

## Design for Sustainability as a Key Driver for Exploring the Potential of Cork Material

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**Abstract :** We, as designers, should be aware of the consequences of our material selection, at the early stages of the design process. Some of the designer's decisions can have a very significant impact on design for sustainability. The influence of this concept has led to years of research studies into eco-friendly materials and their potentials for creating new sustainable products. In order to answer the question, 'how cork has become a design trend', this paper will present an overview of the implications of the concept of design for sustainability on the potential uses of cork material. A decade ago, cork as a material had an association with wine stoppers, but with the evolution of sustainable product design as part of the concept of design for sustainability, cork now offers product designers a wide range of new materials and applications. The purpose of this paper is to show how the phenomenon of sustainability has had an impact on the progress of the material which is currently not being an integral component of the design material palette. At the beginning, the nature of the relationship between cork and sustainability will be explained through the following stages: 1) fundamental understanding of the concept of Design for Sustainability and the importance of material selection for sustainable product design, and 2) the importance of cork oak trees for the environment and the environmental impacts of cork products. In order to examine and present the influence of the sustainability on the innovation in cork applications, the paper will provide a historical overview of designing with cork. The overview will consist of four stages: 1) pre-industrial period - the period when ancient nations used cork and amphoras to store their wine; 2) industrial period - emergence and industrialization of well-known wine stoppers; 3) post-industrial period - commercializing cork products in the area of floors and coverings and first developments in industrial research; and 4) the period when large cork realized the importance of sustainability and started to focus more markedly on research and development. The existence of new cork materials, the investigation in new applications and the investment in new innovations have proved that the sustainability approach has had a great influence on the revival of this material. In addition, the paper will present some of the new cork innovative materials and applications and their potentials for designing promising and sustainable solutions with additive manufacturing technologies, such as 3D printing. Lastly, the paper will introduce some questions for further study, such as the environmental impacts of the new hybrid materials and the gap between cork industry and cork research and development teams. The paper concludes by stating that cork is not only a material for wine stoppers anymore, thanks to the awareness of the concept of design for sustainability.

**Keywords :** cork, design for sustainability, innovation, sustainable materials

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