

Carbon footprint (CFP) på træfiberprodukter – opsummering

CO₂e aftryk på bark, flis, sold, savsmuld og høvlspåner i henhold til ISO 14067:2018

Formål

Norlund har udarbejdet et carbon footprint (CFP) for sine træfiberprodukter: høvlspåner, bark, flis, sold og savsmuld. CFP-studiet opgør produkternes bidrag til global opvarmning i CO₂-ækvivalenter (CO₂e) for cradle-to-gate (skovdrift, transport til savværk, fremstilling) og cradle-to-grave (skovdrift, transport til savværk, fremstilling, distribution og afbrænding/bortskaffelse). Formålet er at levere pålidelige miljødata til Norlunds professionelle kunder inden for energi-, bygge- og landbrugssektoren.

Resultater og konklusion

Klimaaftrykket for de fem produkter fremgår af tabellen nedenfor fra cradle-to-gate pr. rm (rummeter) og fra cradle-to-grave pr. rm (rummeter) og pr. MWh (nedre brændværdi). Klimaaftrykket fra cradle-to-grave varierer fra 6,68 kg/MWh for flis til 44,78 kg/MWh for høvlspåner. Variationerne skyldes primært forskelle i densitet, fugtindhold og transporteffektivitet.

Transport til kunden og forbrænding af træfiberprodukterne er de livscyklusfaser, der bidrager mest til klimaaftrykket. Norlunds produktion bidrager kun marginalt (2–4%) til den samlede CO₂e-udledning fra cradle-to-grave.

Produkt	Cradle-to-gate (ekskl. distribution og afbrænding)*	Cradle-to-grave (inkl. distribution og afbrænding)	Cradle-to-grave (inkl. distribution og afbrænding)
Enhed	kg CO ₂ e/rm	kg CO ₂ e/rm	kg CO ₂ e/MWh
Bark	1,35	6,3	14,46
Savsmuld	1,99	9,03	17,61
Flis	1,32	4,58	6,68
Høvlspåner	1,34	16,05	44,78
Sold	1,65	7,44	14,36

* Optag af biogent CO₂ ifm. dyrkningen af træ er ikke medtaget her, da det vil medføre ubalance set i et livscyklusperspektiv, når forbrændingen af træfiberprodukterne ikke er medtaget.

Metode og begrænsninger

CFP-studiet er udarbejdet iht. ISO 14067:2018 og analyserer på livscyklusfaserne: skovdrift, transport til savværk, fremstilling, distribution til kunde og afbrænding/bortskaffelse. Resultaternes er præsenteret både ekskl. distribution og afbrænding (cradle-to-gate) – som er brugbart for aftagere, der ikke bruger træfiberprodukterne til afbrænding – og inkl. distribution og afbrænding (cradle-to-grave) – som er brugbart for aftagere, der bruger træfiberprodukterne til afbrænding.

Data for produktionen er baseret på primære kilder og data for de andre livscyklusfaser er baseret på sekundære kilder.

For skovdrift, transport til savværk og processer i fremstillingen, som har flere formål (multifunktionelle processer) er aftrykkene fordelt baseret på økonomisk allokering. Det betyder at mere værdifulde produkter tillægges en større andel af aftrykket end produkter med en lavere værdi. Valget af allokeringsmetode har en væsentlig påvirkning på resultaterne. Denne allokeringsmetode er anvendt, fordi den er et krav i henhold til EN 16485:2014 "Produktkategoriregler for træ og træbaserede produkter til konstruktionsbrug", som anvendes til udarbejdelse af EPD'er på Norlunds andre trævarer.

Information om CFP-studiet			
Producent og produktionssted	Norlund A/S Conradsminde 23 9610 Nørager Danmark		
År for produktionsdata	2022 (affaldsdata for 2023)		
Periode for LCA-projekt	August 2024 til oktober 2024		
Produkter omfattet	<ol style="list-style-type: none"> 1. Bark 2. Savsmuld 3. Flis 4. Høvlsplåner 5. Sold 		
Afgrænsning	<table border="0"> <tr> <td style="vertical-align: top;"> Cradle-to-gate (partial CFP): <ol style="list-style-type: none"> 1. Skovdrift 2. Transport til Norlund 3. Produktion hos Norlund </td> <td style="vertical-align: top;"> Cradle-to-grave (full CFP): <ol style="list-style-type: none"> 1. Skovdrift 2. Transport til Norlund 3. Produktion hos Norlund 4. Distribution til kunde 5. Brugsfase (afbrænding) 6. Bortskaffelse af aske </td> </tr> </table>	Cradle-to-gate (partial CFP): <ol style="list-style-type: none"> 1. Skovdrift 2. Transport til Norlund 3. Produktion hos Norlund 	Cradle-to-grave (full CFP): <ol style="list-style-type: none"> 1. Skovdrift 2. Transport til Norlund 3. Produktion hos Norlund 4. Distribution til kunde 5. Brugsfase (afbrænding) 6. Bortskaffelse af aske
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Deklareret enhed	1 m ³ (rummeter)		
Funktionel enhed	1 MWh brændsel (nedre brændværdi)		
Software og database	SimaPro 9.5 med ecoinvent v. 3.9.1 ('cut-off'-systemmodel)		
LCIA metode	Indikator: Global Warming Potential 100 års tidshorisont. Beregningsmodellen er fra IPCC 2021.		
Standard	DS/EN ISO 14067:2018 "Produkters CO ₂ -fodaftryk – Krav til og vejledning om kvantificering" DS/EN 15804:2012+A2:2019 "Bæredygtighed inden for byggeri og anlæg – Miljøvaredeklarationer – Grundlæggende regler for produktkategorien byggevarer" DS/EN 16485:2014 "Rundtræ og savet træ – Miljøvaredeklaration – Produktkategoriregler for træ og træbaserede produkter til konstruktionsbrug"		
LCA-konsulent	Better Green ApS Virumvej 64 2830 Virum Danmark		
Type af verificering	Ekstern kritisk gennemgang af David Althoff Palm, Dalemarken AB <i>Vedhæftet: Review statement af David Althoff Palm 2024-11-05</i>		



