Environmental Profile

This LCA is calculated according to: ISO 14044, ISO 14040 and EN 15804

Ecochain v4.3.1

Product:	3094540 - AquaCell 160 Connection Plug
Unit:	1 piece
Manufacturer:	Wavin - NL - Hardenberg - Verified
Address:	J.C. Kellerlaan 3 7772 SG Hardenberg Netherlands

AquaCell 160 is a water retention units, as part of a PolderRoof solution. PolderRoof is Wavin's complete water retention, level and flow control solution, enabling rain water storage on roofs as well as re-use (for example to keep roof top gardens green).

LCA standard:	NMD Bepalingsmethode 1.1 (2022)
Standard database:	Worldwide - Ecoinvent v 3.6 Cut-Off
Externally verified:	Yes
Issue date:	18-03-2024
End of validity:	18-03-2029
Verifier:	Martijn van Hövell - SGS Search

This LCA was evaluated according to EN15804+A2. It was concluded that the LCA complies with this standard.

The LCA background information and project dossier have been registered in the online Ecochain application in the account Wavin - NL - Hardenberg - Verified (2020). (☑ = module declared, MND = module not declared).

A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
☑	☑	☑	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	☑	☑	☑	☑

Product stage

A1 Raw material supply A2 Transport A3 Manufacturing

Construction process stage

A4 Transport gate to site
A5 Assembly / Construction installation process

Use stage

B1 Use B2 Maintenance B3 Repair B4 Replacement B5 Refurbishment
B6 Operational energy use B7 Operational water use

End-of-Life stage

C1 De-construction demolition C2 Transport C3 Waste processing
C4 Disposal

Benefits and loads beyond the system boundaries

D Reuse- Recovery- Recycling- potential

Environmental impacts and parameters

ECI = Environmental Costs Indicator [euro]; **ADPE** = Abiotic depletion potential for non-fossil resources [kg Sb-eq]; **ADPF** = Abiotic depletion potential for fossil resources [kg Sb-eq]; **GWP** = Global warming potential [kg CO2-eq]; **ODP** = Depletion potential of the stratospheric ozone layer [kg CFC-11-eq]; **POCP** = Formation potential of tropospheric ozone photochemical oxidants [kg ethene-eq]; **AP** = Acidification potential of land and water [kg SO2-eq]; **EP** = Eutrophication potential [kg PO4 3−-eq]; **HTP** = Human toxicity potential [kg 1,4-DB-eq]; **FAETP** = Freshwater aquatic ecotoxicity potential [kg 1,4-DB-eq]; **MAETP** = Marine aquatic ecotoxicity potential [kg 1,4-DB-eq]; **TETP** = Terrestrial ecotoxicity potential [kg 1,4-DB-eq]; **GWP-total** = EF EN15804+A2 Climate Change [kg CO2 eq]; **GWP-f** = EF Climate change - Fossil [kg CO2 eq]; **GWP-b** = EF EN15804+A2 Climate Change - Biogenic [kg CO2 eq]; **GWP-luluc** = EF EN15804+A2 Climate Change - Land use and LU change [kg CO2 eq]; **ODP** = EF Ozone depletion [kg CFC11 eq]; **AP** = EF Acidification [mol H+ eq]; **EP-fw** = EF Eutrophication, freshwater [kg P eq]; **EP-m** = EF Eutrophication, marine [kg N eq]; **EP-T** = EF Eutrophication, terrestrial [mol N eq]; **POCP** = EF Photochemical ozone formation [kg NMVOC eq]; **ADP-mm** = EF Resource use, minerals and metals [kg Sb eq]; **ADP-f** = EF Resource use, fossils [MJ]; **WDP** = EF Water use [m3 depriv.]; **PM** = EF Particulate matter [disease inc.]; **IR** = EF Ionising radiation [kBq U-235 eq]; **ETP-fw** = EF Ecotoxicity, freshwater [CTUe]; **HTP-c** = EF Human toxicity, cancer [CTUh]; **HTP-nc** = EF Human toxicity, non-cancer [CTUh]; **SQP** = EF Land use [Pt]; **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials [MJ]; **PERM** = Use of renewable primary energy resources used as raw materials [MJ]; **PERT** = Total use of renewable primary energy resources [MJ]; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials [MJ]; **PENRM** = Use of non-renewable primary energy resources used as raw materials [MJ]; **PENRT** = Total use of non-renewable primary energy resources [MJ]; **PET** = Total energy [MJ]; **SM** = Use of secondary material [kg]; **RSF** = Use of renewable secondary fuels [MJ]; **NRSF** = Use of non-renewable secondary fuels [MJ]; **FW** = Use of net fresh water [m3]; **HWD** = Hazardous waste disposed [kg]; **NHWD** = Non-hazardous waste disposed [kg]; **RWD** = Radioactive waste disposed [kg]; **CRU** = Components for re-use [kg]; **MFR** = Materials for recycling [kg]; **MER** = Materials for energy recovery [kg]; **EE** = Exported energy [MJ]; **EET** = Exported energy thermic [MJ]; **EEE** = Exported energy electric [MJ]

