

Life cycle analysis (LCA) of different cork floorings

A life cycle analysis of different cork flooring products shows that cork floorings with PVC overlay imply higher environmental burdens than varnished cork floorings, despite the fact that they need no refurbishing.

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A “cradle to grave” life cycle assessment (LCA) that was commissioned by one of the major manufacturers of cork products in Portugal, has been done for 14 different cork flooring systems. The objective of the study was to compare these floorings in terms of environmental impacts of their production and life cycle. The goal of the study was to identify ecologically weak spots and the potential for their improvement. (The report is not publicly available.)

Among the floorings, there are products for fixed and floating layings. Some of the floorings are laminated with PVC sheeting to protect the cork surface while others are either varnished in the factory or after laying. The floorings without PVC are sanded and newly varnished from time to time (every 10 years is assumed as standard but shorter intervals have been assumed for sensitivity analysis) while the PVC covered floorings need no refurbishing during the 30 years in which they are used. Some of the floorings are stained or screen-printed, and some of them are overlaid with cork or wood veneers.

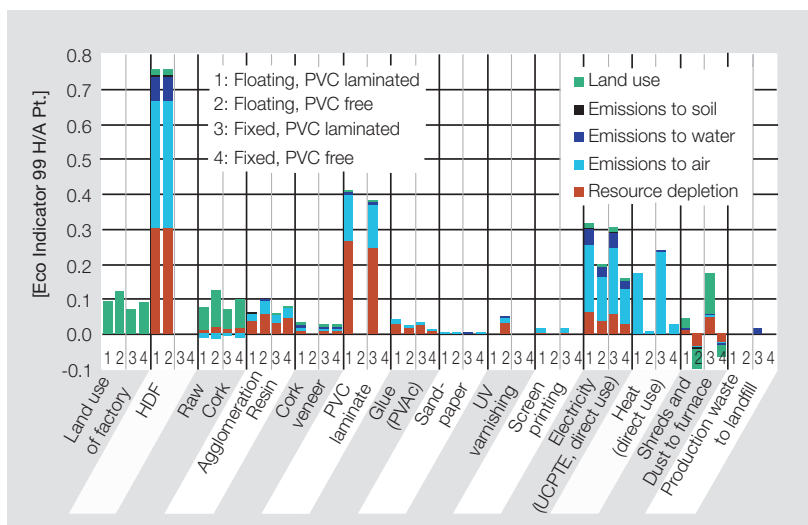
To assess environmental impacts, the CML 92 impact categories are used as well as the Ecoindicator 99 methodology.

Fig. 1 shows that the floating floorings are causing significantly higher ecological impacts than the fixed floorings. This is due to the high-density fibreboard (HDF) that triples the weight of the flooring.

Floorings with PVC cover cause significantly higher ecological impacts than floorings without PVC. This is true even if the refurbishing interval for the PVC free floorings is only 2 years. As Fig. 1 shows, this is, on one hand, due to the impacts of the PVC production and the varnishing and edge sealing of the laminates (cumulated in “PVC laminate”) and, on the other hand, due to the additional heat and electrical energy needed. The burdens of the transportation of the product from the factory to the distributor in Switzerland are relevant for certain impacts in the life cycles of PVC free, fixed floorings. In the other floorings, they appear less significant because of the higher burdens of other steps in their life cycles.

The difference between floorings with veneer, and the same flooring without veneer, and the impacts of screen-printing and staining of the floorings are negligible in the context of the whole life cycle. The damage to the ecosystem caused by land use (use as natural forest for raw cork production and as industrial area for the flooring production site) seems to be relevant at least for fixed PVC free floorings. However, the methodology to assess the impacts of land use lacks data about biodiversity in different habitats. Thus, there might be an overestimation of the effects.

Fig. 1: Typical impacts of the production of different cork flooring systems.



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