use with Thinner T 141. It is recommended to periodically flush out spray equipment during the course of the working day. The frequency of cleaning will depend on amount sprayed, temperature and time gap.
- All surplus material and empty containers should be disposed of in accordance with appropriate regional legislation.

Product Characteristics

- Higher film build up in single coat can be attained only by airless spray. Conventional Air spray or application using pressure pot may require multiple coats to achieve desired film build. Restrict brush and roller application only for stipe coat and for smaller areas.
- The maximum performance is achieved after complete curing.
- As common with all epoxies EpoxyPrimer will chalk and discolor on exterior exposure. However, these phenomena are not detrimental to anti-corrosive performance. The actual rate of chalking will depend upon climatic conditions and will normally be limited to a thin surface layer.

PACK SIZE	20 ltrs
STORAGE	Shelf Life: At least 12 months @ 30°C for original unopened pack, subject to inspection thereafter. Store in a cool, dry place and in accordance with local regulations
REGULATORY INFORMATION	Flash point: Base : Not less than 25° C Hardener : Not less than 25° C VOC: 290 ± 10 gm/lit Approx. as per USA-EPA Method 24 Product Weight: Approx. 1.47 ± 0.05kg/ ltr

SAFETY INFORMATION

- As a general safety measure, inhalation of solvent vapours or paint mist and contact of liquid paint with skin & eyes, should be avoided. Forced ventilation should be provided when applying paint in confined spaces or stagnant air. Even when ventilation is provided, respiratory, skin and eye protection are always recommended when spraying paint.

2) INTERMEDIATE PAINT (APCOFINE 920 OR EQUIVALENT):

PRODUCT DESCRIPTION

Two component fluoropolymer resin based undercoat with excellent recoatability

FEATURES AND RECOMMENDED USE

- Recommended as an under coat for glossy finish requirements.
- Excellent weather resistance to atmospheric exposure conditions as a system.
- Good application workability
- Excellent recoatability

TECHNICAL DATA

Colour	Range
Gloss	Glossy
Volume Solids	Approx. 47 %
Recommended DFT / Coat	35 - 50 microns
Theoretical Coverage Capacity	13.4 sq.mtr/ l @ 35 microns 9.4 sq.mtr/ l @ 50 microns
Drying time	Surface dry : 1 hour Hard dry : 16 hours Full cure : 7 days
Over coating interval	Min. : 16 hours
Method of Application	Brush, Air spray & Airless spray

The data given is for guideline only. The physical values are subject to normal manufacturing tolerances, colour and testing variances. The actual drying time/ overcoat interval may be shorter or longer, depending on film thickness, ventilation, humidity, temperature etc. The information provided above is at 30° C and 65% relative humidity.

DIRECTIONS FOR USE

Surface Preparation

General

- Surfaces must be dry, clean and free from contaminants
- Ensure removal of dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating. Oil and grease should be removed as per SSPC-SP1 solvent cleaning.
- Surface should be checked and treated in accordance with ISO 8504 prior to priming

Primed Surfaces

- Suitable epoxy primer, Epoxy based Intermediate; dry & free from all surface contamination. Apcofine 920 must be applied with the specified over-coating interval of the primer/ under-coat.
- In case of aged epoxy coating, the surface should be clean & sufficiently roughened prior to painting

Application Conditions

- Substrate temperature should be at least 3°C above dew point but not above 50° C.
- Relative humidity should be below 85%
- Good ventilation is required in confined areas to ensure proper curing

Mixing

- Apcofine 920 is supplied in two packs. Stir the base and hardener separately. If settling is observed in the base, loosen the settled material with the help of hand stirrer followed by power driven stirrer for quick homogenous mixing.
- Mix hardener gradually into the base under continuous stirring as per the mixing ratio. Once the unit has been mixed, it should be consumed within the working pot life. In case of part mixing (which should be avoided), close the lids of containers tightly to avoid contact with atmospheric moisture.
- Thinner should be added after mixing the components and post the induction time. Addition of excessive thinner will lead to reduced sag resistance.

