Environmental Profile

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

Ecochain v3.5.80

Product:	3084137 - Q-Bic Plus Infiltration Unit 3
Unit:	1 piece
Manufacturer:	Wavin - NL - Hardenberg - Verified
Address:	J.C. Kellerlaan 3 7772 SG Hardenberg Netherlands

Q-Bic Plus is a solution for urban areas regarding stormwater management. The Q-Bic Plus geocellular system has been uniquely engineered to combine ease of access and speed of installation.

LCA standard:	NMD Bepalingsmethode 1.1 (2022)
Standard database:	Worldwide - Ecoinvent v 3.6 Cut-Off
Externally verified:	Yes
Issue date:	08-06-2023
End of validity:	08-06-2028
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	2.26	0.06	0.18	2.5	0.04	0.93	0.01	-1.28	2.21
ADPE	kg Sb-eq	3.65E-4	1.22E-5	4.53E-5	4.22E-4	9.60E-6	4.51E-5	1.06E-7	-1.17E-4	3.60E-4
ADPF	kg Sb-eq	4.78E-1	3.52E-3	7.79E-3	4.90E-1	2.70E-3	1.76E-2	1.48E-4	-2.62E-1	2.48E-1
GWP	kg CO2-eq	2.69E+1	4.78E-1	1.48E+0	2.89E+1	3.68E-1	1.07E+1	1.49E-1	-1.66E+1	2.36E+1
ODP	kg CFC-11-eq	5.36E-7	8.49E-8	1.17E-7	7.38E-7	6.83E-8	2.29E-7	3.54E-9	-7.11E-7	3.28E-7
POCP	kg ethene-eq	2.25E-2	2.89E-4	6.42E-4	2.34E-2	2.21E-4	1.73E-3	3.40E-5	-1.10E-2	1.44E-2
AP	kg SO2-eq	8.33E-2	2.10E-3	6.35E-3	9.18E-2	1.58E-3	8.83E-3	7.79E-5	-4.04E-2	6.19E-2
EP	kg PO4 3−-eq	7.37E-3	4.13E-4	8.17E-4	8.60E-3	3.16E-4	1.55E-3	3.41E-5	-3.67E-3	6.83E-3
HTP	kg 1,4-DB-eq	4.00E+0	2.01E-1	6.86E-1	4.89E+0	1.57E-1	3.57E+0	1.17E-2	-2.01E+0	6.62E+0
FAETP	kg 1,4-DB-eq	9.10E-2	5.88E-3	2.34E-2	1.20E-1	4.61E-3	7.70E-2	1.27E-2	-3.94E-2	1.75E-1
MAETP	kg 1,4-DB-eq	2.59E+2	2.11E+1	9.24E+1	3.73E+2	1.65E+1	1.72E+2	1.27E+1	-1.22E+2	4.51E+2
TETP	kg 1,4-DB-eq	1.61E-2	7.12E-4	5.10E-2	6.79E-2	5.58E-4	1.11E-2	1.90E-5	-8.00E-3	7.15E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	2.83E+1	4.83E-1	1.69E+0	3.04E+1	3.71E-1	1.08E+1	1.75E-1	-1.72E+1	2.45E+1
GWP-f	kg CO2 eq	2.81E+1	4.82E-1	1.30E+0	2.99E+1	3.71E-1	1.08E+1	1.75E-1	-1.72E+1	2.41E+1
GWP-b	kg CO2 eq	1.27E-1	2.23E-4	2.68E-1	3.95E-1	2.25E-4	-1.41E-2	1.52E-4	-6.10E-2	3.20E-1
GWP-luluc	kg CO2 eq	7.24E-3	1.77E-4	1.23E-1	1.31E-1	1.31E-4	2.08E-3	2.99E-6	-3.43E-3	1.30E-1
ODP	kg CFC11 eq	5.01E-7	1.06E-7	1.37E-7	7.45E-7	8.55E-8	2.71E-7	4.39E-9	-7.41E-7	3.64E-7
