epd-norge.no
The Norwegian EPD Foundation

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	Hjelle AS
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-2719-1419-EN
Registration number:	NEPD-2719-1419-EN
ECO Platform reference number:	-
Issue date:	12.03.2021
Valid to:	12.03.2026

Molto Flex 3s. Høy - MF32-222-2

Hjelle AS

Hjelle

www.epd-norge.no

General information

Product:

Molto Flex 3s. Høy - MF32-222-2

Owner of the declaration:

Hjelle AS
Contact person: Jahn Marius Larsen
Phone: 92048833
e-mail: jahn@hjelle.no

Program operator:

The Norwegian EPD Foundation
Pb. 5250 Majorstuen, 0303 Oslo
Phone: +47 23 08 80 00
e-mail: post@epd-norge.no

Manufacturer:

Hjelle AS
Vikøyra Industriområde 3 , 6230 Sykkylven
Norway

Declaration number:

NEPD-2719-1419-EN

Place of production:

Hjelle AS
Vikøyra Industriområde 3 , 6230 Sykkylven
Norway

ECO Platform reference number:

Management system:

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A1:2013 serves as core PCR
NPCR 026:2018 Part B for furniture

Organisation no:

912684261

Statement of liability:

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Issue date: 12.03.2021

Valid to: 12.03.2026

Declared unit:

1 Pcs Molto Flex 3s. Høy - MF32-222-2

Year of study:

2020

Declared unit with option:

A1,A2,A3,A4

Comparability:

EPDs from programmes other than the Norwegian EPD Foundation may not be comparable

Functional unit:

Development and verification of EPD:

The declaration has been developed and verified using EPD tool lca.tools ver EPD2020.11, developed by LCA.no AS. The EPD tool is integrated into the company's environmental management system, and has been approved by EPD-Norway

General information on verification of EPD from EPD tools:

Independent verification of data, other environmental information and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4. Individual third party verification of each EPD is not required when the EPD tool is i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPDNorway, and iii) the proccess is reviewed annualy. See Appendix G of EPD-Norway's General Programme Instructions for further information on EPD tools.

Developer of EPD:

Jahn Marius Larsen

Reviewer of company-specific input data and EPD:

Elisabeth Hurlen

Verification of EPD tool:

Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPDNorway's procedures and guidelines for verification and approval of EPD tools.

Erik Svanes, Norsus AS

(no signature required)

Approved:

Sign

Håkon Hauan, CEO EPD-Norge

Key environmental indicators	Unit	Cradle to gate A1 - A3
Global warming	kg CO2 eqv	344,44
Total energy use	MJ	8799,80
Amount of recycled materials	%	13,61

Product

Market:

Worldwide

Product description:

The MOLTO Flex system offers numerous opportunities and is highly adaptable to many situations. Due to the smart coupling fittings, the arm and back parts can be moved and the different modules can be switched. This provides a flexible sofa system that can vary high and low areas and easily be refurnished. 1, 2 and 3 seater with a high or low back are just the basic models. The modular system also allows you to build corner or open ended sofas.

Product specification

Technical data:

Width: 234cm
Height: 132cm
Depth:78cm
Seat height: 45cm

Weight: 115kg

Reference service life, product

15 years.

Reference service life, building

Materials	kg	%	Recycled share in material (kg)	Recycled share in material (%)
Metal - Steel	9,00	7,92	7,50	83,33
Textile - Wool	9,46	8,33	0,00	0,00
Plastic - Polyurethane (PUR)	25,70	22,61	0,00	0,00
Plastic - Polyethylene	0,20	0,18	0,00	0,00
Wood - Laminated wood	5,43	4,78	0,00	0,00
Wood - Plywood	53,85	47,39	0,00	0,00
Cardboard	10,00	8,80	7,63	76,30

Packaging	kg		Recycled share in material (kg)	Recycled share in material (%)
Packaging - Cardboard	0,75		0,57	76,30
Packaging - Plastic	0,96		0,00	0,00

LCA: Calculation rules

Declared unit:

1 Pcs Molto Flex 3s. Høy - MF32-222-2

Cut-off criteria:

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

Allocation:

The allocation is made in accordance with the provisions of EN 15804. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

