

RAIL COACH FACTORY, KAPURTHALA

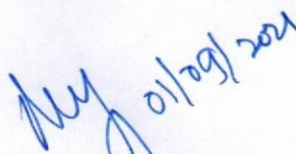
MD35131

Dated: 01/09/2021

Sub: Issue of Amendment No 02. of MDTS-262 Rev-02 for WATER BASED SOUND DEADENING/DAMPENING SPRAY-ABLE PAINT FOR LHB DESIGN COACHES.

Please find attached copy of Amendment No 02. of MDTS-262 Rev-02 for WATER BASED SOUND DEADENING/DAMPENING SPRAY-ABLE PAINT FOR LHB DESIGN COACHES for future procurement.

This has the approval of competent authority.


(Abhey Dogra)
Dy.CME/D-II

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

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AMENDMENT NO. 02 OF MDTS 262, Rev 02 SCHEDULE OF TECHNICAL REQUIREMENTS FOR SINGLE COMPONENT WATER BASED SOUND DEADENING/DAMPENING SPRAY-ABLE PAINT FOR LHB DESIGN COACHES

Para 6.2 Thermal Conductivity Rate modified as under:
Thermal conductivity rate shall be less than 0.24 W/mK, when tested at 35°C as per **ASTM C815** or **ISO 22007-2**.

Para 4.0 Fire properties modified as under:
S.No. 1 to 4 deleted from table -1.

Rejith Kumar
SS E/fin-111
PREPARED BY

[Signature]
09/09/2021
AGREED BY

SPECIFICATION	SCHEDULE OF TECHNICAL REQUIREMENTS FOR SINGLE COMPONENT WATER BASED SOUND DEADENING/DAMPENING SPRAY-ABLE PAINT FOR LHB DESIGN COACHES	MDTS 262, Rev-02 PAGE 1 OF 6 DATED 04.11.2020
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NAME	DESIGNATION	SIGNATURE	DATE	LEVEL
Harish Kumar	SSE/Dev		04.11.2020	Prepared
Ravi Ranjan	ADE/Fur		04.11.2020	Agreed
Abhey Dogra	Dy CME/D-II	Abhey Dogra <small>Digitally signed by Abhey Dogra Date: 2020.11.27 10:57:54 +05'30'</small>	04.11.2020	Reviewed
Akhilesh Misra	CDE		04.11.2020	Approved

Issue/Rev	Details of Changes	Date
Rev.01	1. Consumption of material at S. No. 6.3 revised to 700 kgs. 2. Clause vi of S. No. 1.2 modified.	03.06.2016
Rev.02	1. Para 1.2 and 7.1 modified. 2. Para 9.0 – Type of test added.	04.11.2020

Prepared by

Agreed by

SPECIFICATION	SCHEDULE OF TECHNICAL REQUIREMENTS FOR SINGLE COMPONENT WATER BASED SOUND DEADENING/DAMPENING SPRAY-ABLE PAINT FOR LHB DESIGN COACHES	MDTS 262, Rev-02 PAGE 2 OF 6 DATED 04.11.2020
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SCOPE:

- 1.1. This specification covers the general & technical requirements for single component water based sound deadening/dampening spray-able paint. This paint shall be coated on the interior of coach shell to provide structural bound sound deadening/dampening. The supplier shall apply the paint on the interior of coach shell at RCF premises.
- 1.2. While quoting, the supplier shall submit the following details :
- i Performance and areas of usage of offered material in Indian Railway Passenger Coaches/ International Railways or any other Railway OEM for similar applications.
 - ii Technical data sheet of the offered product.
 - iii Clause-wise comments on the specification.
 - iv Deviation statements with respect to specification, if any.
 - v Credentials and performance of the original supplier.
 - vi All Test certificate as per requirements laid down para 10 of this specification and the testing lab should be accredited as per ISO/IEC-17025 to perform/conduct all tests.

