


RAIL COACH FACTORY KAPURTHALA

MD35131

Date: 17-04-2018

Sub: Issue of specification no. MDTS-47316 Rev-0 Schedule of Technical requirements of Two components anti graffiti hydrophobic coating for SS Washbasin and Lavatory Pans.

Please find enclosed a copy of specification no. MDTS-47316 Rev-0 Schedule of Technical requirements of two component anti graffiti hydrophobic coating for SS Washbasin and Lavatory Pans, for information and necessary action at your end.


(D K Singh)
Dy CME/D-2
17/04/18

CQM, CPLE, CWE (Fur), CMM/HSQ, CMM/Tkj, Dy. CMM/Fur/LHB, Dy CMM/G CMT,
Dy.CPLE-III ,

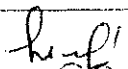


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Copy for kind information to:


CDE

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| SPECIFICATION | SCHEDULE OF TECHNICAL REQUIREMENTS TWO COMPONENT ANTI GRAFFITI HYDROPHOB IC COATING FOR SS WASHBASIN AND LAVATORY PANS | MDTS 47316 Rev-Nil PAGE 1 OF 6 DATED 17.04.2018 |
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| NAME | DESIGNATION | SIGNATURE | DATE | LEVEL |
|--------------|-------------|---|---------|-------------------|
| Harish Kumar | SSE/Dev |  | 17/4/18 | Prepared |
| D. K. Singh | Dy CME/D-2 |  | 17/4/18 | Agreed & Reviewed |
| R. Mukund | CDE |  | 17/4/18 | Approved |

| Issue / Rev. | Details of changes | Date |
|--------------|--------------------|------|
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1. Scope:

- a. This schedule covers the technical requirement, method of tests and sampling for Two Component topcoat systems based on Silicon modified Poly Aspartic coating Anti graffiti hydrophobic coating suitable for use on stainless steel washbasin and lavatory pans of Indian Railway passenger coaches
- b. While quoting, the supplier shall submit the following details :
 - i Technical data sheet and safety data sheet of the offered product.
 - ii Clause-wise comments on the specification.
 - iii Deviation statements with respect to specification, if any.
 - iv Credentials and performance of the original supplier.
 - v Performance and areas of usage of offered material in Railway Passenger Coaches or similar applications.
 - vi Test certificates from NABL certified Labs or reputed International Lab (latest test report or within last one year) indicating compliance to all the test parameters.

In absence of any of the details for offered product, offer may not be considered.

2. Introduction:

The coating material shall be clear, semi gloss, low VOC, free flowing two Component topcoat systems based on silicon modified Poly Aspartic Anti graffiti hydrophobic coating for easy to spray on stainless steel wash basin and lavatory pans or on other stainless steel surfaces. Coating material shall be free from any odor once cured. Coating should help in preventing scale buildups and shall be cleaned easily with normal water. Coating shall be available in transparent or pleasant colors as per choice to improve aesthetic of the coaches and good hygiene feel inside the toilets.

Two component, room temperature vulcanizing (RTV), moisture cure protective coating shall provide anti-graffiti properties, chemical and weather resistance, hydrophobic and water repellency making the cleaning easy after coating. Anti-Graffiti Protective Coating shall forms chemical bonds with the host surface to enhance adhesion properties without requirement of abrasive blasting/ priming/ extensive site preparation. Due to the hydro-phobicity of the coating, graffiti-tagging shall easily be removal from protected surfaces using water under high pressure.

3. Surface Requirements:


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3.1 Surface preparation:

- a. Substrate Stainless steel
- b. Surface preparation Surface shall be clean, grease free. Shall be cleaned with metal conditioner and dry cotton cloth

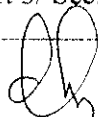
4.0 General Requirements/ Properties:

- 4.1 The coating shall comply with the requirements specified in Table I of this specification.
- 4.2 Unless otherwise specified, all the tests shall be conducted at room temperature (27± 2°C) and a relative humidity 65 ± 5% in a well-ventilated chamber free from draughts and dust. Test panels shall be prepared with steel/stainless steel sheet with 80-100 µ.
- 4.3 As the coating is a thixotropic gel it is necessary to mix by an air powered agitator (300 – 400 rpm) for a minimum of 5 minutes, to ensure an even consistency of coating is obtained without air in suspension.
- 4.4 Application Equipment: The product shall be applied using high pressure plural component spray equipment operated by a suitably trained operator as per manufacturer's recommendation at 4-6 bars.
- 4.5 Number of coats: 2

