

RAIL COACH FACTORY KAPURTHALA




MD35131

Dated: 30-10-2017

**Sub: Issue of specification no. MDTS-207 Rev-04 Schedule of requirements of Resin Bonded Fiber Glass Wool Insulation Laminated on one Side with Heat Resistant Aluminium Foil**

Please find enclosed a copy of specification no. MDTS-207 Rev-04 Schedule of requirements of Resin Bonded Fiber Glass Wool Insulation Laminated on one Side with Heat Resistant Aluminium Foil , for information and necessary action at your end.

  
(D K Singh)  
Dy CME/D-2

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

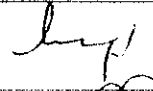

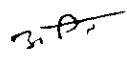
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NAME	DESIGNATION	SIGNATURE	DATE	LEVEL
Harish Kumar	SSE/Dev		26.10.17	Prepared
D. K. Singh	Dy.CME/D-II		26.10.17	Agreed and Reviewed
A K Kathpal	CDE		26.10.17	Approved

Issue / Rev.	Details of changes	Date
Rev01	Properties of the Aluminum foil have been specified.	10/05/2010
Rev02	Para 5.0 Modified. QPC of glass wool deleted as the same is given in the concerned drawing. Old thickness of glass wool given in the drawings added in the table.	03/11/2010
Rev-03	Over-all specification modified. Eligibility criteria, prototype approval added. Fire characteristic requirements to EN-45545-(2) added	04-08-2016
Rev-04	Para 8.0 – Classification of test added.	26-10-2017

  
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**1.0 Scope:**

This specification covers generally the requirements for resin bonded fibre glass wool insulation to Spec. no. IS 8183 (Group-1) laminated with single side heat resistant aluminum foil.

The test and properties of the Resin Bonded Fibre Glass Wool shall be as covered in this specification. The single side laminated heat resistant aluminum foil used for laminating resin bonded fibre glass wool shall not give any adverse effect on the properties of glass wool.

**2.0 Schedule of Requirements for Resin Bonded Fibre Glass Wool:**

- 2.1 Required thickness should be 30mm, 60 mm, 70 mm, 80mm or as specified by the purchaser.
- 2.2 The insulation shall be suitable for application with suitable adhesive on steel sheets or on any other surface and shall firmly adhere to the surface on which it is applied.
- 2.3 The glass wool shall satisfy all the requirements including the optional ones covered in Group-I of specification IS:8183:1993 except for the bulk density. The material must also meet the requirements mentioned in Table-I and the followings:
  - 2.3.1 The resin bonded fibre glass wool insulation shall be laminated on one side with single side heat resistant and vapour barrier aluminum foil.
  - 2.3.2 The resin bonded fibre glass wool shall be laminated with aluminium foil with heating and must not be not glued to the foil. The aluminum foil should meet the requirements mentioned in Table-II and Table-III.
  - 2.3.3 The supplier shall be able to produce WTC (Work Test Certificate) for Glass wool and Aluminum foil from the OEM with each lot of supply.

**Table-I**

<i>S.No</i>	<i>Properties</i>	<i>Values</i>	<i>Test Method</i>
a.	Density (for glass wool only)	20 kg/m <sup>3</sup> ± 15 %	Clause 9 of IS: 3144-1992.
b.	Thermal Conductivity (K-value)	<b>Max 0.390 mW/cm<sup>0</sup>C for mean temperature of 25 deg. C.</b>	IS:3346
c.	Fire & Smoke characteristics	R1, HL3	EN 45545(2):2013 (Table 5)

  
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i.	Lateral spread flame CFE (Minimum)	20 kW/m <sup>2</sup>	ISO-5658-2
ii.	Heat release rate (Cone calorimeter method) <i>MARHE</i> (Max.)	60 kW/m <sup>2</sup>	ISO:5660-1 : 50 kW/m <sup>2</sup>
iii.	Smoke generation D <sub>s</sub> (4) (Max)	150 dimensionless	EN ISO:5659-2 : 50 kW/m <sup>2</sup>
iv.	Smoke generation VOF <sub>4</sub> (Max)	300 min	EN ISO:5659-2 : 50 kW/m <sup>2</sup>
v.	Gas analysis in smoke chamber using FTIR technique CIT <sub>G</sub> (4) (Max)	0.75 dimensionless	EN ISO:5659-2 : 50 kW/m <sup>2</sup>

