

Cork Composites for Sustainable and Eco-friendly Applications in Aerospace Sector









Cork Composites

Cork is a natural cellular material that is widely used in various engineering applications.

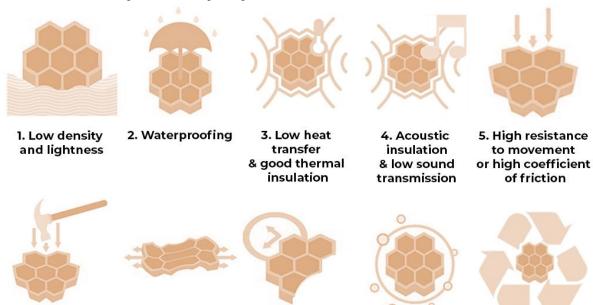
9. Higroscopic

10. 100% natural,

recyclable

and renewable

The **most important properties** of cork are;



8. Durability,

stability

and rigidity



6. Cushioning

capacity



7. Compressibility,

elasticity

and flexibility













Cork Composites

- Although the technical side of industrial applications is compensated by the rise of composite materials, sustainability and eco-friendly properties of materials still require efforts by the institutes and companies.
- At this juncture, composites produced from natural materials such as **cork** become more of an issue due to their environmentally friendly properties.
- Because of its excellent properties, cork based materials are good alternatives for synthetics materials in engineering.







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Cork Composites

- Leading authorities make great investments in sustainable and eco-friendly solutions.
- Still, there is a lack of human resources in the field since syllabuses in engineering programs focus on technical sides rather than the environmental effects of engineering materials.
- To compensate this important gap, ecoCORK project is running.









What is ecoCORK?

- ecoCORK is a Strategic Partnership Project in Higher Education supported by Erasmus+ Program.
- There are six partners in the consortium.

























What is ecoCORK?

- In the current educational system, engineering students are led to pure technical courses and thus, students who graduated from engineering faculties feel the lack of environmental consciousness.
- This point is crucial for humanity because competition in the market leads to rapidly growing technology, resulting in irreversible processes harmful to the environment.
- For this reason, technology developers, mainly engineers, should be aware of the side effects on the environment and humanity.
- Hence, we aim to gain awareness in the aerospace industry for the usage of ecofriendly and sustainable cork.













What is ecoCORK?

- The main reason for selecting the aerospace industry as the implementation sector is that the aerospace industry is familiar with cork as using it in aircraft, helicopters, and space shuttles.
- Moreover, aerospace industry is the leading sector for the development of composites since vast amounts of investments are made by the companies.
- As is well known, scientific developments and trends mostly emerge in the aerospace industry and then these spread to the other sectors.













Within the scope of ecoCORK, there are five modules:

- Module-1: Introduction to cork science, cork cultivation, cork harvesting, cork processing
- **Module-2:** Sustainability of cork, carbon footprint of cork, potential products of cork
- **Module-3:** Sectors for cork products, cork properties, future trends for cork
- Module-4: Cork-based composites, composite manufacturing methods
- Module-5: Aerospace applications of cork demanded properties from the aerospace sector











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SUSTAINABLE MANUFACTURING SOLUTIONS





There is a set of activities conducted in **ecoCORK**. Here the outputs:

- Designing an Educational Curriculum
- Producing Educational Materials
 - Textbook (in 6 different languages)
 - Video Lectures
 - Lecture Presentations
 - Quizzes
- Learning/Teaching Programs











What is ecoCORK?

Some photos from **ecoCORK** activities



















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SUSTAINABLE MANUFACTURING SOLUTIONS



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