Review report for Carbon footprint according to ISO 14067

Study details

Study title:	CFP-studie træfiberprodukter
Study date:	2024-10-23
Practitioner:	Better Green ApS: Julie Kathrine Lyager, Oliver Nicholas Moon
Commissioner:	Norlund A/S
Reviewer(s):	David Althoff Palm, Dalemarken AB
Standards and product category rules:	ISO 14067:2018 With guidance from EN15804+A2:2019 and EN16485:2014
Review process:	2024-09-26: Start of review 2024-10-10: Initial comments 2024-10-23: Draft review report, all comments handled. 2024-11-05: Final review statement



Review comments

The review was performed using a checklist based on the ISO 14067 criteria and in conjunction with an EPD-verification.

1. Background

The review has been performed with a developed checklist for review of ISO 14067-studies with a focus on compliance with:

- Methodology
- Selection and validity of input data
- Modelling and calculation
- Results
- Conclusions and recommendations given goal, scope and limitations

The carbon footprint review is for co-products from the production of Sawn wood and includes bark ("Bark"), saw dust ("Savsmuld"), wood chips ("Flis"), wood shavings ("Høvlspåner) and sifted wood chips ("sold"). The review was performed in conjunction with an EPD-verification of wood boards following EN15804+A2 with an annex for CFP-requirements. To simplify the description the included products are hereon referred to as "energy products" when grouped even though they are sold both for energy and other purposes.

The study presents results for two cradle to grave CFPs using functional units and one cradle to gate partial CFP using a declared unit.

2. General and specific comments

The study is very detailed and covers all outputs from the sawmill. Most comments were managed appropriately before the review statement/opinion and are therefore not mentioned here.

When working with wood-based products and especially energy products that are co-products from sawn wood, all calculations and results will vary with natural variations in moisture and compaction. The study manages this well and results are for a typical moisture and level of compaction.

Allocation of forestry and sawmill in the study is based on product revenue as this is mandated in EN15804+A2 when the difference in value of different co-products is high. This is not the preferred method in ISO14067 which favors allocation based on physical factors and has a significant impact on the CFP. Since it is done for the main sawn wood products and there is a preference to have allocation add up to a total, it is found reasonable to have this allocation also in the CFP for the energy products.

Key contributors to the study results are transports from the sawmill to customers given that the included energy products in general and wood shavings in particular are not very dense in addition to typically being transported in trucks going empty for the return trip.

Data for the sawmill is specific and recent and datasets covering processes outside of the sawmill are deemed suitable and clearly presented. Modelling is clear and transparent.



Electricity use in the sawmill is covered by Guarantees of origin which were presented during the review.

3. Results and conclusions

Results of the CFP are significantly dependent on the economic allocation and a mass-based allocation between boards and energy products. When presenting the CFP-results it is critical to include both the information that allocation is based on revenue and that this has a significant impact on the results.

Since transport to customers is a key contributor to the CFP-results it is important to note whenever the customers are further than 100km from the sawmill as the transport emissions may then be underestimated. With a shorter distance, they are similarly overestimated.

4. Report and confidentiality

The full report is transparent and clear with supporting documentation. As a starting point the full report should be available to any user of the CFP, but this is rarely practical for confidentiality reasons. It is recommended that as much information as possible is offered to any user of the CFP and at a minimum always noting the impact of allocation on the presented results. When referring to the review, this review report and review statement shall be made available to any user of the CFP upon request.



Review statement

I hereby confirm that, following the checks performed, in accordance with the limits of the scope of our appointment, nothing has come to the reviewer's attention to suggest any errors or deviations from the requirements by the above-referenced report in terms of:

- the underlying data collected and used for the calculations,
- the way the calculations has been carried out to comply with calculation rules,
- the presentation of environmental performance, and
- any other information included in the CFP

with respect to the procedural and methodological requirements in above referenced standards.

I confirm that, in accordance with the limits of the scope of our appointment, the company-specific data has been examined as regards plausibility and consistency. The CFP owner is responsible for its factual integrity and that the product does not violate relevant legislation.

I confirm that I have sufficient knowledge and experience of the product category, the industry, relevant standards and the geographical area of the study to carry out this review.

I confirm that:

- I have been independent in my role as reviewer and am not an employee of the commissioner or practitioner of the study;
- I have not been involved in defining the scope or carrying out any of the work to conduct the study or have been part of the commissioner or practitioner team;
- I do not have vested interests in any way, shape or form in the outcome of the study.

Name and organization of reviewer:	David Althoff Palm, Dalemarken AB
Date and location:	2024-11-05, Kungälv, Sweden
Signature:	