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The Norwegian EPD Foundation

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804+A2

Owner of the declaration:	Norgesvinduet Kompetanse AS
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-2998-1653-EN
Registration number:	NEPD-2998-1653-EN
ECO Platform reference number:	-
Issue date:	13.08.2021 (Updated: 27.09.2023)
Valid to:	13.08.2026

Laminated Pine Utforing*

Norgesvinduet Kompetanse AS

www.epd-norge.no

*Utforing is a Norwegian word for the product (please see picture)

General information

Product:
Norgesvinduet laminated pine utforing

Owner of the declaration:
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Manufacturer:
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Norgesvinduet Svenningdal ASIndustriveien 1, 8680 Trofors

Declaration number:
NEPD-2998-1653-EN

Place of production:
Norgesvinduet Bjørlo, Nordfjordeid, Norge
Norgesvinduet Svenningdal, Trofors, Norge

ECO Platform registration number

Management system:
NS-EN ISO 9001:2015, NS-EN ISO 14001:2015

This declaration is based on Product Category Rules
The CEN standard EN 15804 serves as the core PCR. In addition, NPCR Part A: Construction products and services, version 2.0 (according to EN15804: 2012 + A2: 2019) + NPCR 014: 2019 Part B for windows and doors, version 3.0

Org. no:
959189412

Declaration of responsibility:
The owner of the declaration shall be responsible for the underlying information and evidence. EPD Norway shall not be responsible with regard to manufacturer information, life cycle data and evidence.

Issue date: 13.08.2021

Valid to: 13.08.2026

Declared unit:

Year of Study:
2021

Declared unit with option:

Comparability:
Construction products EPDs may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

Functional unit:
1 m2 window utforing in laminated pine with a width of 100mm with a reference service life of 60 years

The EPD has been worked out by:
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Verification
(Why does verification transparency matter? Read more online)

The CEN Norm EN 15804 serves as the core PCR. Independent verification of the declaration and data, according to ISO14025

☐ Internal certification ☒ External verification
Third party verifier:

Elisabet Amat Guasch
(Independent verifier approved by EPD-Norway)

Approved

(Managing Director EPD-Norway)

Product

Product Description:
Painted utforing* in laminated pine is used to extend the window frames to cover the transition between window and wall. Depth of utforing will vary on the projects

PRODUCT specification
Laminated pine 18mm thickness with weight 8,78kg.
The calculations are based on 100 mm width, while the weight per m2 will vary with up to 6% when using other widths.

Market
Norway, scenarios are calculated for the Norwegian market.

Reference Service Lifetime:
60 years

Product Raw Material Composition

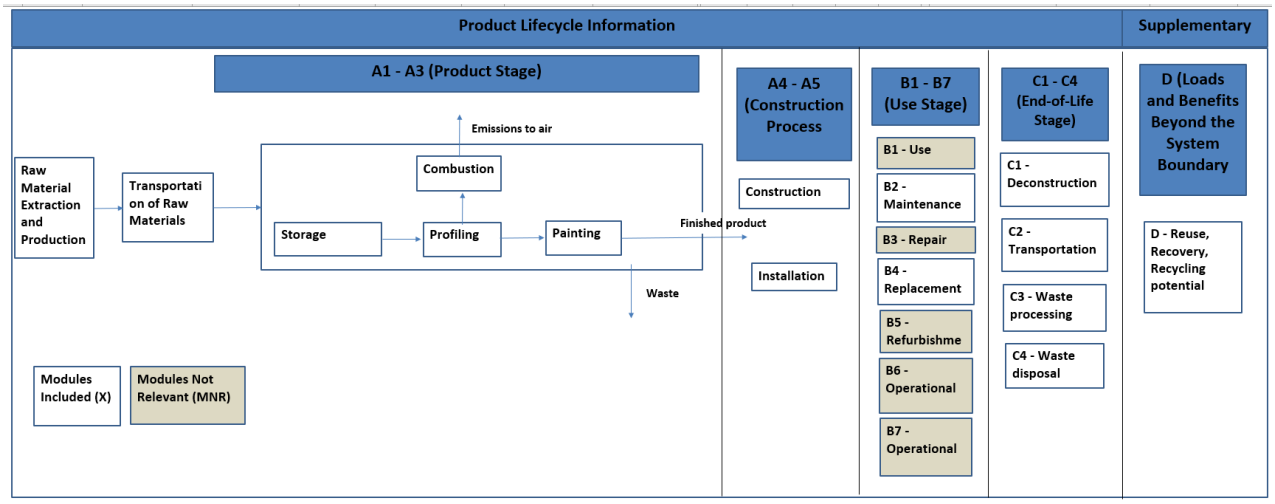
Material	Weight (kg)	%
Laminated pine	8,38	95,44%
Paint	0,4	4,56%
Total weight of product	8,78	100%
Wood packaging	0,37	
Steel packaging	0,050	
Plastic packaging	0,210	
Total weight with packaging	9,41	

