Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

Molok®Classic 5 m^3 waste container

from

Molok Oy

Programme:	The International EPD® System, www.environdec.com
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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

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

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): *PCR 2019:14 Construction products (EN 15804+A2) (1.11)*
PCR review was conducted by: *The Technical Committee of the International EPD® System. The review panel may be contacted via info@environdec.com.*
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD process certification ☒ EPD verification
Third party verifier: *Hannu Karppi* *Ramboll Finland Oy* Approved by: The International EPD® System
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 from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

Differences versus previous version of EPD:

2022-02-01 Version 1

2022-02-28 Version 2
Editorial change: Updated values of post-consumer material percentages in components of waste container (on page 7, upper table). The amount of post-consumer material in components is 0%. The modification made has no impact on LCI or LCIA results presented in the EPD document, or to any other content of EPD. Only the percentages presented in table were incorrect in version 1 of EPD.

2023-05-16 Version 3:
Changes in component (share of recycled origin of raw materials): plastic well, composite framing's plastic share, lifting bag and lid. Inventory data of aluminum component manufacturing changed to supplier-specific data (EPD).

The components replaced during RSL changed: only lifting bag and lifting ring needs to be replaced. Secondary database of GaBi professional updated to 2022 version. Practitioner of LCA study changed to Etteplan Finland from LCA Consulting (now part of Etteplan Finland). LCI and LCIA results, content information and other related definitions/descriptions changed due to the modifications made.

Only one use and EoL stage location is presented in the EPD. Use location is assumed to be in Sweden. Previously two alternative locations were studied and presented.

Company information

Owner of the EPD: Molok Oy

Contact: Samuli Hellemaa, Director Products and Marketing, samuli.hellemaa@molok.com

Description of the organisation: Molok Oy develops, produces, markets and sells waste collection systems. Company has app. 80 employees, mainly located in the head quarter in Finland. International sales is mostly organized by independent partners.

Product-related or management system-related certifications: Molok has following certified management systems: quality (ISO 9001), environment (ISO 14001) and occupational safety (ISO 45001).

Name and location of production site: Nokia, Finland

Product information

Product name: Molok®Classic 5 m^3 waste container

Product identification: Semi underground container

Product description:
MolokClassic 5 m^3 is a waste container which is partly underground. The function of MolokClassic is to contain and store waste before collection and transportation to further treatment. MolokClassic is suitable for all kind of commercial waste fractions – municipal solid waste (MSW), paper, cardboard, biowaste, plastic packaging, glass and metal. It also can be divided to sections to enable the collection of two waste types in one MolokClassic container. Reference life of the container is 30 years when used properly.

There are several options for customer to select when acquiring MolokClassic 5 m^3. Depending on the designed function (waste type to be collected) and some customer-specific choices (e.g. framing materials), the product, MolokClassic 5 m^3, has different variants and modifications.

UN CPC code: 369 other plastic products

LCA information

Functional unit / declared unit: One (1 piece) stand-alone MolokClassic 5 m^3 waste container

