Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

NOVATOP OPEN

from

AGROP NOVA a.s.

NOVATOP

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

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General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification

Product Category Rules (PCR)

CEN standard EN 158041+A2 serves as the Core Product Category Rules (PCR)

Product Category Rules (PCR): PCR 2019:14 Construction products (EN 15804:A2) (1.3.1)

PCR review was conducted by: IVL Swedish Environmental Research Institute Secretariat of the International EPD® System

Life Cycle Assessment (LCA)

LCA accountability:
Mgr. Barbora Vlasata,
UCEEB CTU in Prague
www.uceeb.cz

UNIVERZITNÍ CENTRUM ENERGETICKY EFEKTIVNÍCH BUDOV ČVUT V PRAZE

Third-party verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:
☒ EPD verification by accredited certification body

Third-party verification: TZÚS Praha, s.p. is an approved certification body accountable for the thirdparty verification

The certification body is accredited by: Czech Accreditation Institute

Procedure for follow-up of data during EPD validity involves third party verifier:
☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD: Agrop Nova a.s.,
Contact: Jan Sušeň
Sales manager
Jan.susen@agrop.cz
www.agrop.cz

Description of the organisation:
AGROP NOVA a.s. was established in 2001. Today it is one of the largest and most modern producers of large multilayer boards in Europe. The company's core product range is NOVATOP SWP multilayer boards and NOVATOP SYSTEM - a comprehensive and in many ways unique building system based on cross-laminated timber (CLT).

Product-related or management system-related certifications:
ISO 9001:2015

Name and location of production site(s):
Agrop Nova a.s., Lesnická 49, 798 03 Plumlov, the Czech Republic (headquarters and drying of wood)
Agrop Nova a.s., Ptenský Dvorek 99, 798 43 Ptení, the Czech Republic (plant)

Product information

Product name and identification:
NOVATOP OPEN

Product description:
NOVATOP OPEN - The construction of the element consists of a load-bearing bottom multilayer plate (SWP), on which prisms (KVH, DUO, TRIO, BSH, I-beams) are glued in the basic axial distance of 625 mm, fulfilling the load-bearing function. Transverse stiffening ribs are inserted between the individual prisms, reinforcing around the perimeter and around the building openings. The dimensions and spacing of the prisms can be adjusted according to the project requirements. The connection of the boards and ribs is carried out by gluing and cold pressing. The cavities between the prisms can be fitted with thermal insulation. The element can be sealed with another sheet material - diffusion open (e.g. Fermacell, DHF, DFP, etc.).

UN CPC code:
314 Boards and panels

Geographical scope:
Europe, Global
For modules A1-A3, A4 and C1-C4 +D a European and Global scale has been considered due to the availability of data for waste scenarios.

LCA information

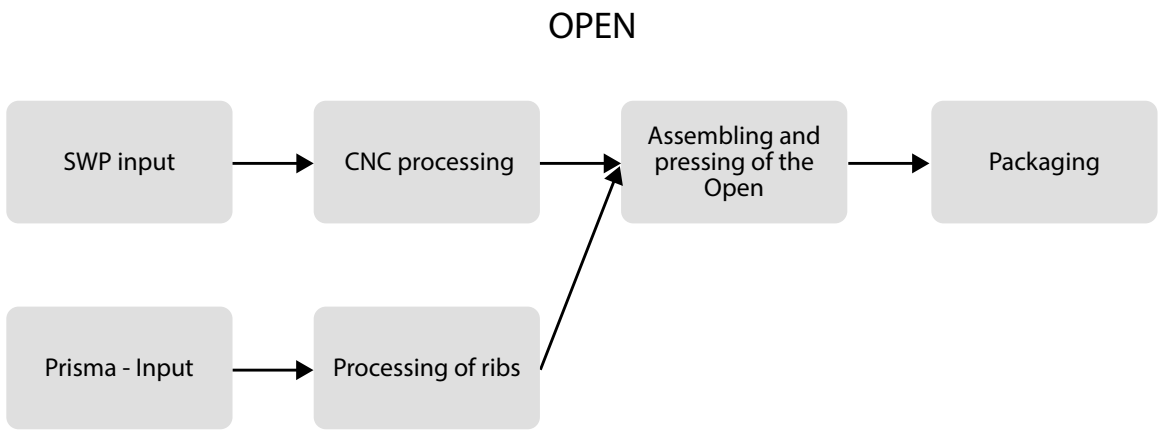
Functional unit / declared unit:
1 m^3 of solid wood panel – mass 490 kg

Time representativeness:
< 10 years for background data;
< 2 years for manufacturer's data

Database(s) and LCA software used:
EcoInvent database v. 3.8;
SimaPro 9.4.0.2 software