LCA: Calculation Rules

Functional unit:
1 m2 window utforing in laminated pine with a width of 100mm with a reference service life of 60 years

System boundary:
This EPD covers the cradle to grave scope with following modules; A1 (Raw material supply), A2 (Transport) and A3 (Manufacturing), A4 (Transport), A5 (Assembly), B1 – B7 (use phase) as well as C1 (Deconstruction), C2 (Transport at end-of-life), C3 (Waste processing) and C4 (Disposal). In addition, module D - benefits and loads beyond the system boundary is included. B1, B3, B4, B5, B6, B7 are however not relevant for the product system under study.

Below is the flow chart for the manufacturing process.



Data quality:
According to EN 15804+A2 Section 6.3.8.3 data quality of the life cycle inventory data should be assessed using one of the of the schemes in Annex E of the standard. The life cycle inventory was analysed for geographical, technological and time representativeness for a data quality rating as defined in Product Environmental Footprint Guide; CONSOLIDATED VERSION 2012 using the formula provided in the same document. The DQR calculated was then studied for the datasets that contribute to more than 70% of the impacts and the data quality level was analysed as "good quality".

Allocations:
Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. The factory is a producer of windows, doors and utforings. These products are produced in various sizes and types. Economic allocation was calculated based on the revenue of the company from doors and windows compared to the utforing. Following that the production volumes at the Bjorlo and Svenningdal sites were used to allocate energy use for production, internal transport, waste produced during manufacturing, and the water use per utforing.

Allocation for generic data used from Ecoinvent 3.6 environmental data sources follows the methodology 'allocation, cut-off by classification'. This methodology is in line with the requirements of the EN 15804 -standard.

Cut-off criteria:
The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

Calculations of biogenic carbon:
Product's biogenic carbon content at the factory gate:

Biogenic carbon content in product, kg C	4,19
Biogenic carbon content in packaging, kg C	0,19

LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD
Transport from production place to assembly/user (A4)

Type	Capacity Utilization	Type of vehicle	Distance (km)	Fuel /Energy Consumption per t-km	Fuel/Energy Consumption per km
Truck	95%	EURO5>32 ton	300	0,022 l/t-km	0,31 l/km
Truck	95%	EURO5, 16-32 ton	30	0,045 l/t-km	0,25 l/km

Transport from production to the building site is assumed to be carried out by truck and a total distance of 330 km. It is assumed 300 km on a large truck and 30 km on a medium size truck. Norgesvinduet has its own truck that is used to transport windows to the building sites.

Installation (A5)

	Unit	Value
Auxiliary	kg	-
Water consumption	m3	-
Electricity consumption	kWh	-
Other energy carriers	MJ	-
Material loss	kg	-
Output materials from waste treatment	kg	0,63

According to the report from EPD-Norge 'Harmonizing the documentation of scenarios beyond cradle to gate, EN 15804' Section 5.2 Table 3 there is no loss on site during construction activities. The window products in this EPD are painted and surface treated in the production and not at the building site. Therefore, there is only 2 items left in this module. 1) Waste treatment of packaging which is considered in the EPD calculations. 1) Energy use during installation. This can be varied depending on the floor, type of building and several other unknown parameters, and therefore ignored in the calculation.