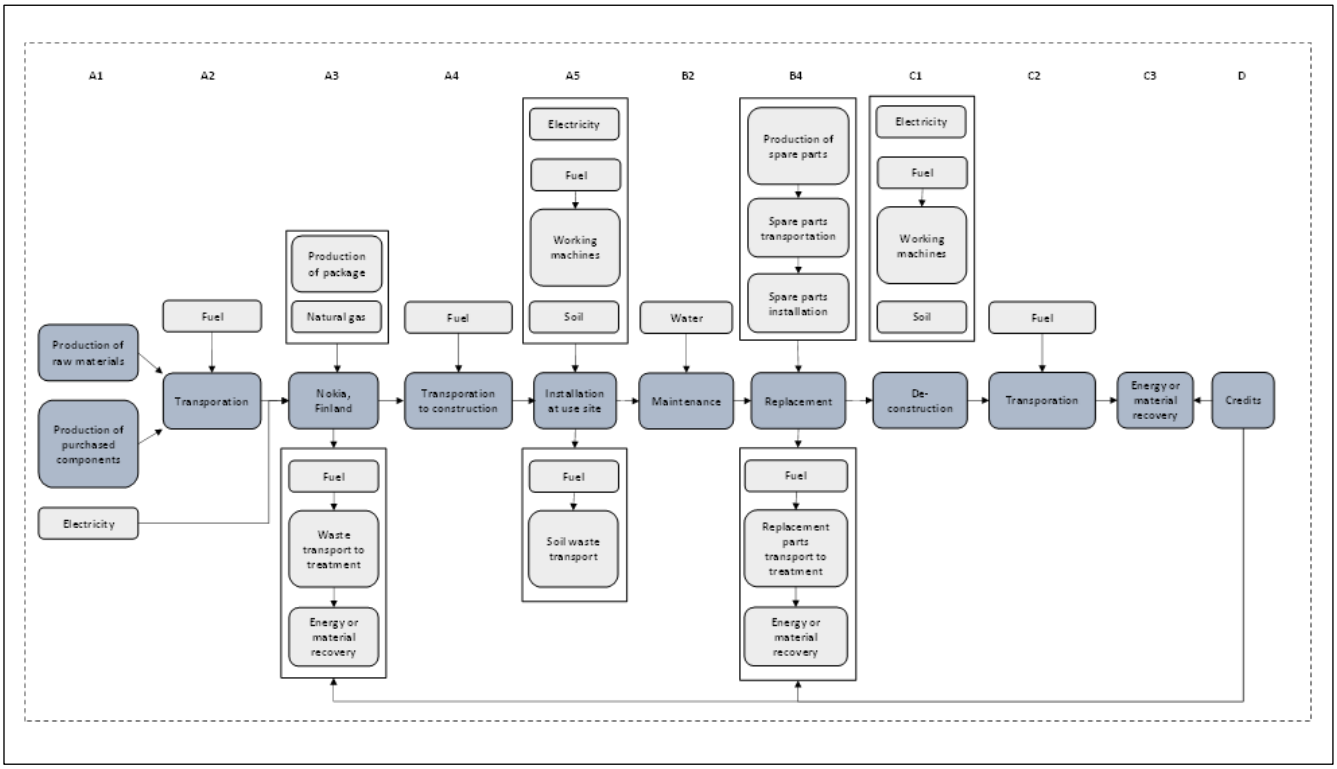
Reference service life:
30 years - defined based on the service life of a plastic well. Service life for lifting bag and lifting ring: 15 years. RSL of other components is the same as for plastic well, i.e. 30 years.

Time representativeness:
Primary data (of Nokia production plant) represents year 2019. The raw materials of MolokClassic components are modelled with inventory data representing year 2022. Secondary data used is the newest available data from GaBi professional database (2022) and Ecoinvent 3.6 databases.

Database(s) and LCA software used:
GaBi 10.5 software used for modelling. Secondary data from GaBi professional database 2022 and Ecoinvent 3.6 (APOS system modelling) were used.

Practitioner of the study:
Etteplan Finland Oy
Laserkatu 6, 53850 Lappeenranta, Finland
www.etteplan.com

Description of system boundaries:
b) Cradle to gate with options, modules C1–C4, module D and with optional modules (A1–A3 + C + D and additional modules). The additional modules A4–A5 and B1–B7 are included in the system boundary.



More information about methodological choices and data:

The cut off rule is reflected in the inputs of the product system studied separately for each module. Flows accounting less than 1% of the overall input mass or energy flows are excluded from the study if appropriate LCI data or even proxy data is not available. Only omitted flows are: Capital equipment, infrastructure and employee commute, detergent used in the washing of a container in module B, pigment/colorant used in plastic well production. Those are seen negligible.

The recommended allocation procedure described in PCR, EN 15804+A2 and ISO 14044, section 4.3.4 is followed. As principle, allocation is avoided whenever possible. When allocation is applied, it is ensured that there is no double counting or omissions, and all the environmental impacts are allocated to either product or to co-products.

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

	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-Recycling-potential
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	N.A.	X	N.A.	X	NA	N.A.	N.A.	X	X	X	N.A.	X
Geography	FI/EU	FI/EU	FI	FI to SE	SE	-	SE	-	FI/ SE	-	-	-	SE	SE	SE	-	SE
Specific data used	For gate-to-gate operations, construction installation and replacement.					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	N.A.					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	N.A.					-	-	-	-	-	-	-	-	-	-	-	-

Abbreviations: X Declared, ND. Not declared, N.A. Not applicable, FI Finland, SE Sweden

A1 – Raw material supply: The raw material supply covers sourcing and production of all raw materials, fuels and production of electricity used in the Nokia production plant.

A2 – Transport: Transportation of raw materials, purchased components and packaging materials to Nokia plant. Transportation distances are defined based on actual suppliers of raw materials and components.

