

# The circular economy in fashion: the button as a problematic

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# RESUMO

**Introduction:** According to the Ellen MacArthur Foundation, waste generated must be reused to create a circular economy that benefits everyone. We address the issue regarding the environmental impact of buttons and propose the experimental development of biodegradable and compostable accessories; aiming to assist in the solution for the incorrect disposal of textile materials and accessories with urban collectors. **Objectives:** Address the issue in relation to the environmental impact of buttons related to the disposal of textiles with common urban waste and propose as a solution the experimental development of biodegradable and compostable accessories in order to help solve a part of the problem caused by the accumulation of textile waste when discarded. **Methods:** An action investigation was carried out together with an experimental procedure, initiated through a qualitative and exploratory bibliographic research, after an analysis and synthesis of the collected content, following interpretative and comparative methods. Applying design thinking methods to new product development (Tschimmel, 2011). Finally, the experimental procedure was carried out using rapid prototyping methods in the laboratory. **Results:** The experiment was carried out in a domestic environment and replicated in an academic laboratory, obtaining results similar to industrialized products. Durability was determined by the 5A washing method, following NP EN ISO 6330: 2002. For commercialization, the scalability of the process is necessary, maintaining its circular and sustainable characteristics. **Conclusions:** According to the design based on Cradle to Cradle™ it is necessary to eliminate the concept of garbage determined by the current linear production model. For the question of the experimental product, despite its sustainable and identical characteristics to the industrial product, it is necessary to determine its environmental impact from tests in accordance with current regulations. According to the Ellen MacArthur Foundation, the circular economy is the alternative to redefining the notion of development based on sustainability.

**Palavras-chave:** Buttons, Circular Economy, Sustainability, Biodegradable, Fashion.

## ■ PURPOSE

According to Ellen MacArthur Foundation, the waste generated must be reused to create a circular economy that benefits everyone. We address the issue in relation to the environmental impact of buttons and propose the experimental development of biodegradable and compostable accessories. For every discarded garment, at least 5 synthetic buttons are present. According to data from the Portuguese Environment Agency (APA), in 2020 around 5.279 million tons of waste were collected, with 3.78% of textiles being discarded in urban waste containers.

## ■ METHODS

A qualitative and exploratory bibliographic research was carried out, following the concepts of circular economy (McDonough and Braungart, 2002). The analysis and synthesis of the collected content was carried out, following interpretative and comparative methods. Application of Design Thinking methods for the development of new products (Tschimmel, 2011). The experimental procedure used methods of rapid prototyping in the laboratory, where the substrates of food waste and the polymer were pulverized, using a disk mill, for shaping silicone form and a high temperature oven were used.

## ■ RESULTS AND DISCUSSION

The experiment was conducted in a domestic environment and replicated in an academic laboratory, obtaining results similar to industrialized products. The durability was determined by the 5A washing method, following NP EN ISO 6330:2002. For commercialization, the scalability of the process is necessary, maintaining its circular and sustainable characteristics. The experimental sample (figure) was produced from food waste from household consumption, with the aim of reusing the by-product of the food industry. According to the Cradle to Cradle™ concept, all materials involved in industrial and commercial processes, whether technical or biological, must feed the chain at the end of their life cycle. Design must be thought of in terms of products with positive impact and reduction of negative impacts through their effectiveness (McDonough and Braungart, 2002).

## ■ IMPLICATIONS

Design based on Cradle to Cradle understands nature's safe and productive biological processes as inspiration for the technical flow of industrial materials, eliminating the concept

of waste (McDonough and Braungart, 2002). For the question of the experimental product, determine the degradability, compostability, as well as determine its useful life, strength and environmental impact; tests will be required following current regulations. According to the Ellen MacArthur Foundation, the current extract, produce and waste economic model is reaching its limit and the circular economy is the alternative to redefine the notion of development.

## ■ REFERENCES

1. ELLEN MACARTHUR FOUNDATION. Circular Economy. Report 2021. Available at: <<https://www.ellenmacarthurfoundation.org/circular-economy/concept>>. Accessed on: October 15, 2021.
2. MCDONOUGH, W.; BRAUNGART, M. Cradle to cradle: Remaking the way we make things (1st Ed.). New York: North Point Press, 2002.
3. PORTUGUESE ENVIRONMENT AGENCY (APA). Waste: Data on Urban Waste, 2020. Available at: <<https://apambiente.pt/residuos/dados-sobre-residuos-urbanosEllen>>. Accessed on: October 15, 2021.
4. PORTUGUESE STANDARD. NP EN ISO 6330 2002: Textiles: Domestic washing and drying methods for textile testing: (ISO 6330:2000) / Portuguese Institute of Quality; elab. CT 4 (CITEVE), 2002.
5. TSCHIMMEL, K. Creative Processes: The Emergence of Ideas in the Systemic Perspective of Creativity (1st Ed). Matosinhos: ESAD Editions, 2011.