Dust in the air	kg	-

Maintenance (B2)

Material or energy	Quantity per functional unit	
Paint	0,22	kg

Maintenance – The scenario includes painting. Cleaning is performed three times per year. It is assumed that the linings are painted as often as windows.

The transport of window as waste is calculated based on a scenario with 50 km distance.

Transport to waste processing (C2)

Type	Capacity Utilization	Type of vehicle	Distance (km)	Fuel /Energy Consumption	Fuel/Energy Consumption
Truck	95%	Unspecified	50	0,033 l/t-km	0,28 l/km

End of Life (C1, C3, C4)

The EOL waste treatment scenario has been created based on two references. The first one is EN17213 Annex B, which gives generic scenarios for different types of windows and door sets. Additionally, Statistics Norway was referred to in order to get reference numbers for treatment of construction waste in Norway (https://www.ssb.no/en) in 2019. At the end of the RSL of the utforing, it is assumed that it will be dismantled and transported as mixed waste to the scrap recycling centre, where the wood will be separated and treated for recycling, energy recovery or will go to landfill per % calculated from Statistics Norway 2019 for Construction Waste

Scenario parameter	Value	Unit
Collection process – kg collected separately	--	kg
Collection process – kg collected with mixed waste	8,98	kg
Recovery process – kg for re-use	0	kg
Recovery process – kg for recycling	0	kg
Recovery process – kg for energy recovery	8,65	kg
Disposal (total) – kg for final deposition	0,33	kg

Benefits and loads beyond system boundaries (D)

	Quantity per functional unit	
Substitution of thermal energy	30,55	MJ
Substitution of electrical energy	15,22	MJ
Substitution of raw materials	-	kg

LCA: Results

Raw material extraction and transportation are the top contributors with each contributing about 25% to the environmental impacts. This is followed by manufacturing and maintenance, with each contributing about 10% to the environmental impacts. The contribution % are quoted for GWP total, however similar trend is seen across all impact categories.

X = included; MNR: Module Not Relevant

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D
X	X	X	X	X	MNR	X	MNR	X	MNR	MNR	MNR	X	X	X	X	X	X	X
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/Demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Environmental impact

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Please note that Modules B1, B3, B4, B5, B6, B7 are not included in the results tables because they have been assigned as MNR

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
Climate change – total	kg CO2e	−1,71E1	3,51E0	6,20E0	-7,40E0	2,82E−1	7,59E−1	1,54E0	0	7,33E−2	1,57E1	7,88E−1	-1,88E1
Climate change – fossil	kg CO2e	3,03E0	3,51E0	1,52E0	8,06E0	2,82E−1	9,30E−2	1,19E0	0	7,33E−2	3,76E−1	7,87E−1	−2,74E0
Climate change – biogenic	kg CO2e	−2,07E01	0	4,68E0	−1,6E1	0	6,66E−1	0	0	0	1,54E1	0	-1,6E1
Climate change – LULUC	kg CO2e	5,35E−1	1,27E−3	3,04E−3	5,39E−1	8,49E−5	5,79E−5	3,45E−1	0	2,65E−5	2,73E−4	1,3E−4	−1,47E−4
Ozone depletion	kg CFC11e	3,3E−7	7,99E−7	8,45E−8	1,21E−6	6,63E−8	6,84E−9	1,05E−7	0	1,67E−8	2,08E−8	4,62E−8	−5,8E−7
Acidification	mol H+e	3,68E−2	1,01E−2	8,21E−3	5,51E−2	1,19E−3	2,89E−4	8,84E−3	0	2,11E−4	1,21E−3	2,8E−3	−2,14E−2
Eutrophication, aquatic freshwater[2)]	kg Pe	2,32E−4	2,98E−5	1,05E−4	3,67E−4	2,3E−6	1,64E−6	9,14E−5	0	6,24E−7	1E−5	1,79E−5	−5,19E−6
Eutrophication, aquatic marine	kg Ne	5,65E−3	2,02E−3	2E−3	9,66E−3	3,57E−4	8,3E−5	2,22E−3	0	4,18E−5	2,49E−4	3,02E−4	−1,12E−3
Eutrophication, terrestrial	mol Ne	4,68E−2	2,25E−2	1,52E−2	8,45E−2	3,95E−3	9,1E−4	1,41E−2	0	4,67E−4	2,81E−3	4,05E−3	−1,26E−2