Statement of Confidentiality

Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	0	0	0	0	0	0	0	0	0
ADPE	kg Sb-eq	3.59E-7	4.96E-8	7.39E-8	4.83E-7	1.50E-8	7.26E-8	1.68E-10	4.06E-8	6.11E-7
ADPF	kg Sb-eq	5.52E-5	1.43E-5	1.27E-5	8.22E-5	4.22E-6	2.79E-5	2.32E-7	7.34E-5	1.88E-4
GWP	kg CO2-eq	8.81E-3	1.94E-3	2.41E-3	1.32E-2	5.74E-4	1.68E-2	2.33E-4	4.29E-4	3.12E-2
ODP	kg CFC-11-eq	8.98E-10	3.45E-10	1.91E-10	1.43E-9	1.07E-10	3.69E-10	5.53E-12	-1.05E-9	8.62E-10
POCP	kg ethene-eq	2.90E-6	1.17E-6	1.05E-6	5.12E-6	3.45E-7	2.77E-6	5.31E-8	4.99E-6	1.33E-5
AP	kg SO2-eq	4.10E-5	8.54E-6	1.04E-5	5.99E-5	2.47E-6	1.41E-5	1.23E-7	1.36E-5	9.02E-5
EP	kg PO4 3−-eq	6.40E-6	1.68E-6	1.33E-6	9.41E-6	4.94E-7	2.50E-6	5.26E-8	4.05E-8	1.25E-5
HTP	kg 1,4-DB-eq	4.07E-3	8.18E-4	1.12E-3	6.00E-3	2.46E-4	5.64E-3	1.81E-5	1.65E-4	1.21E-2
FAETP	kg 1,4-DB-eq	1.74E-4	2.39E-5	3.83E-5	2.36E-4	7.20E-6	1.21E-4	1.94E-5	-1.77E-5	3.66E-4
MAETP	kg 1,4-DB-eq	4.09E-1	8.59E-2	1.51E-1	6.46E-1	2.57E-2	2.79E-1	1.94E-2	1.59E-2	9.86E-1
TETP	kg 1,4-DB-eq	4.77E-5	2.89E-6	8.33E-5	1.34E-4	8.71E-7	1.75E-5	3.02E-8	-9.23E-6	1.43E-4
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	9.91E-3	1.96E-3	2.76E-3	1.46E-2	5.80E-4	1.79E-2	2.73E-4	7.17E-4	3.41E-2
GWP-f	kg CO2 eq	8.40E-3	1.96E-3	2.12E-3	1.25E-2	5.79E-4	1.69E-2	2.73E-4	6.96E-4	3.09E-2
GWP-b	kg CO2 eq	1.50E-3	9.05E-7	4.38E-4	1.94E-3	3.52E-7	9.50E-4	2.36E-7	2.85E-5	2.92E-3
GWP-luluc	kg CO2 eq	1.83E-5	7.18E-7	2.01E-4	2.20E-4	2.05E-7	3.28E-6	4.85E-9	-6.18E-6	2.18E-4
ODP	kg CFC11 eq	8.15E-10	4.32E-10	2.24E-10	1.47E-9	1.33E-10	4.37E-10	6.86E-12	-1.13E-9	9.15E-10
AP	mol H+ eq	5.02E-5	1.14E-5	1.29E-5	7.45E-5	3.30E-6	1.82E-5	1.65E-7	1.56E-5	1.12E-4
EP-fw	kg P eq	6.36E-7	1.98E-8	3.71E-8	6.93E-7	4.77E-9	9.48E-8	2.20E-10	-2.15E-8	7.71E-7
EP-m	kg N eq	8.42E-6	4.00E-6	3.05E-6	1.55E-5	1.18E-6	5.34E-6	1.05E-7	1.56E-6	2.37E-5
EP-T	mol N eq	9.25E-5	4.41E-5	3.37E-5	1.70E-4	1.30E-5	5.87E-5	6.66E-7	1.72E-5	2.60E-4
POCP	kg NMVOC eq	2.22E-5	1.26E-5	9.58E-6	4.44E-5	3.72E-6	1.86E-5	2.50E-7	1.47E-5	8.16E-5
ADP-mm	kg Sb eq	3.59E-7	4.96E-8	7.39E-8	4.83E-7	1.50E-8	7.26E-8	1.68E-10	4.07E-8	6.11E-7
ADP-f	MJ	1.34E-1	2.96E-2	2.37E-2	1.87E-1	8.89E-3	5.74E-2	5.01E-4	1.67E-1	4.21E-1
WDP	m3 depriv.	2.94E-3	1.06E-4	1.83E-2	2.14E-2	2.73E-5	1.11E-3	3.25E-6	2.58E-3	2.51E-2
PM	disease inc.	5.07E-10	1.76E-10	1.60E-10	8.42E-10	5.23E-11	3.00E-10	3.45E-12	1.13E-10	1.31E-9
IR	kBq U-235 eq	9.05E-4	1.24E-4	3.77E-5	1.07E-3	3.89E-5	1.74E-4	2.31E-6	5.41E-6	1.29E-3
ETP-fw	CTUe	3.59E-1	2.64E-2	5.51E-2	4.40E-1	7.22E-3	6.55E-2	4.20E-4	-6.32E-2	4.50E-1
HTP-c	CTUh	5.46E-12	8.55E-13	1.91E-12	8.22E-12	2.57E-13	8.24E-12	1.28E-14	4.83E-14	1.68E-11
HTP-nc	CTUh	1.39E-10	2.88E-11	5.95E-11	2.28E-10	8.61E-12	9.75E-11	2.73E-13	2.75E-12	3.37E-10
SQP	Pt	9.27E-2	2.56E-2	1.77E-3	1.20E-1	7.61E-3	4.56E-2	1.28E-3	-1.86E-1	-1.10E-2