A3 – Manufacturing: Includes production of packaging materials at suppliers and natural gas combustion (used for molding of plastic components) at Nokia plant. Transportation of waste streams generated in Nokia production plant to treatment plant (material and energy recovery) are also included.

Electricity used in Nokia production plant is renewable energy with Guarantee of Origin (GoO). Molok has committed to purchase renewable GoO electricity also in future years to achieve its carbon neutrality aims. Electricity purchased consist of wind power (8.1%), hydropower (40.7%) and biomass (51.2%). Fossil GHG emission factor of GoO electricity consumed at Nokia plant is 0.09 kg CO_2 eq./MWh.

A4 – Transportation to construction: Transportation of MolokClassic to the use site. LCI and LCIA results are provided for Sweden.

A5 – Installation at use site: Includes final assembly of the MolokClassic waste container, excavation of installation pit and treatment of installation related waste streams.

B1-B7 – Use stage: Includes the emissions generated due to the washing, production and transportation of spare parts, assembly of spare parts and EoL treatment of original parts replaced by new ones.

C1-C3 – End of life: In EoL phase (C1 module), separately sorted materials of disassembled waste container are, aluminum, composite board, plastic and steel. Aluminum, plastic (excluding lifting bag) and steel components are assumed to be directed to material recovery. Lifting bag is assumed to be directed to energy recovery due to contamination (dirt and waste) and can be regarded as mixed waste. Composite board is also assumed to be directed to energy recovery, according to the manufacturer's instructions. EoL stage is assumed to take place in Sweden.

D – Reuse-Recovery/Recycling potential: Emission credits are obtained from energy recovery and recycling of waste materials. In energy recovery, it is assumed that heat and electricity from waste incineration substitute thermal energy from natural gas and electricity grid mix of country in question, respectively.

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Plastic well 5m^3	128.0	0%	0%
Lid: Standard main lid with filling lid	18.3	0%	0%
Framing: Composite framing	26.6	0%	40%
Lifting bag: With quick lifting equipment (incl. metal parts)	30.2	39%	0%
Other components (anchor feet, screws, metal parts etc.)	11.9	2%	0%
TOTAL	**215**	**6%**	**5%**

Packaging materials	Weight, kg	Weight-% (versus the product)
Packaging film	1.64	0.8%
Corrugated board	0.66	0.3%
TOTAL	**2.3**	**1.1%**

Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit
None			

Environmental Information – use and EoL phase in Sweden

Potential environmental impact – mandatory indicators according to EN 15804 + A2

Results per one stand-alone Molok®Classic 5m^3 waste container													
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**A4**	**A5**	**B2**	**B4**	**C1**	**C2**	**C3**	**D**
GWP-fossil	kg CO_2 eq.	3,96E+02	2,11E+01	9,01E+01	5,07E+02	2,39E+01	1,08E+02	9,12E-07	1,03E+02	1,28E+02	3,35E+00	1,26E+02	-1,34E+02
GWP-biogenic	kg CO_2 eq.	-2,08E+01	0,00E+00	-1,02E+00	-2,18E+01	0,00E+00	1,02E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,08E+01	-4,41E-01
GWP-luluc	kg CO_2 eq.	1,48E+00	3,08E-02	4,77E-03	1,52E+00	1,29E-01	6,71E-01	7,64E-10	7,24E-01	6,67E-01	2,27E-02	8,80E-03	-1,73E-02
GWP-total	kg CO_2 eq.	3,76E+02	2,11E+01	8,91E+01	4,87E+02	2,41E+01	1,10E+02	9,13E-07	1,03E+02	1,29E+02	3,37E+00	1,47E+02	-1,35E+02
ODP	kg CFC 11 eq.	1,12E-05	1,39E-12	2,85E-09	1,12E-05	2,15E-12	6,89E-11	6,72E-21	5,62E-06	3,40E-10	3,31E-13	4,52E-10	-2,15E-10
AP	mol H^+ eq.	1,30E+00	2,38E-01	5,54E-02	1,60E+00	9,12E-02	4,14E-01	1,70E-09	3,86E-01	4,52E-01	3,95E-03	9,51E-02	-2,13E-01
EP-freshwater	kg PO_4^{3-} eq.	6,11E-02	3,90E-02	8,03E-03	1,08E-01	1,47E-02	6,96E-02	1,07E-09	1,01E-02	7,33E-02	5,12E-04	1,46E-02	-1,94E-02
EP-freshwater	kg P eq.	4,17E-02	1,99E-05	2,04E-05	4,17E-02	6,95E-05	3.46E-04	1.26E-10	5.69E-04	4.30E-04	9.96E-06	5.78E-04	-3.13E-04
EP-marine	kg N eq.	1.81E-01	1.16E-01	2.44E-02	0,00E+00	4.09E-02	4.09E-03	4.09E-04	4.09E-05	4.09E-06	4.09E-07	4.09E-08	4.09E-09
EP-terrestrial	mol N eq.	2,61E+00	1,27E+00	2,50E-01	4,13E+00	4,58E-01	2,13E+00	5,46E-09	7,54E-01	2,20E+00	1,56E-02	2,81E-01	-5,09E-01
POCP	kg NMVOC eq.	2,85E+00	3,03E-01	1,03E-01	3,26E+00	1,07E-01	5,22E-01	1,46E-09	1,20E+00	5,32E-01	3,42E-03	6,89E-02	-1,68E-01
ADP-minerals & metals*	kg Sb eq.	1,18E-03	1,06E-06	3,45E-05	1,21E-03	2,10E-06	1,27E-05	1,10E-13	2,33E-04	1,87E-05	3,39E-07	9,44E-06	-7,32E-05
ADP-fossil*	MJ	1,22E+04	2,57E+02	1,50E+03	1,40E+04	3,09E+02	1,60E+03	1,33E-05	1,52E+03	2,07E+03	4,42E+01	7,91E+02	-3,68E+03
WDP	m^3	1,75E+01	8,01E-02	6,94E-01	1,82E+01	2,23E-01	4,87E+00	4,25E-04	7,41E+00	2,09E+01	3,77E-02	1,63E+01	-8,15E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and 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; ADP-minerals&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.*

Use of resources

Results per one stand-alone Molok®Classic 5m³ waste container													
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**A4**	**A5**	**B2**	**B4**	**C1**	**C2**	**C3**	**D**
PERE	MJ	1,56E+03	4,91E+00	5,61E+00	1,57E+03	1,77E+01	3,14E+02	1,96E-06	7,24E+02	6,22E+02	3,06E+00	2,99E+02	-7,47E+02
PERM	MJ	2,62E+02	0,00E+00	1,15E+01	2,74E+02	0,00E+00	0,00E+00	0,00E+00	1,26E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,83E+03	4,91E+00	1,71E+01	1,85E+03	1,77E+01	3,14E+02	1,96E-06	7,36E+02	6,22E+02	3,06E+00	2,99E+02	-7,47E+02
PENRE	MJ	5,27E+03	2,58E+02	1,45E+03	6,98E+03	3,10E+02	1,60E+03	1,33E-05	1,40E+03	2,07E+03	4,44E+01	7,92E+02	-3,68E+03
PENRM	MJ.	7,55E+03	0,00E+00	4,76E+01	7,60E+03	0,00E+00	0,00E+00	0,00E+00	4,13E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,28E+04	2,58E+02	1,50E+03	1,46E+04	3,10E+02	1,60E+03	1,33E-05	1,81E+03	2,07E+03	4,44E+01	7,92E+02	-3,68E+03
SM	kg	4,79E+01	0,00E+00	0,00E+00	4,79E+01	0,00E+00	0,00E+00	0,00E+00	1,33E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	1,72E+00	5,96E-03	3,83E-02	1,76E+00	2,05E-02	4,70E-01	1,57E-08	7,60E-01	1,10E+00	3,54E-03	5,11E-01	-1,33E+00
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 production and output flows

Waste production

Results per one stand-alone Molok®Classic 5m³ waste container													
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**A4**	**A5**	**B2**	**B4**	**C1**	**C2**	**C3**	**D**
Hazardous waste disposed	kg	5,90E-01	1,12E-09	2,63E-07	5,90E-01	1,57E-09	2,10E-08	2,23E-15	2,96E-01	4,96E-08	2,35E-10	1,03E-07	-2,91E-07
Non-hazardous waste disposed	kg	4,23E+01	2,84E-02	6,40E-01	4,29E+01	4,65E-02	5,18E-01	3,13E-06	1,89E+01	9,40E-01	7,23E-03	1,54E+01	-7,56E+00
Radioactive waste disposed	kg	1,97E-01	3,37E-04	4,64E-03	2,02E-01	5,34E-04	9,44E-02	4,17E-10	1,92E-01	2,02E-01	8,24E-05	8,30E-02	-2,64E-01