Table- I

| S. N. | Characteristics | Requirements | Test Method |
|-------|--|--|--|
| 1. | (a) Surface dry (b) Tack Free (c) Hard Dry | 5 min (Max) 15-20 Min 2-2.5 Hrs (Max) | IS : 101-86 (Part 3/ Sec. 1) at atmospheric condition of 27±2°C and 60±5% RH |
| 2 | Chemical Base | Silicon based on Poly-Aspartic | |
| 3 | VOC Content | 350-400 g/l | DIN EN ISO 11890-1 / ASTM D- 1259 |
| 4. | Mixing Ratio (By Volume) | Component A: 2 Component B: 1 | |
| 5. | Consistency | Smooth and uniform, suitable for spray application | IS : 101-89 (Part 1/ Sec.5) |
| 6. | Finish | Semi Gloss | IS : 101-87 (Part 3/ Sec. 4) |



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| 7 | Color | Clear | IS: 101-89 (Part 4/ Sec. 2) |
| 8. | Dry film thickness | 80-100 μ | IS: 101(Pt.3/Sec.2)-89 By Elcometer/thickness gauge meter/DFT meter |
| 9 | Volume Solid | 60 \pm 3% | IS: 101-86 (Part 8/ Sec-6) |
| 10 | Density (g /cm ³) | 1.0 to 1.04 | IS : 101-87 (Part 1/ Sec. 7) |
| 11 | Theoretical Spreading (Covering Capacity), min | 9 Sq. m /L for 80 μ | IS-101-88 |
| 12. | Viscosity @ 25°C | 30-40 secs | |
| 13. | Keeping Properties for both the packs | Min. 12 months | IS : 101-86 (Part 6/ Sec-2) |
| 14 | Porosity | No pinhole | Visual |
| 15. | Pot Life at 20°C | 1.5 Hrs | App. G of MDTS-094 |
| 16. | Contact Angle in water | >105 | ASTM D-7334 |
| 17. | Surface Energy in water | <20mN /m | ASTM D-7334 |
| 18. | Graffiti Resistance | < 10cycle | ASTM D-2486 |
| 19. | Anti-Graffiti requirement | Clean-ability: level- I No signs of graffiti left after clean-up; no visible signs of streaking, cracking, pin holing , discoloration or other coating degradation upon casual examination | ASTM D-7089(Graffiti remove with high pressure cold water wash) |
| 20 | Graffiti Resistance after 1000 hrs of QUV | <40 cycle | ASTM D-2486 |
| 21 | QUV Resistance | Gloss retention > 90% with hrs >1000 | ASTM D-2486 |
| 22. | Chemical Resistance - Acid Test - 8 hrs (37% H ₂ SO ₄) | No film defect | ASTM D-1308 |
| 23. | Chemical Resistance -- (40% NaOH) -24 hrs | No film defect | ASTM D-1308 |
| 24 | Flash Point | 10 min before bake | |


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| 25 | Hardness | 2H | IS : 101-87 (Part 5/ Sec. 1) |
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* Where testing method not specified, testing of coating shall be done as per IS:101.


5.0 Marking and Packing:


Each container shall be marked with the following:-

- a. Name of the material
- b. Source of manufacture
- c. Volume of the material
- d. Batch No. or Lot No. in code or otherwise and
- e. Month & year of manufacture
- f. Shelf life of paint /material on container and temperature to be stored at.

6.0 Testing & prototype approval:

- 7.1 The firm who has not got their prototype sample approved earlier, shall submit following for prototype approval from CDE/RCF or user railways:
 - 7.1 Two test samples of minimum size 300X300 mm Stainless Steel panel coated with paint.
 - 7.2 Test certificates from NABL certified Labs or reputed International Lab (latest test report or within last one year) indicating compliance to all the test parameters.
 - 7.3 Material safety data-sheets
- 7.2 The regular supply/application shall be undertaken only after the prototype approval.


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APPENDIX -I

KEEPING PROPERTIES

When stored under cover in a dry place in the original sealed containers under normal temperature conditions, the material shall retain the properties prescribed in the specification for the stipulated period from the date of manufacture which shall be subsequent to the date of placement of contract.


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