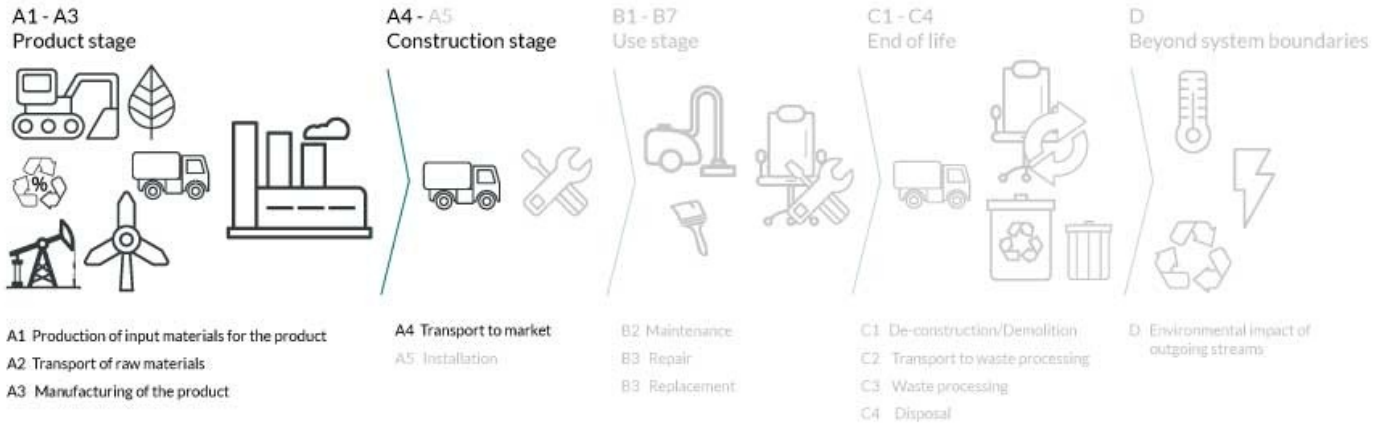
Data quality:

Specific data for the product composition are provided by the manufacturer. They represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on registered EPDs according to EN 15804, Ostfold Research databases, ecoinvent and other LCA databases. The data quality of the raw materials in A1 is presented in the table below.

Materials	Source	Data quality	Year
Plastic - Polyurethane (PUR)	ecoinvent 3.4	Database	2015
Metal - Steel	EPD-Norge	EPD	2015
Cardboard	ecoinvent 3.4	Database	2017
Metal - Steel	ecoinvent 3.4	Database	2017
Packaging - Cardboard	ecoinvent 3.4	Database	2017
Packaging - Plastic	ecoinvent 3.4	Database	2017
Plastic - Polyethylene	ecoinvent 3.4	Database	2017
Textile - Wool	ecoinvent 3.4	Database	2017
Wood - Laminated wood	ecoinvent 3.4	Database	2017
Wood - Plywood	ecoinvent 3.4	Database	2017

System boundary:

Life cycle stages included are described in figure and through the corresponding letter and number designations in the declaration (see figure below).



Additional technical information:

Transportation to an average customer in Oslo is 600km (A4: average European lorry > 32 tonnes)

The following information describe the scenarios in the different modules of the EPD.

The following information describe the scenarios in the different modules of the EPD.

It is assumed that the solution is dismantled and the materials recycled or combusted according to the general Norwegian treatment of industrial waste.

Transport from production place to user (A4)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Unit	Value (l/t)
Truck	55,0 %	Truck, over 32 tonnes, EURO 6	600	0,022606	l/tkm	13,56
Railway					l/tkm	
Boat					l/tkm	
Other Transportation					l/tkm	

Assembly (A5)

.	Unit	Value
Auxiliary	kg	
Water consumption	m^3	
Electricity consumption	kWh	
Other energy carriers	MJ	
Material loss	kg	
Output materials fr ste treatment	kg	
Dust in the air	kg	
VOC emissions	kg	

Use (B1)

.	Unit	Value

Maintenance (B2)/Repair (B3)

.	Unit	Value
Maintenance cycle*		
Auxiliary		
Other resources		
Water consumption	m^3	
Electricity consumption	kWh	
Other energy carriers	MJ	
Material loss	kg	
VOC emissions	kg	

Replacement (B4)/Refurbishment (B5)

.	Unit	Value
Replacement cycle*		
Electricity consumption	kWh	
Replacement of worn parts		

* Described above if relevant

Operational energy (B6) and water consumption (B7)

.	Unit	Value
Water consumption	m^3	
Electricity consumption	kWh	
Other energy carriers	MJ	
Power output of equipment	kW	

End of Life (C1, C

.	Unit	Value
Hazardous waste disposed	kg	
Collected as mixed construction wa	kg	
Reuse	kg	
Recycling		
Energy recovery		
To landfill	kg	

Scenarios after A1-A4 are not included

Transport to waste processing (C2)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Unit	Value (l/t)
Truck					l/tkm	
Railway					l/tkm	
Boat					l/tkm	
Other Transportation					l/tkm	

LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

System boundaries (X=included, MND=module not declared, MNR=module not relevant)

Product stage			Construction installation stage	User stage								End of life stage				.	Beyond the system bondaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal		Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	.	D
X	X	X	X													.	

