Dartex® Microclimate EcoPlus:

The Ultimate Healthcare Fabric?

New Dartex® coated fabric which combines high levels of breathability and chemical resistance.

Introduction

When considering a polyurethane coated fabric for use as a patient support surface in healthcare & medical settings, two contrasting considerations in terms of product performance are breathability and chemical resistance.

Historically, there has been a trade-off between these properties, as due to the nature of polyurethane chemistry high breathability results in lower chemical performance, whereas high chemical performance has resulted in lower breathability.

Breathability, or mositure vapour transfer (MVP) is an important characteristic for coated healthcare fabrics as, 'moisture underneath a medical device creates an environment in which the skin is more vulnerable to alterations in skin integrity' (Prevention and Treatment of Pressure Ulcers: Quick Reference Guide)[1].

Trelleborg Engineered Coated Fabrics designed a new coated fabric to provide high levels of both breathability and chemical resistance in one product. This study demonstrates how Dartex® Microclimate EcoPlus compares to traditional Dartex® product lines.

Method

Two studies were undertaken in a laboratory setting to demonstrate the chemical resistance and moisture vapour permeability of Dartex® fabrics.

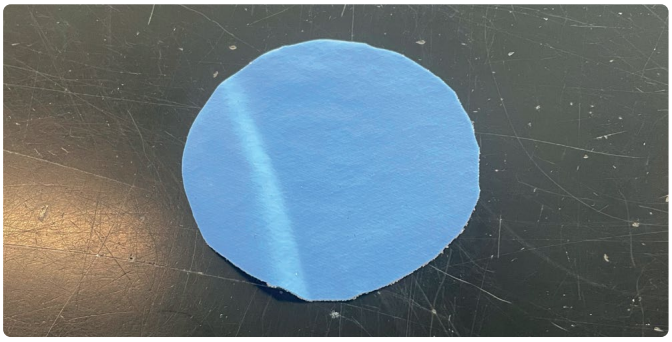
PER200	MIC861	MIC+406
dartex Performance — Industry standard fabric	dartex MicroClimate — Specialist breathable fabric	dartex MicroClimate EcoPlus — New development
Nylon	Polyester	100% recycled polyester

Study 1 – Moisture vapour permeability

Polyurethane (PU) coated samples were tested in a laboratory environment for moisture vapour permeability, following the method stated for ASTM E96 BW.

A piece of fabric from each product range, (PER200, MIC861, MIC+406) were cut to size and placed over the testing apparatus and was filled with 108ml of distilled water.

Each sample was then weighed, and the weight of each sample was recorded.

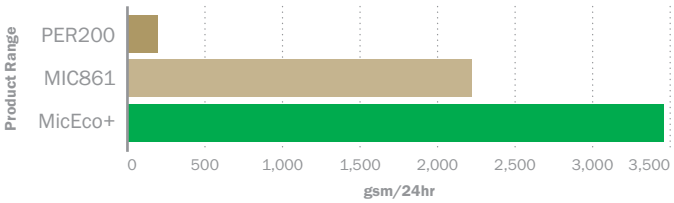


The apparatus was then placed in a humidity-controlled environment for 24 hours. After the 24hr period had finished, samples were then weighed again to determine the moisture vapour permeability. Each test was repeated five times and results were averaged.

RESULTS

MIC+406 outperformed both PER200 & MIC861 with a result of 3446 gsm/24hr, as more moisture vapour was able to escape from the coating in the 24hr timeframe.

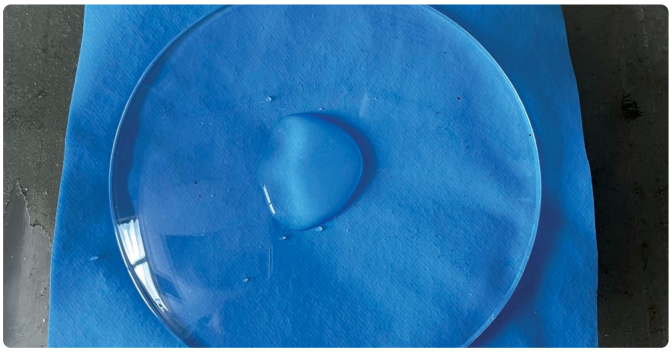
Moisture vapour permability - ASTM E96 BW



Study 2 – Chemical resistance

This study was undertaken with the same three fabrics using an internal test method. 2ml of 10,000ppm Sodium Hypochlorite was placed on each polyurethane sample and left to challenge the surface. Using a Shirley Hydrostatic Head Tester, each sample was tested for hydrostatic pressure resistance.

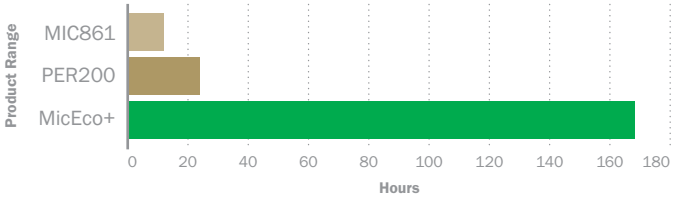
The test was repeated with increasingly long challenge times until the end-point where the test specimen gave a result of less than 35kPa. Each test was conducted five times and the results from each test (the time taken to reach the end-point) were averaged.



RESULTS

MIC+406 outperformed both fabrics, withstanding penetration of Sodium Hypochlorite for an average of 168hrs; 7 times longer than PER200.

Chemical resistance



Conclusion

This study clearly demonstrates that Dartex® Microclimate EcoPlus has an enhanced moisture vapour permeability rate and enhanced durability, when compared to industry standard Dartex® fabrics.

Further comparison is needed across other product lines to further demonstrate the superior combined characteristics of Dartex® Microclimate EcoPlus.

This product is an excellent choice for medical device manufacturers who require equal performance within both characteristics.

References:

1. National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance. Prevention and Treatment of Pressure Ulcers: Quick Reference Guide. Emily Haesler (Ed.). Cambridge Media: Osborne Park, Australia; 2014

About Trelleborg:

Trelleborg is a world leader in engineered polymer solutions that seal, damp and protect critical applications in demanding environments. Its innovative engineered solutions accelerate performance for customers in a sustainable way. The Trelleborg Group has local presence in over 40 countries around the world.

- TrelleborgHM
- Trelleborg Healthcare & Medical
- TrelleborgECF
- Trelleborg

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