Description of system boundaries:
Cradle to gate with options, modules C1–C4, module D and with optional modules (A1–A3 + C + D and additional modules). The additional modules may be one or more selected from A4–A5 and/or B1–B7

System diagram



More information:
The electricity used in the production processes of module A3 is purchased from an electricity supplier and is supported by a Guarantee of Origin- it is electricity from renewable energy sources. The share of renewable energy sources was modelled based on the Czech Republic's energy mix current in the reference period. Its climate impact is 0,255 kg CO_2 eq./kWh (using the GWP-GHG indicator). More info about production see www.novatop-system.com

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recyclin-gpotential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	x	x	x	x									x	x	x	x	x
Geography	Global	Global	Global	Global									Global	Global	Global	Global	Global
Specific data used		>90%			-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products		0%			-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites		0%			-	-	-	-	-	-	-	-	-	-	-	-	-

Content information

Product components	**Weight, kg**	**Post-consumer material, weight-%**	**Biogenic material, weight-% and kg C/kg**
Sawnwood	459	0	100 %/204
Additional inputs – glue and sealant	25	0	0
Additional inputs – fasteners wood	3	0	100 %
Additional inputs – fasteners iron	0,5	0	0
TOTAL	490	0	94 %/204
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	**Weight biogenic carbon, kg C/kg**
Packaging film LDPE	2	0	0
TOTAL	2	0	0

Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804

		Results per functional or declared unit														
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	3,06E+02	5,12E+01	ND	ND	ND	ND	ND	ND	ND	ND	5,26E-01	4,05E+00	3,73E-01	-1,34E+01	-9,12E+00
GWP-biogenic	kg CO_2 eq.	-3,10E+03	1,21E-01	ND	ND	ND	ND	ND	ND	ND	ND	4,12E-04	9,71E-03	2,91E-04	2,14E+02	-9,35E-01
GWP-luluc	kg CO_2 eq.	2,65E+00	1,75E-02	ND	ND	ND	ND	ND	ND	ND	ND	4,15E-05	1,36E-03	2,94E-05	-1,27E-02	-8,17E-03
GWP-total	kg CO_2 eq.	-2,79E+03	5,14E+01	ND	ND	ND	ND	ND	ND	ND	ND	5,27E-01	4,07E+00	3,73E-01	2,01E+02	-1,01E+01
ODP	kg CFC 11 eq.	2,00E+00	2,24E-01	ND	ND	ND	ND	ND	ND	ND	ND	3,27E-03	1,62E-02	2,48E-03	-7,00E-02	-5,07E-02
AP	mol H+eq.	4,94E-05	1,16E-05	ND	ND	ND	ND	ND	ND	ND	ND	1,13E-07	9,21E-07	7,97E-08	-2,23E-06	-1,55E-06
EP-freshwater	kg P eq.	1,16E-01	3,42E-03	ND	ND	ND	ND	ND	ND	ND	ND	1,58E-05	2,72E-04	1,12E-05	-2,72E-03	-3,32E-03
EP-marine	kg N eq.	6,57E-01	6,72E-02	ND	ND	ND	ND	ND	ND	ND	ND	1,36E-03	4,97E-03	1,05E-03	-1,76E-02	-1,56E-02
EP-terrestrial	mol N eq	7,18E+00	7,35E-01	ND	ND	ND	ND	ND	ND	ND	ND	1,49E-02	5,42E-02	1,15E-02	-2,05E-01	-1,64E-01
POCP	kg NMVOC eq.	2,24E+00	2,22E-01	ND	ND	ND	ND	ND	ND	ND	ND	4,18E-03	1,66E-02	3,24E-03	-6,12E-02	-4,66E-02
ADPminerals&metals*	kg Sb eq.	1,73E-03	1,83E-04	ND	ND	ND	ND	ND	ND	ND	ND	2,11E-07	1,46E-05	1,49E-07	-4,23E-05	-2,94E-05
ADP-fossil*	MJ	4,69E+03	7,73E+02	ND	ND	ND	ND	ND	ND	ND	ND	7,17E+00	6,13E+01	5,08E+00	-2,04E+02	-1,55E+02
WDP*	m^3	5,29E+01	2,19E+00	ND	ND	ND	ND	ND	ND	ND	ND	1,04E-02	1,74E-01	7,34E-03	-2,57E+00	-3,97E-01
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land useand land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADPminerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption															

