



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.

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



1. Low density and lightness



2. Waterproofing



3. Low heat transfer & good thermal insulation



4. Acoustic insulation & low sound transmission



5. High resistance to movement or high coefficient of friction



6. Cushioning capacity



7. Compressibility, elasticity and flexibility



8. Durability, stability and rigidity



9. Hysteresis



10. 100% natural, recyclable and renewable

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 synthetic materials in engineering.

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 *eco*CORK ?

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



What is *eco*CORK ?

- 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 eco-friendly and sustainable cork.

What is *eco*CORK ?

- 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.

What is *eco*CORK ?

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

What is *eco*CORK ?

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 *eco*CORK?

Some photos from *eco*CORK activities



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Thank you!...



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