

## Appendix 6 Energy calculations

### **Energy calculation for production of panels made from renewable raw materials; wood- and lignocellulose based panels, CLT, glulam and laminate.**

The following applies to the energy calculation in the production of wood- and lignocellulose panels and mouldings, CLT, glulam and laminate:

1. Energy consumption is calculated as an annual average for either just the ecolabelled production or for the whole enterprise that is relevant for Nordic Swan Ecolabelled panels, CLT, glulam and laminate.
2. The energy consumption is calculated as MJ/kg per panel/product, and encompasses all energy used from gate to gate at the panel production site. Separate energy consumption also needs to be calculated for production for pulp/paper and laminate (if they comprise more than 5% wt% of the panel/product).
3. Processes included in the calculation:  
Chipping, refining, drying, blending (production of any adhesive; see 4), forming, pressing, any lamination of the panel, cooling, trimming, sanding, surface treatment and packaging.
4. In the case of the production of chemical products, for example adhesive, the energy accounts must be based on data for production. The energy content of the raw material must not be included in the calculation. In exceptional cases a standard value of 15 MJ/kg (solution for use) for adhesive may be used, broken down as 12 MJ/kg for fuel and 3 MJ/kg for electricity purchased from an outside supplier (4:1).

*Example of a calculation using the standard value for adhesives:*

*A panel contains 12% adhesive (solution for use). This represents 0.12 kg of adhesive solution for use per kilogram of panel. Applying the standard value in the calculation of energy points for adhesive results in 0.12 kg adhesive/ kg panel x 15 MJ/ kg adhesive = 1.8 MJ/ kg panel.*

5. Energy consumption in the production of laminate (compact laminate and HPL) includes the production of resin/glue, the process of handling paper (dipping in resin/drying process), stacking of paper/laminate, pressing, heating, cooling, trimming, sanding and packaging. Production of paper has its own requirement.
6. The calculation includes the actual energy consumed (electricity and heat) in production without the use of primary energy factors. Self-produced energy and excess energy that is sold off should be stated but does not count as consumed energy in the calculation.

**System boundary for the requirement:** Energy consumption for obtaining raw material and transport of raw materials to sawmill/panel production site is not included in the calculation.

**Energy calculation for production of panels made from mineral- and non renewable raw materials; panels made from recycled composite, gypsum plasterboards, mineral wool-based acoustic panels, cement-based panels, panels made from other materials and production of mineral wool and cement.**

The following applies to the energy calculation in the production of panels made from recycled composite, gypsum plasterboards, mineral wool-based acoustic panels, cement base panels, panels made from other materials and production of the raw materials: mineral wool and cement.

1. Energy consumption is calculated as an annual average for either just the ecolabelled production or for the whole production site that is relevant for Nordic Swan Ecolabelled panels.
2. The energy consumption is calculated as MJ/kg product produces, and encompasses all energy used from **gate to gate** (phase A3 in EPDs) at the panel production site. Separate energy consumption also needs to be calculated for production of the following raw materials: cement, mineral wool, paper, and laminate (if they comprise more than 5 wt% of the panel/product).
3. Processes included in the calculation:  
  
Raw material preparation (crushing/grinding/chipping), refining, blending, forming, heating, pressing, gluing/laminating different types of material layers together, facing the panels, surface treatment, cooling, trimming, and packaging.
4. The calculation includes the actual energy consumed (electricity and heat) in production without the use of primary energy factors. Self-produced energy and excess energy that is sold off should be stated but does not count as consumed energy in the calculation.
5. **System boundary for the requirement:** Energy consumption for extraction of raw materials and transports of raw materials is not part of the energy requirement. The energy requirement for production of raw materials do not apply to raw materials that are included by less than **5 wt%** of the panel.