

### “Multifunctional hooding for automobiles and/or outdoor screening material based on coated cotton-jute fabric”

#### Description of the product

The product is a cotton-jute fabric coated with a blend of chlorosulphonated polyethylene, chloroprene and polyvinyl alcohol employing a calendar coating technique and subsequently vulcanized using a typical sulphur curing system. The product is intended as a substitute for PVC-coated polyester, which is used as an outdoor material throughout the world.

By incorporating polyvinyl alcohol (PVA) at an appropriate dosage in the rubber blend, the fabric coating is made moisture vapour permeable. PVA acts as a conduit in the rubber matrix, promoting the transfer of moisture vapour by breaking and reforming hydrogen bonds with water molecules (Das. D, Ghosh. S, 2018). The resulting coated cotton-jute fabric may be used in canopies or awnings in view of its ability to transfer moisture while remaining waterproof and fire-retardant.

The natural textile product contains no PVC, no carcinogenic plasticizer, no toxic formaldehyde-based adhesion promoter, and no non-biodegradable products, unlike PVC-coated polyester (commonly known as Vinyl).

Property parameters of coated cotton-jute fabric for outdoor applications:

Type of Property	Parameters
Waterproofness	1300 mm water column (Hydrostatic Head)
Moisture Vapour permeability (Breathability)	2240 g/m <sup>2</sup> /24 h (ASTM E 398)
Tensile Strength	383N/cm
Tear Strength	78 N
Weight	700-800 g /m <sup>2</sup>
Flame retardancy	Complies FMVSS302
Low temperature flexibility	(up to -40°C)
Abrasion resistance	Complies ASTM D3389
Coating adhesion	87 N/5 cm
Limiting oxygen Index	34
Weather resistance	Retains 75% of strength, 80% of flame retardancy, 80% of breathability after having exposure in Weathertometer following AATCC TM 186
Antibacterial property	Shows antibacterial property against <i>E. coli</i> and <i>S. aureus</i>

**Degree to which the innovation has been implemented or may be implemented:**

The product and the production process are the result of research sponsored by the Ministry of Textiles, Government of India and implemented by the Department of Jute and Fibre Technology, University of Calcutta. MS. Ajanta Textiles, India, is the industrial partner who will be responsible for commercialization of the product after a technology transfer agreement is completed with the University of Calcutta.

MS. Ajanta may be contacted for additional information.

### **Level of innovation**

The natural-fibre based material provides appreciable weather resistance and can serve as a bio-degradable substitute for non-biodegradable PVC- coated polyester. The cotton-jute blend is fire retardant, antibacterial and provides moisture vapour permeability. The material is cost effective and does not involve complicated, solvent-based technology.

### **Potential for developing new markets or uses for natural fibres.**

The coated cotton-jute product will be appropriate for use as soft hooding in vehicles or as material for canopies and awnings. The development of this material will lead to increased use of natural fibres.

### **Reference**

D. Das , A. Chaudhuri, M. Mitra and S. Ghosh, (2018) Development of moisture vapour permeable waterproof cotton fabric by coating with blend of natural rubber latex and polyvinyl alcohol *Journal of Textile Institute*, **108(8)**,1285-1290

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