Photochemical ozone formation	kg NMVOCe	1,53E−2	8,6E−3	5,47E−3	2,94E−2	1,27E−3	2,83E−4	4,89E−3	0	1,79E−4	9,01E−4	2,08E−3	−4,98E−3
Abiotic depletion, minerals & metals	kg Sbe	5,13E−5	9,66E−5	4,79E−5	1,96E−4	4,82E−6	1,04E−6	7,03E−5	0	2,02E−6	3,29E−6	3,25E−6	−3,83E−7
Abiotic depletion of fossil resources	MJ	4,35E1	5,31E1	2,84E1	1,25E2	4,39E0	8,95E−1	1,48E1	0	1,11E0	2,8E0	4,21E0	−3,56E1
Water use[1)]	m3e depr.	2,67E0	1,74E−1	4,55E−1	3,29E0	1,63E−2	1,71E−2	6,17E−1	0	3,63E−3	9,35E−2	7,57E−2	−1,92E−1

1) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. 2) Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e.

ADDITIONAL (OPTIONAL) INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
Particulate matter	Incidence	4,65E−7	2,24E−7	7,62E−8	7,65E−7	2,55E−8	4,97E−9	7,93E−8	0	4,67E−9	1,26E−8	2,41E−8	−1,73E−7
Ionizing radiation,	kBq U235e	1,31E−1	2,32E−1	1,6E−1	5,22E−1	1,92E−2	2,92E−3	3,34E−2	0	4,85E−3	1,21E−2	8,79E−3	−1,61E−1
Eco-toxicity (freshwater	CTUe	8,63E1	4,12E1	6,04E1	1,88E2	3,35E0	9,4E−1	3,72E1	0	8,61E−1	7,67E0	2,02E1	−1,66E1
Human toxicity,	CTUh	4,04E−9	1,18E−9	2,9E−9	8,12E−9	8,58E−11	8,77E−11	8,03E−10	0	2,48E−11	1,6E−10	2,91E−10	−6,02E−10
Human toxicity,	CTUh	8,54E−8	4,51E−8	5,71E−8	1,88E−7	3,98E−9	1,25E−9	4,27E−8	0	9,41E−10	6,35E−9	3,18E−8	3,68E−9
Land use related	-	2,32E1	4,52E1	3,34E0	7,18E1	6,63E0	4,94E−1	1,31E1	0	9,39E−1	1,25E0	1,29E0	−4E−1

3) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
RPEE	MJ	1,37E1	7,59E−1	9,26E1	1,07E2	5,53E−2	3,83E−2	4,5E0	0	1,59E−2	4,72E−2	1,61E−1	−1,62E1
RPEM	MJ	8,5E1	0E0	5,64E0	9,06E1	0E0	8,62E−3	0E0	0	0E0	1,95E−1	0E0	0E0
TPE	MJ	9,86E1	7,59E−1	9,83E1	1,98E2	5,53E−2	4,69E−2	4,5E0	0	1,59E−2	2,43E−1	1,61E−1	−1,62E1
NRPE	MJ	4,35E1	5,31E1	1,84E1	1,15E2	4,39E0	8,95E−1	1,48E1	0	1,11E0	2,8E0	4,21E0	−3,56E1
NRPM	MJ	0E0	0E0	1E1	1E1	0E0	0E0	0E0	0	0E0	0E0	0E0	0E0
TRPE	MJ	4,35E1	5,31E1	2,84E1	1,25E2	4,39E0	8,95E−1	1,48E1	0	1,11E0	2,8E0	4,21E0	−3,56E1
SM	kg	4,59E−2	0E0	3,05E−2	7,64E−2	0E0	0E0	1,8E−2	0	0E0	0E0	0E0	0E0
RSF	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0	0E0	0E0	0E0	0E0
NRSP	MJ	0E0	0E0	4,67E1	4,67E1	0E0	0E0	0E0	0	0E0	0E0	0E0	0E0
W	m3	8,2E−2	9,18E−3	9,34E−3	1,01E−1	9,14E−4	2,62E−4	2,06E−2	0	1,92E−4	3,06E−3	2,58E−3	−4,48E−4