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

		Results per functional or declared unit														
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq.	3,09E+02	5,12E+01	ND	ND	ND	ND	ND	ND	ND	ND	5,27E-01	4,06E+00	3,73E-01	-1,34E+01	-9,13E+00
PM	Disease incidence	6,13E-05	3,52E-06	ND	ND	ND	ND	ND	ND	ND	ND	5,62E-08	2,81E-07	4,71E-08	-9,76E-07	-6,06E-07
IR	kBq U235 eq.	4,65E+01	4,03E+00	ND	ND	ND	ND	ND	ND	ND	ND	3,27E-02	3,20E-01	2,32E-02	-1,59E+00	-2,09E+00
ETP-fw	CTUe	8,33E+03	5,90E+02	ND	ND	ND	ND	ND	ND	ND	ND	4,10E+00	4,69E+01	2,90E+00	-2,00E+02	-1,09E+02
HTP-c	CTUh	4,62E-07	2,13E-08	ND	ND	ND	ND	ND	ND	ND	ND	7,08E-10	1,67E-09	6,04E-10	-4,94E-09	-6,76E-09
HTP-nc	CTUh	7,20E-06	5,97E-07	ND	ND	ND	ND	ND	ND	ND	ND	3,66E-09	4,76E-08	2,89E-09	1,18E-07	-1,13E-07
SQP	dimensi-onless	2,54E+05	5,28E+02	ND	ND	ND	ND	ND	ND	ND	ND	9,31E-01	4,22E+01	6,59E-01	-1,51E+02	-9,24E+01

[1] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Resource use indicators

		Results per functional or declared unit														
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	3,64E+02	7,54E+00	ND	ND	ND	ND	ND	ND	ND	ND	2,80E-02	6,01E-01	1,99E-02	-8,17E+00	-9,02E+00
PERM	MJ	3,86E+04	2,82E+00	ND	ND	ND	ND	ND	ND	ND	ND	9,13E-03	2,25E-01	6,46E-03	-1,88E+00	-1,89E+00
PERT	MJ	3,89E+04	1,04E+01	ND	ND	ND	ND	ND	ND	ND	ND	3,72E-02	8,26E-01	2,63E-02	-1,01E+01	-1,09E+01
PENRE	MJ	4,69E+03	7,73E+02	ND	ND	ND	ND	ND	ND	ND	ND	7,17E+00	6,13E+01	5,08E+00	-2,04E+02	-1,55E+02
PENRM	MJ	3,86E+04	2,82E+00	ND	ND	ND	ND	ND	ND	ND	ND	9,13E-03	2,25E-01	6,46E-03	-1,88E+00	-1,89E+00
PENRT	MJ	4,33E+04	7,76E+02	ND	ND	ND	ND	ND	ND	ND	ND	7,18E+00	6,16E+01	5,09E+00	-2,06E+02	-1,57E+02
SM	kg	0	0	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
RSF	MJ	0	0	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
NRSF	MJ	0	0	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
FW	m^3	5,29E+01	2,19E+00	ND	ND	ND	ND	ND	ND	ND	ND	1,04E-02	1,74E-01	7,34E-03	-2,57E+00	-3,97E-01
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water															

Waste indicators

		Results per functional or declared unit														
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	1,39E-02	2,00E-03	ND	ND	ND	ND	ND	ND	ND	ND	1,93E-05	1,60E-04	1,37E-05	-3,88E-04	-2,68E-04
Non-hazardous waste disposed	kg	1,43E+02	3,67E+01	ND	ND	ND	ND	ND	ND	ND	ND	8,82E-03	2,94E+00	6,25E-03	-6,95E+00	-6,16E+00
Radioactive waste disposed	kg	2,81E-02	5,30E-03	ND	ND	ND	ND	ND	ND	ND	ND	4,99E-05	4,20E-04	3,54E-05	-1,21E-03	-1,07E-03

Output flow indicators

		Results per functional or declared unit														
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0	0	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
Material for recycling	kg	0	0	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	3,43E+02	0
Materials for energy recovery	kg	0	0	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
Exported energy, electricity	MJ	0	0	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
Exported energy, thermal	MJ	0	0	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0

References

ISO 14020:2000 Environmental labels and declarations — General principles, 2000-09

ISO 14025: EN ISO 14025:2006-11: Environmental labels and declarations - Type III environmental declarations — Principles and procedures

ISO, 14040:2006 Environmental management — Life cycle assessment — Principles and framework, 2006-07

ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines, 2006-07

EN 15804+A2:2019 European Committee for Standardization: Sustainability of construction works

– Environmental product declarations – Core rules for the product category of construction products, 2019

General Programme Instructions of The International EPD® System. Version 4.0, 2021-03-29

Product Category Rules (PCR) document for Construction Products (PCR 2019:14 VERSION 1.3.1, 2022-11-01)

Ecoinvent: Ecoinvent Centre, www.Eco-invent.org version 3.8

SimaPro software 9.0.4.2, Pré Consultants

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