

Annexure E

**INDIAN RAILWAYS**

सत्यमेव जयते

**FUNCTIONAL REQUIREMENTS OF SPECIFICATION FOR  
EVERY TRIP WASHABLE BLANKET AND PILLOW FOR USED IN  
INDIAN RAILWAY AC COACHES.****Issued By:****Research Designs and Standards Organization  
Manak Nagar, Lucknow - 226011.**

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## FUNCTIONAL REQUIREMENTS OF SPECIFICATION FOR EVERY TRIP WASHABLE BLANKET AND PILLOW FOR USED IN INDIAN RAILWAY AC COACHES.

### 1. FOREWORD

Indian Railway is intended to improve the cleanliness and hygienic level of pillows and blanket, at present blankets and pillows are not washed in every trip for AC Coaches.

### 2. SCOPE

This specification covers the functional requirement for every trip washable blanket and pillow for used in Indian railway ac coaches. The operating conditions is normal air-condition environment suitable for human body.

#### 1.0 FUNCTIONAL REQUIREMENTS:

A) The washable blanket should have following functional requirements: -

1. Fire retardant properties as per existing RDSO standards or as per EN 45545. This property should not diminish either with aging or repeated washing.
2. There should not be any chemical coating over the surface to achieve flame retardancy.
3. It should maintain dimension stability and have no shrinkage/enlargement.
4. It should have sufficient length and width to cover from head to toe.
5. Corner and edge of blanket are interlock/ piped.
6. It should be easily pliable and free from tackiness.
7. It should be washable in every trip, and colour fastness of blanket should not diminish due to repeated washing.
8. It should be odourless, wrinkle free, antibacterial, anti- allergic and safe for skin.
9. Softness of fibre is not compromised due to repeated washing.
10. It occupies less ground space.
11. It should be lightweight, warm and comfortable to general passengers.
12. Design of Blanket should be pleasant

B) The washable pillow should have following functional requirements: -

1. Fire retardant properties as per existing RDSO standards or as per EN 45545. This property should not diminish either with aging or repeated washing.
2. There should not be any chemical coating over the surface to achieve flame retardancy.
3. Cushioning effect of pillow will not be affected for a definite life cycle.
4. It should maintain dimension stability and have no shrinkage/enlargement.
5. Sharp Corner in pillow should be avoided.
6. It should be washable in every trip, and colour fastness of pillow are not diminishes due to repeated washing.
7. It should be odourless, wrinkle free, antibacterial, anti- allergic and safe for skin.
8. Softness of fibre and cushioning is not compromised due to repeated washing.
9. It should compress easily so that it occupies less ground space.

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10. It should be lightweight.
11. Pillow design should fulfil ergonomic criterion.
12. Lumps should not form during washing in every trip
13. Firm will furnish the various test requirements such as capability of product in terms of 3d deformation, ventilation, durability, thermal regulation, ergonomics, sleep test based on non REM phase 3&4 etc and other such tests if applicable to the product.

**1.1 Coach Inside Condition:**

Temperature and humidity of AC Coaches is as suitable for general living condition in Air-condition environment.

**2.0 Fire Properties required for washable blanket and pillows.**

S. No	Properties	Required value	Test Method
1	Resistance to spread of flame	Class-A(Min.)	Appendix-5 of UIC-564-2
2	Deterioration of visibility due to smoke	Class-A(Min.)	Appendix-15 of UIC-564-2
3	Limiting Oxygen Index – Minimum	35	IS:13501
4	Toxicity	Less than 1	NCD-1409
5	Heat Release Rate (MARHE i.e. Maximum Average Rate of Heat Emission in KW/m <sup>2</sup> ) as specified in EN 45545-2:2013	R1(HL-3)	ISO-5660-1:50KW/m <sup>2</sup>

**3.0** Since the item is intended for public use, the specification proposed by firm's shall be as generic as possible, so that source of raw material are easily available. In case a firm proposes a proprietary item, a valid tie up in the form of written MOU with source will be required.

**4.0** It is recommended that the material should be made of Virgin/non recycled fibres

**5.0** If any other parameter needs to be evaluated may also be mentioned. Also the cost implication of the material may be submitted.

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