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water

END-OF-LIFE WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
HW	Kg	4,36E−1	5,46E−2	2,22E0	2,71E0	4,27E−3	4,71E−3	2,27E−1	0	1,14E−3	0E0	1,31E−1	3,46E−2
NHW	Kg	5,69E0	3,77E0	4,12E0	1,36E1	4,72E−1	1,22E−1	2,05E0	0	7,86E−2	0E0	4,69E−1	8,39E0
RW	Kg	1,34E−4	3,64E−4	8,84E−5	5,86E−4	3,01E−5	3,54E−6	3,45E−5	0	7,59E−6	0E0	1,06E−5	−2,63E−4

HW Hazardous waste disposed; NHW Non-hazardous waste disposed; RW Radioactive waste disposed

END-OF-LIFE WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
CR	Kg	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0	0E0	0E0	0E0	0E0
MR	Kg	0E0	0E0	0E0	0E0	0E0	2,6E−1	0E0	0	0E0	0E0	0E0	0E0
MER	Kg	0E0	0E0	1,8E−1	1,8E−1	0E0	3,7E−1	0E0	0	0E0	8,98E0	0E0	0E0
EEE	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0	0E0	0E0	0E0	0E0
ETE	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0	0E0	0E0	0E0	0E0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

Norwegian Additional Requirements

Greenhouse gas emissions from the use of electricity in A3 manufacturing

Data Source	Amount	Unit
Ecoinvent v3.6 (2019)	23.1	g CO2-eqv/ kWh

Hazardous substances

☒ The product contains no substances from REACH Candidate List or the Norwegian Priority List

☐ The product contains substances below 0.1% by weight on the REACH Candidate List

☐ The product contains substances from REACH Candidate List or the Norwegian Priority List, see table under Specific Norwegian requirements

☐ The product does not contain any substances on the REACH Candidate List or the Norwegian Priority List. The product can be characterized as hazardous waste (according to the Waste Shift, Appendix III), see table under Specific Norwegian requirements.

Transport

Transport from production site to construction site in A4: 330km

Indoor air quality

According to SINTEF Technical Approval No. 20447, the products are evaluated to not release any particles, gases or radiation that has a negative impact on the indoor climate or to health.

Bibliography

ISO 14025:2010	Environmental labels and declarations – Type III environmental declarations. Principles and procedures.
ISO 14040:2006	Environmental management. Life cycle assessment. Principles and frameworks.
ISO 14044:2006	Environmental management. Life cycle assessment. Requirements and guidelines.

EN 15804:2012+A2:2019	Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.
NPCR- Part A	Construction products and services, version 2.0 (according to EN15804: 2012 + A2: 2019
NPCR014 version 3.0 (2019)	PCR Part B for windows and doors
LCA background report 20.06.2021	Norgesvinduet Kompetanse AS Fixed Frame Window, Balcony Door and Laminated Pine Utforing
EN 17213	Windows and doors - Environmental Product Declarations - Product category rules for windows and pedestrian doorsets
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Tellnes, Lars et al. (2014) EPD-Norge	Harmonising the documentation of scenarios beyond cradle to gate, EN 15804
EPD # NEPD-394-278-NO	Norgesvinduet Kompetanse AS Malt utforing i laminert furu

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