

Environmental Sustainability of Duro Design Cork Tile Flooring

Environmental Performance

Cork tile flooring is widely recognized as one of the most sustainable flooring materials available. Harvested from the renewable bark of the cork oak (*Quercus suber*), cork provides significant environmental benefits throughout its life cycle, including carbon sequestration, water conservation, biodiversity protection, waste minimization, and long-term forest preservation.

Renewable Resource

Cork is harvested without felling the tree. The bark is carefully removed approximately every 9 to 12 years, after which it naturally regenerates. A single cork oak tree can remain productive for more than 150 years, making cork one of the few truly renewable forest products. New cork oak plantations are established regularly to ensure the long-term sustainability of cork production.

Portugal, which produces more than 50% of the world's cork, has protected cork oak forests by law since the 13th century. The removal of cork oak trees is strictly regulated, ensuring the long-term preservation of this valuable natural resource.

Carbon Sequestration and Climate Benefits

Cork oak forests are important carbon sinks. Following each harvest, the tree regenerates its bark and absorbs approximately three to five times more carbon dioxide than an unharvested tree. Portuguese cork forests are estimated to sequester approximately 4.8 million tonnes of CO₂ annually, while cork oak forests across the Mediterranean region absorb more than 14 million tonnes of CO₂ each year, contributing significantly to climate change mitigation.

Biodiversity and Ecosystem Protection

Cork oak forests are uniquely adapted to the semi-arid landscapes of southern Europe and North Africa. They play a critical role in preventing desertification, stabilizing soils, protecting watersheds, and maintaining regional ecological balance.

These forests provide habitat for thousands of plant and animal species, including numerous rare and endangered species. According to the World Wildlife Fund (WWF), approximately 100,000 people depend directly or indirectly on cork oak forests for their livelihoods, making cork production an important contributor to both environmental conservation and rural economic sustainability.

Water Conservation

Water preservation is a significant environmental advantage of cork flooring.

Unlike many agricultural or forestry products, cork oak forests rely primarily on natural rainfall and require little or no artificial irrigation. Harvesting the bark requires minimal water, and the manufacturing process itself is highly water-efficient. Most production stages—including granulating, pressing, and curing—are largely dry processes that consume substantially less water than many conventional flooring materials such as ceramic tile, concrete, or certain hardwood products.

Many modern cork manufacturing facilities employ closed-loop water systems that recycle process water, significantly reducing freshwater consumption and minimizing wastewater discharge. In addition, cork manufacturing uses relatively few harsh chemicals, helping protect local water resources and reducing environmental impacts associated with industrial production.

Resource Efficiency and Circular Manufacturing

The cork industry operates on a near zero-waste manufacturing model. Virtually every portion of the harvested cork is utilized in commercial applications, including flooring, insulation, decorative products, composites, automotive



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components, and industrial materials.

Manufacturing residues are recycled into new products whenever possible, while cork dust generated during processing is used as a renewable biomass fuel to produce thermal energy for manufacturing facilities. As a result, cork production generates minimal landfill waste and supports circular economy principles.

Contribution to Sustainable Building

The environmental characteristics of cork flooring can contribute toward sustainable building objectives by supporting:

- Renewable material selection
- Reduced embodied carbon
- Water conservation
- Waste reduction and circular manufacturing
- Forest conservation and biodiversity protection
- Improved indoor environmental quality through low-emission product options (depending on manufacturer certification)
- These attributes make cork flooring well suited for green building programs, including LEED®, WELL Building Standard®, BREEAM®, and other sustainable construction initiatives when supported by manufacturer-specific certifications.

Summary

Cork tile flooring combines renewable harvesting, exceptional resource efficiency, low water consumption, carbon sequestration, and long-term forest conservation into a single building material. Its unique life-cycle performance makes it one of the most environmentally responsible flooring solutions available for residential, commercial, institutional, and public building projects.