Output flows

Results per one stand-alone Molok®Classic 5m³ waste container													
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**A4**	**A5**	**B2**	**B4**	**C1**	**C2**	**C3**	**D**
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	1,22E+01	0,00E+00	1,87E+00	1,40E+01	0,00E+00	0,00E+00	0,00E+00	1,61E+01	0,00E+00	0,00E+00	1,80E+02	0,00E+00
Materials for energy recovery	kg	1,52E-01	0,00E+00	1,80E+00	1,95E+00	0,00E+00	0,00E+00	0,00E+00	8,58E+00	0,00E+00	0,00E+00	3,49E+01	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	8,61E+00	8,61E+00	0,00E+00	0,00E+00	0,00E+00	1,26E+02	0,00E+00	0,00E+00	4,02E+02	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	1,29E+01	1,29E+01	0,00E+00	0,00E+00	0,00E+00	2,22E+02	0,00E+00	0,00E+00	7,10E+02	0,00E+00

Information on biogenic carbon content

Results per one stand-alone Molok®Classic 5m³ waste container		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	5.7
Biogenic carbon content in packaging	kg C	0.3

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2.

Additional information

Use of Molok container

-Recommended maintenance lengthen the life cycle of waring parts & container and moreover secures the safe operation. Here are the essential maintenance instructions:

Note: Do not make any holes on the container during maintenance. If necessary, use mild, environmentally friendly detergents.
All broken or damaged parts must be replaced immediately with original spare parts. The use of non-original or self-made spare parts terminates the warranty given by Molok Oy.
Framing: Framing materials should be washed when necessary.
Lid: Lid is washed once a year or when necessary, i.e. with Würth Pineline Power wash. Waxing the lid in every two years after wash eases the cleaning, i.e. Autoglym Supersheen wax can be used.
Lifting container: Lifting container can be washed when necessary i.e. with pressure washer. Note not to use too hard pressure!
Lifting bag: Light wash is possible when needed, do not use pressure washer on the lifting bag.
Container: The entire container can be washed with pressure washer when necessary. Remove all water from the container after the wash.
During every emptying of the container all possible damages such as cuts, cracks and tears should be checked from:
• the lid
• possible quick system
• lifting bag - check especially:
• closing rope
• rope lock
• lifting loops
Note: Check the update maintenance information from the authorized Molok partner

Disposal of packaging materials and discarded Molok containers

Packaging materials
Bubble wrap, stretch films, plastic straps, pallets, and cardboard boxes/collars are used in the packing of Molok products.
- Clean packaging plastics (bubble wrap, stretch films and plastic rims) can be delivered for the collection of plastic packaging
- Cardboard boxes and collars are delivered for cardboard collection
- Pallets can be reused or delivered for separate collection of wood. Some waste disposal plants collect used pallets separately.

Discarded Molok® containers
Molok deep collection containers are long-lasting and durable. If the container becomes unnecessary at one site, the primary option is to relocate the container to a new site where there is a need to collect waste. If no new use is found for the container and it is desired to decommission it completely, following steps are followed:
- Aluminium and metal parts are separated for metal collection. Metal parts can be found in the following parts:
• lifting structures of the lifting bag/lifting container
• the collar ring of the container
• the support rings of the framing or possible aluminium

framing
• the waste type sign

-Plastic container bodies (wells) are recommended to be reduced to smaller, easier-to-handle parts and after cleaning (if necessary) direct to material recovery to be used as raw material to plastics industry.
-Lifting bags and composite framing boards are disposed of as mixed waste for further treatment (often energy recovery by incineration).

Quality and environmental management system

Molok's operations have been certified to meet quality (ISO 9001), environment (ISO 14001) and occupational safety (ISO 45001) requirements.

Code of Conduct

Molok has in writing code of conduct principles, which are executed in the daily operation. The principles include e.g. following aspects: health & safety, environment, legality, human rights, anti-corruption, equality, leadership, protection of intellectual property and fair competition.

References

Ecoinvent 3.6 database

Etteplan Finland. 2023. ANNEX E. Modifications to LCA study and EPD of MolokClassic 5m³.

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LCA Consulting Oy. 2021. LCA study report of MolokClassic 5m3 waste containers.

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