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

2. Material Base:

- 2.1 Single component water based sound insulating coating shall be visco-elastic spray-able liquid sound dampening coating to provide structural-bound sound deadening/dampening in structures of Railway coaches and shall be ready for use.
- 2.2 Structure and surface of applied paint: The dried paint's structure and surface shall be free of bubbles, foam .
- 2.3 Chemical Base of paint : Aqueous synthetic Resin dispersion and must be isocyanate free and PVC free.
- 2.4 Colour : Beige/Grey to White

3.0 Technical Requirements

- 3.1 *Spray coating:* A coating thickness of 1.2 to 1.5 mm (DFT) is required in a single coating with Air Spray Gun/Airless equipment with 4-7 bar pressure with suitable nozzle size. The approx. area to be covered with paint in coach shell should be as per drg. no. 1 10113.0.21.110.001 or 1 11012.0.21.110.001 (Drawing shall be referred only for area to be covered and not for thickness of paint).

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- 3.2 *Adhesion:* The paint coating shall have excellent adhesion to stainless steel surface sand-blasted to Sa 2½ of ISO:8501-1 and shall have minimum strength adhesion- 4A when tested as per ASTM D 3359 or 4 N/mm² when tested with ASTM D-4541.
- 3.3 *Thixotropic:* The paint coating must not sag when sprayed in coating thickness of 1.2 to 1.5 mm on a vertical surface.
- 3.4 *Drying time:* The drying time of paint coating shall be as per followings:
- | | |
|-----------------------|--------|
| At ambient conditions | 48 hrs |
| At 40 ° C convection | 08 hrs |
| At 80 ° C convection | 03 hrs |
- 3.5 *Coverage:* The paint formulation must give a minimum of 0.3 sq. m/kg for coverage of 1.5 mm (DFT) coating on flat surface.
- 3.6 *Cleaning thinner:* Water, before drying.
- 3.6.1 *Dilution by weight :* No
- 3.7 *Specific gravity(wet):* 1.3 to 1.6 g/ml at 23°C (ASTM D-1475):
- 3.8 *Volume solids:* 60% to 70%
- 3.9 *In service Temperature:* - 40 ° C to 120 ° C.
- 3.10 *Penetration test (Viscosity Indicator):* should be 36mm to 40mm, when tested as per DIN 51580 (Aluminium shell, cone-150 gm, 6 seconds, at 20°C).
- 3.11 *pH value:* 9-10.
- 4.0 **Fire properties:**

The dried paint coating when subjected to fire test must conform to following parameter laid down in Table-1:

Table-1

<i>S.No</i>	<i>Properties</i>	<i>Values</i>	<i>Test Method</i>
1.	In-flammability class/ Surface spread of flame	S4	DIN 5510 Part 2
2.	Smoke generation classes	SR2	DIN 5510 Part 2
3.	Droplet formation classes	ST2	DIN 5510 Part 2
4.	Smoke density & Toxicity	FED (fraction effective dose) less than 1.0	DIN-5510 & ISO 5659-2

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5.	Optical Density of Smoke	D _{1.5} < 100 D _{4.0} < 200	ASTM E662
6.	Spread of flame	Should meet fire protection requirements R1 and Hazard level HL3 as per EN 45545.	ISO 5658-2
7.	Smoke toxicity & density		ISO 5659-2
8.	Heat release rate		ISO 5660-1

5.0 Sound insulation:

The following sound insulation parameter shall be fulfilled when test sample is prepared as per EN ISO 6721-1 on steel panel.

