UPM
The Biofore Company

# CARBON FOOTPRINT

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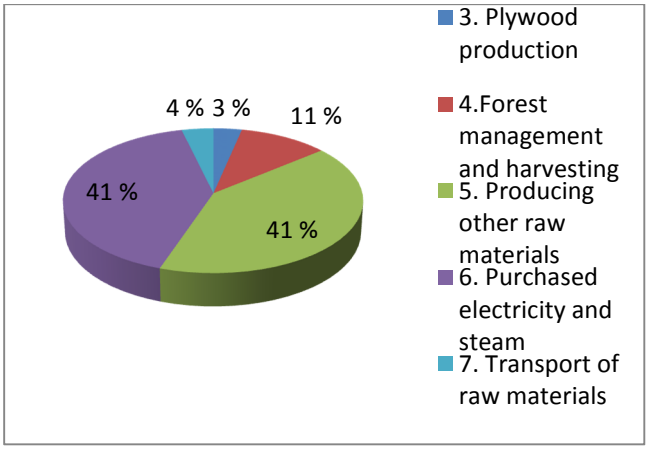
|---|---|
| **Company** | **UPM-Kymmene Wood Oy** |
| **Sites** | **Jyväskylä and Pellos plywood mills** |
| **Products** | **WISA®-Spruce products** |

Information gathered from **1.1. 2013** to **31.12.2013**

## Carbon Footprint

- UPM calculates the carbon footprint of its plywood products on the basis of the 10 elements of the Carbon Footprint Framework for Paper and Board Products developed by CEPI (the Confederation of European Paper Industries).
  Detailed information on the CEPI Framework can be found at www.cepi.org.
- The data used in the calculation are based on annual averages for a mill.
- GHG = greenhouse gas. UPM figures refer only to emissions of fossil $CO_2$.
- Information is calculated as weighted average in relation to the production volumes for the various mills.




Note that wood products are biogenic $CO_2$ stores and can replace fossil fuels in energy production at the end of their life cycle.

1 m³ of this product contains 222 kg of carbon, equivalent to 820 kg of $CO_2$. Therefore, if this product remains in use or is stored for 100 years, this is equivalent to locking away and storing 820 kg of $CO_2$. Equivalent figures for applications with a life span of less than 100 years are available on request.

| **Ten elements of the CEPI Framework** (See next page for remarks and explanations) | **Fossil $CO_2$** (kg/m³ of plywood) | **Biogenic $CO_2$** (kg/m³ of plywood) |
|---|---|---|
| 1. Carbon sequestration in the forest | | 0 |
| 2. Carbon stored in the product | | 820 |
| **Net sequestration of biomass carbon** | | **820** |
| 3. GHG emissions from plywood production | 10 | |
| 4. GHG emissions associated with producing wood material | 10 | |
| 5. GHG emissions associated with producing other raw materials | 20 | |
| 6. GHG emissions associated with purchased electricity and steam | 20 | |
| 7. Transport-related GHG emissions (excl. delivery to customer) | 10 | |
| **Total fossil $CO_2$ emissions** | **70** | |
| 8. GHG emissions attributable to product use | - | |
| 9. GHG emissions attributable to end-of-life-management of products | - | |

| | | |
|---|---|---|
| 10. Avoided emissions | - | |

## Remarks and explanations to the ten elements of CEPI Framework

**1. Carbon sequestration in the forest**

- In line with the CEPI Framework, carbon sequestration is currently not included in product level carbon footprint calculations.
- For UPM, forest certification and traceability of wood raw material supply using certified Chain of Custodies ensures the sustainable management of forests, and the long-term sequestration of carbon in them via the process of photosynthesis.

**2. Carbon stored in the product**

- Biogenic carbon is stored in products produced from wood. The IPCC (International Panel on Climate Change) formula is used to determine the amount of $CO_2$ that is stored in the plywood.

**3. GHG emissions from plywood production**

- UPM includes data on fossil $CO_2$ emissions from combustion of fossil fuels at plywood manufacturing facilities. In addition fossil fuels used in forklifts in plywood manufacturing are included.

**4. GHG emissions associated with generating the supply of wood**

- Includes fossil $CO_2$ emissions from forest management and harvesting activities.

**5. GHG emissions associated with producing other raw materials**

- Includes fossil $CO_2$ emissions generated during the manufacturing of non-wood-based raw materials (e.g. coatings and chemicals which are used in an amount above 1 % per $m^3$ of plywood) and fuels used at mill site.

**6. GHG emissions associated with purchased electricity and steam**

- Includes fossil $CO_2$ emissions associated with purchased electricity, steam and heat used for plywood production.
- Due to differences in fuel mix used to produce electricity there are significant differences in the emission factors used to convert grid electricity to its equivalent $CO_2$. UPM uses source and country specific emission conversion factors

**7. Transport-related GHG emissions**

- Includes fossil $CO_2$ emissions associated with inbound transports of raw materials and final products from the plywood mill, along the value chain.
- At UPM, this figure includes the transportation of wood, coatings, chemicals and fuels to UPM mills. $CO_2$ emissions from wood transports are allocated mass based among products and by-products.
- $CO_2$ emissions from transportation of plywood to the customer are not included since this depends on the transportation modes used and distances to specific customer locations. This part of the element can be calculated for a specific case on request.

**8. GHG emissions attributable to product use**

- This element is not included within UPM's scope as a plywood manufacturer.

**9. GHG emissions attributable to end-of-life-management of products**

- This element is not included within UPM's scope as a plywood manufacturer.

**10. Avoided emissions (e.g. superior energy efficiency or carbon offsetting measures)**

- This element is not currently included in UPM's scope.

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