

**LCA PARQUET**

Calculations are based on the LCA Parquet calculation programme created by VTT (tool version September, 2011)



# KARELIA UPOFLOOR

**Product**

Pre-finished three layer parquet (thickness 14 mm)

**Manufacturer/Plant**

All parquet plants in Group Karelia-Upofloor Oy

**Production year**

2010

**Structure**

Parquet consists of hard wood top layer (3.5 mm), with a coniferous wood middle layer (spruce wood lath 9 mm), and a veneer base made from coniferous wood (2 mm). The surface is treated with UV-hardening urethane-acrylate varnish or with blend of UV-hardening oil and wax. End strengthening is done with spruce plywood.

**End use and service life**

Floor covering material. The estimated service life in dwellings is more than 35 years and in public places such as offices and hotels, approximately 10-30 years. More information about end-use conditions and maintenance instructions is available on manufacturer web page. During service life the parquet can be sanded and surface treated 2-3 times.

**Product at factory gates****Energy and raw materials**

Non-renewable energy	121	MJ/m <sup>2</sup>
Renewable energy	86	MJ/m <sup>2</sup>
Non-renewable raw materials	6,9	g/m <sup>2</sup>
Renewable raw-materials	14	g/m <sup>2</sup>

**Emissions (in accordance with the DAIA-method)**

Greenhouse gases	8,9	(kg CO <sub>2</sub> eq/m <sup>2</sup> )
Acidification	1,0	(g H <sup>+</sup> ekv/m <sup>2</sup> )
Formation of oxidants	32,4	(g POCP ekv/m <sup>2</sup> )

Carbon storage, calculated as CO <sub>2</sub>	10,0	(kg CO <sub>2</sub> eq/m <sup>2</sup> )
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## Indoor air emissions

Not significant

Surface material classification (M1, M2 and M3) M1

## Recycling

### Product recycling

For backfilling or recycling for energy production by burning.

### Energy production

Product's energy content 232 MJ/m<sup>2</sup>

### Package recycling

Packaging materials can be 100% utilised for energy production by burning. The plastic wrapping is made of polyethene that can be recycled at collection centres or burnt.

## Information quality

The environmental profile for the parquet is based on the material and energy flows reported by KareliaUpofloor's parquet plants (Finland, Russia, and Romania). The calculations have been made with the Parquet LCA tool (Vares, S. updated 2011). Results are given as the average parquet production (product at factory gate). Environmental impact assessment based on DAIA method (Seppälä, J., 1999).

Life cycle assessment covers raw material production and transportation, parquet production and package production and transportation. The calculation is based mainly on ISO 14040 and on the Finnish national method for environmental declarations of building materials and buildings (Anon., 2004).

The average environmental profile of electricity depends on the fuel types typically used in electricity production in the relevant country, the plant types in which the electricity is produced, the efficiency of electricity production, and how co-combustion method is treated in the calculations. The programme assumes average Finnish electricity production in accordance with 2008 production (VTT calculation, co-combustion is dealt by using benefit shearing method), average Romanian electricity production in 2002 (Gabi and ILCD database) and an estimation of electricity production in Russia. The heat used in production is produced by burning the sawdust generated in production in a cauldron with a capacity of under 5 MW. The environmental profile of that heat production is based on VTT's energy database. The environmental profiles of plywood and sawn timber are based on RT Environmental declaration for plywood and sawn timber. The environmental profile of hardwood is based on literature (Bergman et al., 2008). The environmental profile of urea-formaldehyde adhesive is based on the data in SPINE LCI database (UF 1274). The environmental profile for the bottom and surface lacquer and staining is based on VTT calculations. The environmental profiles of the plastic binder and plastic used in packaging are based on literature (Boustead, I. 2005). The environmental profile of the paper used for packaging is based on VTT's data.

### References:

*Anon 2004.* Menetelmä rakennustuotteiden ympäristöselosteen laadintaan ja rakennusten ympäristövaikutusten arviointiin. Confederation of Finnish Construction Industries (RT), Helsinki, 56 p. + app. 28 p.

*Boustead, I., 2005.* Eco profiles of the European plastic Industry. Polyethylene. PWMI.

*Bergman, R. D., Bowe, S. A., 2008, Environmental impact of producing hardwood lumber* Using Life-Cycle inventory, Wood and Fiber Science, 40(3), 2008, pp. 448 – 458 .

*ISO 14040:2006 Environmental management. Life cycle assessment. Principles and framework*

*Seppälä, J., 1999.* Vaikutusluokkien laskenta elinkaariarvioinnissa - vertailtavana DAIA- ja Eco-indikaattori -menetelmät. Finnish Environmental Administration hand-out 172, 38 p.

*Vares, S., 2011.* LCA-Parquet - Life cycle assessment tool for parquet production (VTT, September, 2011).