Environmental impact

Parameter	Unit	A1	A2	A3	A4
GWP	kg CO_2 -eq	3,37E+02	5,94E-01	6,84E+00	5,73E+00
ODP	kg CFC11 -eq	1,21E-05	1,14E-07	2,87E-07	1,18E-06
POCP	kg C_2H_4-eq	1,21E-01	9,62E-05	7,88E-04	8,96E-04
AP	kg SO_2 -eq	2,34E+00	1,92E-03	1,36E-02	1,48E-02
EP	kg PO_4^{3-} -eq	4,49E-01	3,21E-04	3,98E-03	2,04E-03
ADPM	kg Sb -eq	4,55E-04	1,46E-06	3,79E-05	1,36E-05
ADPE	MJ	3,83E+03	9,22E+00	3,01E+01	9,40E+01

GWP Global warming potential; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources

Reading example: 9,0 E-03 = 9,0*10-3 = 0,009
*INA Indicator Not Assessed

Resource use

Parameter	Unit	A1	A2	A3	A4
RPEE	MJ	3,37E+03	1,59E-01	3,41E+02	1,71E+00
RPEM	MJ	2,15E+03	0,00E+00	0,00E+00	0,00E+00
TPE	MJ	5,52E+03	1,59E-01	3,41E+02	1,71E+00
NRPE	MJ	5,00E+03	9,49E+00	7,96E+01	9,70E+01
NRPM	MJ	5,32E+02	0,00E+00	0,00E+00	0,00E+00
TRPE	MJ	5,53E+03	9,49E+00	7,96E+01	9,70E+01
SM	kg	1,57E+01	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	5,07E-02	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
W	m^3	3,62E+00	2,12E-03	2,74E-01	2,30E-02

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

Reading example: 9,0 E-03 = 9,0*10-3 = 0,009
*INA Indicator Not Assessed

End of life - Waste

Parameter	Unit	A1	A2	A3	A4
HW	kg	5,17E-03	5,17E-06	6,44E-05	5,17E-05
NHW	kg	1,49E+02	7,70E-01	6,39E+00	8,86E+00
RW	kg	INA*	INA*	INA*	INA*

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

Reading example: 9,0 E-03 = 9,0*10-3 = 0,009
*INA Indicator Not Assessed

End of life - Output flow

Parameter	Unit	A1	A2	A3	A4
CR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MR	kg	0,00E+00	0,00E+00	2,72E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	2,72E-02	0,00E+00
EEE	MJ	INA*	INA*	INA*	INA*
ETE	MJ	INA*	INA*	INA*	INA*

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

Reading example: 9,0 E-03 = 9,0*10-3 = 0,009
*INA Indicator Not Assessed

Additional Norwegian requirements

Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

Electricity mix	Data source	Amount	Unit
El-mix, Norway (kWh)	ecoinvent 3.4	31,04	g CO2-ekv/kWh

Dangerous substances

The product contains no substances given by the REACH Candidate list or the Norwegian priority list.

Indoor environment

Our furniture does not contain any substrates that affect indoor climate.

Additional environmental information

Bibliography

ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations - Principles and procedures.
ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines.
EN 15804:2012+A1:2013 Environmental product declaration - Core rules for the product category of construction products.
ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products.
ecoinvent v3, Allocation, cut-off by classification, Swiss Centre of Life Cycle Inventories.
Iversen et al., (2018) eEPD v3.0 - Background information for EPD generator system. LCA.no report number 04.18
Vold et al., (2019) EPD generator for Norsk Industri, Background information for industry application and LCA data, LCA.no report number 06.19.
NPCR Part A: Construction products and services. Ver. 1.0. April 2017, EPD-Norge.
NPCR 026 Part B for Furniture. Ver. 2.0 October 2018, EPD-Norge.

epd-norge.no The Norwegian EPD Foundation	**Program operator and publisher** The Norwegian EPD Foundation Post Box 5250 Majorstuen, 0303 Oslo,Norway	Phone: e-mail: web:	+47 23 08 80 00 post@epd-norge.no www.epd-norge.no
Hjelle	**Owner of the declaration** Hjelle AS Vikøyra Industriområde 3 , 6230 Sykkylven	Phone: e-mail: web:	92048833 jahn@hjelle.no www.hjelle.no
LCA.no	**Author of the Life Cycle Assessment** LCA.no AS Dokka 1C , 1671 Kråkerøy	Phone: e-mail: web:	+47 916 50 916 post@lca.no www.lca.no
LCA.no	**Developer of EPD generator** LCA.no AS Dokka 1C,1671 Kråkerøy	Phone: e-mail: web:	+47 916 50 916 post@lca.no www.lca.no