

# Reusing Composite Fabrics Made of Polyester and Cotton

Yongping Liao\*

Department of Textile and Material Engineering, Dalian Polytechnic University, Dalian, China

## Abstract

Reusing polyester/cotton blend fabrics for composites offers an innovative and sustainable approach to materials engineering and recycling. These blended fabrics, typically composed of a combination of polyester and cotton fibers, are abundant in various textiles, from clothing to household linens. By repurposing these materials for composite applications, we can not only divert textile waste from landfills but also harness the unique properties of both polyester and cotton to create composite materials with a balance of strength and flexibility. Polyester contributes high tensile strength and resistance to moisture and chemicals, making it a valuable component in composite fabrication. Cotton, on the other hand, brings natural breathability and comfort to the blend. When these fabrics are recycled and processed into composite materials, the resulting composites inherit a combination of these attributes. They can be tailored to exhibit specific properties, depending on the intended application, such as lightweight yet robust components in automotive or construction, or even eco-friendly panels in interior design.

**Keywords:** Polyester • Cotton • Textile waste

## Introduction

The recycling of polyester/cotton blend fabrics for composites aligns with the principles of the circular economy, where waste is minimized, and resources are maximized through reuse and repurposing. This sustainable approach not only conserves resources but also reduces the environmental impact associated with the production of virgin composite materials. As technology advances in the field of textile recycling and composite manufacturing, the possibilities for repurposing polyester/cotton blend fabrics into high-performance composites continue to grow, offering a promising avenue for sustainable materials innovation. Furthermore, the reuse of polyester/cotton blend fabrics for composites provides a solution to the growing problem of textile waste, a significant environmental concern. Textiles constitute a substantial portion of the global waste stream, and their disposal in landfills contributes to pollution and resource depletion. By transforming discarded fabrics into composite materials, we not only divert textiles from landfills but also reduce the demand for virgin resources and the associated energy and water consumption required for their production.

## Literature Review

These recycled composite materials have a broad range of potential applications. In the automotive industry, for example, they can be utilized to create interior panels, seat components, or even structural elements, benefiting from the durability of polyester and the comfort of cotton. In construction, recycled polyester/cotton composites can be employed for sustainable building materials, offering strength, insulation, and moisture resistance. Additionally, they can find use in the production of eco-friendly furniture, reducing the environmental impact of the interior design and furniture manufacturing sectors. As society increasingly emphasizes sustainability and the need to reduce the carbon footprint of various industries, the repurposing of polyester/cotton blend fabrics into composites represents a viable and eco-conscious solution. This process not only contributes to the development of green technologies but also supports the transition toward

\*Address for Correspondence: Yongping Liao, Department of Textile and Material Engineering, Dalian Polytechnic University, Dalian, China, E-mail: yongpingliao165@gmail.com

**Copyright:** © 2023 Liao Y. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

**Received:** 01 July, 2023, Manuscript No. Jtese-23-113983; **Editor assigned:** 03 July, 2023, PreQC No. P-113983; **Reviewed:** 17 July, 2023, QC No. Q-113983; **Revised:** 22 July 2023, Manuscript No. R-113983; **Published:** 29 July, 2023, DOI: 10.37421/2165-8064.2023.13.554

a more circular and resource-efficient economy. Through on-going research and innovation in composite materials and recycling technologies, the potential for reusing polyester/cotton blend fabrics will likely continue to expand, promoting a more sustainable and responsible approach to materials engineering and waste management [1,2].

## Discussion

Moreover, the reuse of polyester/cotton blend fabrics for composites aligns with the broader goals of reducing the textile industry's environmental impact. The fashion and textile industries are among the largest contributors to water consumption, chemical pollution, and greenhouse gas emissions globally. Recycling and repurposing textiles for composite materials can significantly mitigate these negative effects by extending the lifespan of textile resources and reducing the need for new textile production, which often involves resource-intensive processes. By incorporating polyester/cotton blend fabrics into composites, manufacturers can benefit from the synergy between the two materials. Polyester's strength and resistance to environmental factors make it suitable for reinforcing structures, while cotton's comfort and breathability provide a unique blend of properties. This versatility opens up possibilities in various sectors, from consumer products to industrial applications. Furthermore, the recycling process itself can be optimized to minimize energy consumption and environmental impact. Innovations in textile recycling techniques, such as mechanical and chemical recycling, are continuously improving, making it increasingly efficient and sustainable to transform polyester/cotton blend fabrics into composite materials [3-6].

## Conclusion

Reusing polyester/cotton blend fabrics for composites offers a sustainable and environmentally responsible approach to materials engineering. It not only addresses the textile waste problem but also contributes to resource conservation and reduced environmental impact in multiple industries. As research and technology in recycling and composite materials advance, the integration of recycled textiles into composite manufacturing is poised to play a pivotal role in the transition toward a more sustainable and circular economy.

## Acknowledgement

None.

## Conflict of Interest

None.

---

## References

1. Cappello, Leonardo, Kevin C. Galloway, Siddharth Sanan and Diana A. Wagner, et al. "Exploiting textile mechanical anisotropy for fabric-based pneumatic actuators." *Soft Robot* 5 (2018): 662-674.
2. Moussavi, Gholamreza and Maryam Mahmoudi. "Removal of azo and anthraquinone reactive dyes from industrial wastewaters using MgO nanoparticles." *J Hazard Mater* 168 (2009): 806-812.
3. Gordon, Ian L., Seth Casden, Mark Vangel and Michael R. Hamblin. "Effect of shirts with 42% Celliant™ fiber on TCPO<sub>2</sub> levels and grip strength in healthy subjects: A placebo-controlled clinical trial." *J Text Eng* 9 (2019).
4. Fares, Mirella C., Gustavo de Souza and Antonio JF Carvalho. "Thermoformed polypropylene composite reinforced with cotton fabric." *Macromol Symp* 383 (2019): 1800068.
5. Laqbaqi, M., M. C. García-Payo, M. Khayet and J. El Kharraz, et al. "Application of direct contact membrane distillation for textile wastewater treatment and fouling study." *Sep Purif Technol* 209 (2019): 815-825.

**How to cite this article:** Liao, Yongping. "Reusing Composite Fabrics Made of Polyester and Cotton." *J Textile Sci Eng* 13 (2023): 554.