Mixing Ratio (by volume)	: Base : Hardener 4 : 1
Induction time	: 15 minutes
Pot life at 30°C	: 5 hours
Application Brush / Roller	
Recommended thinner	: T 213
Volume of thinner	: 0 - 5 %
Air Spray	
Recommended thinner	: T 213
Volume of thinner	: 0 - 5 %
Nozzle Orifice	: 1.5 - 3.00 mm
Nozzle Pressure	: 0.3- 0.4 MPa (= approx 3-4 atm; 43-57 p.s.i.)
Airless Spray	
Recommended thinner	: T 213
Volume of thinner	: 0 - 5 %
Nozzle orifice	: 0.28 - 0.33 mm
Nozzle pressure	: 10 -13 MPa (= approx. 100-130 atm; 1400-1800 p.s.i.)

Cleaning

- Do not allow the product to remain in hoses, gun or spray equipment. Clean all equipments immediately after use with Thinner T 213. It is recommended to periodically flush out spray equipment during the course of the working day. The frequency of cleaning will depend on amount sprayed, temperature and time gap.
- All surplus material and empty containers should be disposed of in accordance with appropriate regional legislation.

Product Characteristics

- Apcofine 920 must be thinned with the recommended thinner only. Usage of alternate thinners will affect the drying and curing process.
- Premature exposure to condensation and rain may cause change in color and gloss.
- This product is not recommended for use in immersion condition. Extended exposure of strong chemicals, solvents, spillage may result in discoloration.

Overcoating

- Apcofine 920 undercoat must be top coated by Fluoropolymer based Apcofine 921.
- When overcoating after weathering or ageing, ensure the surface is free from all contaminations before application of Apcofine 920. Adhesion on such aged surface largely depends on the extent of secondary surface preparation.

PACK SIZE	20 ltr
STORAGE	Shelf Life: At least 12 months @ 30°C for original unopened pack, subject to inspection thereafter. Store in a cool, dry place and in accordance with local regulations
REGULATORY INFORMATION	Flash point: Base : Not less than 24°C Hardener : Not less than 24°C VOC: 454 ±10 gm/ ltr (depending on shades)as per USA-EPA Method 24 Product Weight: 1.11 ± 0.04 kg/ltr ((depending on shades)

SAFETY INFORMATION

- As a general safety measure, inhalation of solvent vapours or paint mist and contact of liquid paint with skin & eyes, should be avoided. Forced ventilation should be provided when applying paint in confined spaces or stagnant air. Even when ventilation is provided, respiratory, skin and eye protection are always recommended when spraying paint.

3) FINISH PAINT (APCOFINE 921 OR EQUIVALENT):

PRODUCT DESCRIPTION

Two component fluoropolymer resin finish with excellent durability

FEATURES AND RECOMMENDED USE

- Excellent weather resistance to atmospheric exposure conditions
- Excellent gloss and colour retention on exposure conditions like infrastructure, bridges, storage tank exteriors etc.
- Good application workability
- Low surface energy and easy clean property
- Excellent chemical resistance properties such as oil resistance, sea water resistance and acid resistance etc.

TECHNICAL DATA

Colour	Light Grey
Gloss	Glossy
Volume Solids	Approx. 38 %
Recommended DFT / Coat	25 - 35 microns
Theoretical Coverage Capacity	15.2 sq.mtr/ l @ 25 microns 10.8 sq.mtr/ l @ 35 microns
Drying time	Surface dry : 1 hour Hard dry : 16 hours Full cure : 7 days
Over coating interval	Min. : 16 hours
Method of Application	Brush, Air spray & Airless spray

The data given is for guideline only. The physical values are subject to normal manufacturing tolerances, colour and testing variances
The actual drying time/ overcoat interval may be shorter or longer, depending on film thickness, ventilation, humidity, temperature etc.
The information provided above is at 30° C and 65% relative humidity.