Table-2

<i>Description</i>	<i>Test Frequency</i>	<i>Loss Factor (min)</i>	<i>Test</i>
Dampening Loss factor at 20°C	200 Hz	0.19	DIN EN ISO 6721-3 (thickness ratio coating to steel 2:1)

6.0 Other Parameters:

- 6.1 *Corrosion prevention:* There shall be no sign of corrosion/ deterioration for 7 days when tested as per IS: 101-88 (Part 6 Sec-1).
- 6.2 *Thermal Conductivity Rate:* Thermal conductivity rate shall be less than 0.24 W/mK, when tested at 35°C as per DIN 52612.
- 6.3 *Consumption of Material:* Consumption of material should not be more than 700 kg.
- 6.4 *Shelf life:* Shelf life should be 9 months from the date of manufacturing and available shelf life of the product, when supplied to Railway, shall be minimum 6 months.

7.0 Testing & prototype approval:

- 7.1. Tenderer shall submit following for the prototype approval by CDE
- 7.1.1. Two test samples of minimum size 300X300 mm steel plate coated with paint.
- 7.1.2. All Test certificate as per requirements laid down para 9 of this specification and the testing lab should be accredited as per ISO/IEC-17025 to perform/conduct all tests.
- 7.1.3. The samples submitted shall be tested for each parameters laid down in the specification.
- 7.1.4. Material safety data-sheets

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- 7.2. After getting approval of above from RCF, the supplier must demonstrate conformity of the paint formulation to the application process on interior of one coach shell, within RCF premises using standard equipment, prior to bulk supply of the paint.
- 7.3. The regular supply shall be undertaken only after the approval of application of paint on interior of prototype coach shell.
- 7.4. This clause is applicable for first time supply of a supplier. However, RCF shall have the right to repeat prototype approval process in subsequent order also; in this regard RCF decision shall be final.

8.0 Application process & testing requirement for supplier during Bulk Supply :

After getting the prototype approval of paint on the coach, the supplier shall install following application and testing facilities at RCF for bulk supply and un-interrupted application of paint:

- 8.1. The supplier shall have calibrated testing equipment available with the application team to check parameters e.g. coating thickness, adhesion strength, thixotropic, drying time and coverage area to check these values on coach painted surface.
- 8.2. *Identification Marking:* The supplier shall fix metallic sticker on each interior coach shell painted mentioning name of supplier, PO no and it's date, lot no. and month & year of painting. These stickers shall not be visible to passengers and shall be easily traceable during POH.
- 8.3. The supplier shall clearly mark supplier name, PO no and date, lot no, container capacity, date of manufacture of paint and storage instruction on each container. The supplier must keep the following records for traceability for at-least six years:
- o Name of supplier
 - o PO no and date
 - o Date of coach painting
 - o Coach shell number painted.
 - o Type of coach
 - o Qty of paint used
 - o Nos. of container used and their capacity
 - o Lot no. and date of supply to RCF

9.0 Type of Tests:

The paint shall be subjected to the following types of test during different stage of design approval:

SN	Category of test	Remarks	Parameters
1	Type Tests	These tests shall be done on a	•Fire & Smoke

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	(Prototype)	sampled lot of prototype. Such Tests are required only on initial approval, change of design and change of manufacturing process. These tests shall be done as pre-requisite for design approval or as specified.	characteristics (Table-I) • Sound dampening (Table-2)
2	Routine tests	These tests are required to verify the functional working of the system. These may require simulated in-puts for testing the operation under full range of in-puts. These tests shall be done by the manufacturer during manufacturing and record maintained for inspection. These tests are to be repeated after every 12 months or as specified.	• Thermal conductivity • Corrosion Prevention test
3	Acceptance tests	These tests shall be done on all or samples of lot for bulk supply. Sampling shall be done as per IS:2500 These tests shall normally consist of routine tests and additionally specified in the contract.	• Spray Coating • Adhesion • Drying Time • Viscosity/ Penetration test • Density • pH Value • Volume solid

However, if the consignee or inspecting agency desires to do the tests, the supplier should not deny the same. There are various circumstances when may be needed e.g.:

- There is any design change or as per requirements of the users.
- In case of doubt in type test certificate(previous)
- Complaint regarding type test certificates
- Failure of material attributable to any of the parameters covered in type tests, etc.