**3.0 Eligibility Criteria:**

- 3.1 Tenderer shall be either OEM or an authorized dealer of OEM. The tenderer should submit tender specific authorisation of the OEM along with the bid and contact details (address, phone no., fax no., e-mail) of OEM.
- 3.2 The OEM of resin bonded fibre insulation shall be supplier of the offered (Part no./Brand Name) material to Indian/International Railways and/or automotive industries. The tenderer shall submit proof of supply and performance feedback along with the offer.
- 3.3 While quoting, the tenderer shall submit the following details along with the offer:
- Part no./Brand Name and OEM of offered product.
  - Credentials and performance of the OEM.
  - Clause wise comments and technical compliance to the specification.
  - Test certificates from internationally Accredited labs/Indian Government Labs as per IS:8183/IS:3144/EN45545 (2):2013 from OEM for all the parameters.
- 3.4 Test certificates from Internationally Accredited Labs as per ISO/IEC-17025 from OEM for all the parameters for fire and smoke characteristics as per requirements laid down at Table-I.
- 3.5 For other parameters mentioned in this specification and IS 8183, test certificates from NABL/Internationally Accredited Labs shall be submitted.

  
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- 3.6 Authorized dealer is required to submit test certificates from OEM only. Test certificates submitted by authorized dealer after conducting tests at their end/any outside agency shall not be accepted.
- 3.7 In absence of any of the above details for the offered product, offer shall not be considered.

**4.0 The Schedule of Requirements for aluminium foil shall be below**

- 4.1 Construction : The aluminium foil will consist to following layers:

**Table-II**

S.No.	Facing Composition	Description	Specified Value
i.	Foil	Aluminum	6.5-8.0 Microns
ii.	Adhesive	Flame resistant	--
iii.	Kraft	Natural	Density 45-55 g/ m <sup>2</sup>
iv.	Reinforcing	Tri-way fibre glass and polyester	20/100mm (XD) min 20/100mm (MD) min

- 4.2 **Properties:**


**Table-III**

S.No.	Physical Properties	Specified Value	Test Method
i.	Basic weight	100-125 g/ m <sup>2</sup>	Scale
ii.	Water Vapour Transmission rate	1.1-1.2 ng/N.s	ASTM E 96 Procedure-A
iii.	Bursting Strength	3.5-5.0 Kg/ m <sup>2</sup>	ASTM D 774
iv.	Tensile Strength	7.5 (min)kN/m(MD) 4.5 (min)kN/m(XD)	ASTM C 1136
v.	Caliper Thickness	180-210 microns	Micrometer
vi.	Water immersion	No de-lamination	24 hrs at 20-25°C
vii.	Mold resistance	No growth	ASTM C 1136/ C 1338
viii.	Emissivity	0.03	ASTM E 408
ix.	Temp resistant	Remains flexible, No de-lamination	4 hrs at 116°C
x.	Dimension Stability	0.25% (max)	ASTM D 1204

**5.0 Prototype Approval:**

The prototype approval is applicable on the first supply of material as per this specification form a supplier. Firm should submit prototype sample after placement of PO for approval by EDE/RCF before bulk supply along with following documents:

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- i. Authorization certificate from OEM in case the supplier is an authorized dealer of the OEM.
- ii. Technical and safety data sheets of the offered part no./Brand Name.
- iii. Test certificates from internationally Accredited labs/Indian Government Labs as per IS:8183/IS:3144/EN45545 (2):2013 from OEM for all the parameters.

Authorized dealer is required to submit test certificates from OEM only. Test certificates submitted by authorized dealer after conducting tests at their end/any outside agency shall not be accepted.

#### 6.0 Marking and Packing:

- i. Each roll shall bear proper batch number, manufacturer's name with month and year of manufacture and same shall be verified & traceable from the submitted WTC of the OEM.
- ii. The individual rolls of the material shall be vacuum packed and transported in Hessian or gunny cloth so as to avoid any damage during transportation and handling.

7.0 The thickness of glass wool to be applied on different coaches is mentioned in Table –IV, which may be in variance to respective drawings.

**Table-IV**


S.No.	Coach Type	Applicable Thickness	Thickness mentioned in Drawings
i.	ICF design AC Coaches	30 mm 60 mm 70 mm 80 mm	25 mm 50 mm 65 mm 75 mm
ii.	ICF design Non-AC Coaches	30 mm	25 mm
iii.	Non-AC LHB Coaches	30 mm	25 mm
iv.	AC LHB Coaches	60 mm	60 mm

#### 8.0 Classification of tests:

a. Testing of following parameters as mentioned in this specification shall be treated as type tests and shall be repeated every 12 months:

- Thermal Conductivity
- Resistance to Micro-organisms
- Odour Emission Test
- Parameters mentioned for aluminum foil.
- Fire & Smoke characteristics

  
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However, if the consignee or inspecting agency desires to do the type tests, before 12 months, the supplier should not deny the same. There are various circumstances when type tests may be needed on next supply before one year of last supply/ last type tests e.g.:

- 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.

b. All other parameters shall be checked as per acceptance tests.

  
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