DIRECTIONS FOR USE

Surface Preparation

General

- Surfaces must be dry, clean and free from contaminants
- Ensure removal of dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating. Oil and grease should be removed as per SSPC-SP1 solvent cleaning.
- Surface should be checked and treated in accordance with ISO 8504 prior to priming

Primed Surfaces

- Suitable epoxy primer with fluoropolymer based undercoat; dry & free from all surface contamination. Apcofine 921 must be applied with the specified over-coating interval of the primer/ under-coat.

Application Conditions

- Substrate temperature should be at least 3°C above dew point but not above 50° C.
- Relative humidity should be below 85%
- Good ventilation is required in confined areas to ensure proper curing

Mixing

- Apcofine 921 is supplied in two packs. Stir the base and hardener separately. If settling is observed in the base, loosen the settled material with the help of hand stirrer followed by power driven stirrer for quick homogenous mixing.
- Mix hardener gradually into the base under continuous stirring as per the mixing ratio. Once the unit has been mixed, it should be consumed within the working pot life. In case of part mixing (which should be avoided), close the lids of containers tightly to avoid contact with atmospheric moisture.
- Thinner should be added after mixing the components and post the induction time. Addition of excessive thinner will lead to reduced sag resistance.

Mixing Ratio (by volume)	: Base : Hardener 4 : 1
Induction time	: 15 minutes
Pot life at 30°C	: 5 hours
Application Brush / Roller	
Recommended thinner	: T 213
Volume of thinner	: 0 - 5 %
Air Spray	
Recommended thinner	: T 213
Volume of thinner	: 0 - 5 %
Nozzle Orifice	: 1.5 - 3.00 mm
Nozzle Pressure	: 0.3- 0.4 MPa (= approx 3-4 atm; 43-57 p.s.i.)
Airless Spray	
Recommended thinner	: T 213
Volume of thinner	: 0 - 5 %
Nozzle orifice	: 0.28 - 0.33 mm
Nozzle pressure	: 10 -13 MPa (= approx. 100-130 atm; 1400-1800 p.s.i)

Cleaning

- Apcofine 921 must applied over fluoropolymer based undercoat i.e. Apcofine 920 recommended by Asian Paints PPG representative.
- Overcoating after weathering or ageing, ensure the surface is free from all contaminations before application of Apcofine 921. Adhesion on such aged surface largely depends on the extent of secondary surface preparation.

Product Characteristics

- The gloss and finish of Apcofine 921 are dependent on the application method. The best gloss and finish is achieved by conventional spray application.
- Apcofine 921 must be thinned with the recommended thinner only. Usage of alternate thinners will affect the drying and curing process.
- Premature exposure to condensation and rain may cause change in color and gloss.
- This product is not recommended for use in immersion condition. Extended exposure of strong chemicals, solvents, spillage may result in discoloration.

Overcoating

- Apcofine 921 must be applied over fluoropolymer based undercoat i.e. Apcofine 920.
- Overcoating after weathering or ageing, ensure the surface is free from all contaminations before application of Apcofine 921. Adhesion on such aged surface largely depends on the extent of secondary surface preparation.

PACK SIZE	20 ltr
STORAGE	Shelf Life: At least 12 months @ 30°C for original unopened pack, subject to inspection thereafter. Store in a cool, dry place and in accordance with local regulations
REGULATORY INFORMATION	Flash point: Base : Not less than 24°C Hardener : Not less than 24°C VOC: 568 ± 1 0gm/ ltr (depending on shades) as per USA-EPA Method 24 Product Weight: 1.08 ± 0.04 kg/ltr (depending on shades)

SAFETY INFORMATION

- As a general safety measure, inhalation of solvent vapours or paint mist and contact of liquid paint with skin & eyes, should be avoided. Forced ventilation should be provided when applying paint in confined spaces or stagnant air. Even when ventilation is provided, respiratory, skin and eye protection are always recommended when spraying paint.

Note: Above paints shall comply with standard EN 45545 R7 HL-3 for Fire prevention measures.