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.80E-2	3.70E-4	1.15E-1	1.44E-1	1.28E-4	2.81E-3	1.90E-5	-3.13E-2	1.15E-1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.80E-2	3.70E-4	1.15E-1	1.44E-1	1.28E-4	2.81E-3	1.90E-5	-3.13E-2	1.15E-1
PENRE	MJ	1.42E-1	3.14E-2	2.56E-2	1.99E-1	9.44E-3	6.11E-2	5.32E-4	1.75E-1	4.45E-1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.42E-1	3.14E-2	2.56E-2	1.99E-1	9.44E-3	6.11E-2	5.32E-4	1.75E-1	4.45E-1
PET	MJ	1.70E-1	3.17E-2	1.41E-1	3.43E-1	9.56E-3	6.39E-2	5.51E-4	1.44E-1	5.61E-1
SM	kg	2.10E-2	0	0	2.10E-2	0	0	0	0	2.10E-2
RSF	MJ	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0
FW	m3	1.29E-4	3.60E-6	4.34E-4	5.66E-4	1.01E-6	3.29E-5	6.15E-7	2.56E-5	6.27E-4
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.46E-7	7.49E-8	2.52E-8	2.46E-7	2.27E-8	9.46E-8	6.11E-10	-1.29E-7	2.35E-7
NHWD	kg	1.45E-3	1.87E-3	3.89E-5	3.37E-3	5.51E-4	2.81E-3	2.20E-3	4.41E-5	8.98E-3
RWD	kg	7.67E-7	1.94E-7	4.67E-8	1.01E-6	6.05E-8	2.21E-7	3.26E-9	-1.73E-8	1.28E-6
CRU	kg	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	1.61E-2	0	0	1.61E-2
MER	kg	0	0	0	0	0	4.69E-3	0	0	4.69E-3
EE	MJ	0	0	0	0	0	0	0	1.51E-1	1.51E-1
EET	MJ	0	0	0	0	0	0	0	5.36E-2	5.36E-2
EEE	MJ	0	0	0	0	0	0	0	2.17E-2	2.17E-2