Potentialities of Interior Textile Membrane Partition Walls

Mónica Macieira\textsuperscript{1,2} and Paulo Mendonça\textsuperscript{1,2}
\textsuperscript{1}School of Architecture, University of Minho, Guimarães, Portugal
\textsuperscript{2}Center of Territory, construction and environment, University of Minho, Guimarães, Portugal
monicamacieira@civil.uminho.pt; mendonca@arquitectura.uminho.pt

1. Introduction

The evolution of architecture involves, not only improvements in building construction techniques, methods, but also in materials development and research. The research of new architectural textile membrane materials allows extending its possibilities to interior partitions in order to fulfill contemporary demands of comfort.

This paper pretends to present the state of the art of textiles membranes application in interior partition walls and the potentialities of polymers and natural fibres used in these building elements.

2. Textile Membranes in Interior Partition Walls

Textile membrane partitions constitute several advantages as alternative to traditional rigid wall construction (such as plasterboard, metal or hollow brick) in an economy where being flexible is an important issue [1].

From the “classical” curtain, to sliding padded lamella structures, to spanned canvas elements: textile partitions allow different spatial situations to be created as required, so that individual areas can be used simultaneously for different functions [2, 3]. Partitions can usually be guided horizontally along ceiling tracks or can be vertically raised and lowered; their design incorporates storage room for folded textile when not in use. Various degrees of separation can be created, depending on the transparency and volume of the material – from light solely visual separation to acoustically partition [3].

Architectural membranes are nowadays used with competitive costs for covering big spans, but they can also be suitable for small size constructions, such as housing buildings. The fact of being the lighter constructive solution for facades and coverings used in buildings and nowadays having a life span that exceeds 25 years makes architectural membranes extremely competitive in terms of deconstruction effectiveness, embodied energy, economic cost and durability [4,5]. Materials such as Vinyl Coated Polyester (VCP); Vinyl Laminated Polyester (VLP); HDPE Knitted non-woven Polyester and PVC or Polyurethane (PU) coated woven Polyester; Polyvinylchloride (PVC); Woven Polyethylene (WPE); Fiberglass; Polychloroprene (PCH); Linen; Jute; Polytetrafluoroethylene (PTFE) coated Fibreglass; Expanded PTFE fibre membrane; are used in membrane partition walls [3].

3. Conclusions

An interior dividing wall is a thin interior wall which is constructed to divide the space within the building into rooms or areas. Textile Membrane partitions, as lightweight constructions, present some advantages when compared with heavyweight construction like: less material expended, save fuel on transport to the building site, flexibility, and can be designed with smaller assembly fittings [4,5].

The application of membranes in interior dividing walls have several potentialities, such as: lightness and flexibility, facility of construction and deconstruction, mobility, storage, elasticity, translucency, shape memory, thermal regulation, acoustic performance, low cost, communication, light, custom-designed to specific application, tie in to existing walls and upper structure, flame resistance, durability, recyclability and reutilization.

References