AP	mol H+ eq	9.99E-2	2.80E-3	7.92E-3	1.11E-1	2.11E-3	1.14E-2	1.05E-4	-4.85E-2	7.57E-2
EP-fw	kg P eq	4.08E-4	4.87E-6	2.28E-5	4.36E-4	3.05E-6	6.01E-5	1.37E-7	-1.95E-4	3.04E-4
EP-m	kg N eq	1.65E-2	9.86E-4	1.87E-3	1.94E-2	7.56E-4	3.31E-3	6.80E-5	-8.56E-3	1.49E-2
EP-T	mol N eq	1.86E-1	1.09E-2	2.06E-2	2.17E-1	8.34E-3	3.64E-2	4.25E-4	-9.47E-2	1.68E-1
POCP	kg NMVOC eq	8.64E-2	3.10E-3	5.87E-3	9.54E-2	2.38E-3	1.15E-2	1.60E-4	-4.36E-2	6.58E-2
ADP-mm	kg Sb eq	3.65E-4	1.22E-5	4.53E-5	4.22E-4	9.60E-6	4.51E-5	1.06E-7	-1.17E-4	3.60E-4
ADP-f	MJ	1.00E+3	7.27E+0	1.45E+1	1.03E+3	5.70E+0	3.61E+1	3.20E-1	-5.41E+2	5.28E+2
WDP	m3 depriv.	1.99E+1	2.60E-2	1.12E+1	3.11E+1	1.75E-2	7.09E-1	1.66E-3	-9.60E+0	2.22E+1
PM	disease inc.	8.69E-7	4.33E-8	9.78E-8	1.01E-6	3.35E-8	1.88E-7	2.20E-9	-4.04E-7	8.29E-7
IR	kBq U-235 eq	5.08E-1	3.05E-2	2.31E-2	5.61E-1	2.49E-2	1.09E-1	1.49E-3	-2.59E-1	4.38E-1
ETP-fw	CTUe	1.46E+2	6.49E+0	3.37E+1	1.87E+2	4.63E+0	4.08E+1	2.68E-1	-6.92E+1	1.63E+2
HTP-c	CTUh	6.23E-9	2.10E-10	1.17E-9	7.61E-9	1.65E-10	4.95E-9	7.86E-12	-2.95E-9	9.79E-9
HTP-nc	CTUh	1.78E-7	7.10E-9	3.65E-8	2.21E-7	5.52E-9	6.08E-8	1.73E-10	-8.43E-8	2.04E-7
SQP	Pt	3.28E+1	6.31E+0	1.09E+0	4.01E+1	4.87E+0	2.89E+1	8.22E-1	-1.50E+1	5.98E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.43E+1	9.11E-2	7.06E+1	8.50E+1	8.17E-2	1.78E+0	1.24E-2	-6.89E+0	8.00E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.43E+1	9.11E-2	7.06E+1	8.50E+1	8.17E-2	1.78E+0	1.24E-2	-6.89E+0	8.00E+1
PENRE	MJ	1.08E+3	7.72E+0	1.57E+1	1.10E+3	6.05E+0	3.85E+1	3.40E-1	-5.83E+2	5.63E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.08E+3	7.72E+0	1.57E+1	1.10E+3	6.05E+0	3.85E+1	3.40E-1	-5.83E+2	5.63E+2
PET	MJ	1.09E+3	7.81E+0	8.63E+1	1.19E+3	6.13E+0	4.03E+1	3.52E-1	-5.90E+2	6.43E+2
SM	kg	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0
FW	m3	2.97E-1	8.86E-4	2.66E-1	5.64E-1	6.45E-4	2.09E-2	3.95E-4	-1.42E-1	4.44E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.13E-4	1.84E-5	1.54E-5	1.47E-4	1.46E-5	5.87E-5	3.87E-7	-1.28E-4	9.30E-5
NHWD	kg	1.02E+0	4.61E-1	2.38E-2	1.51E+0	3.53E-1	1.77E+0	1.41E+0	-4.29E-1	4.61E+0
RWD	kg	4.39E-4	4.78E-5	2.86E-5	5.15E-4	3.87E-5	1.38E-4	2.09E-6	-2.33E-4	4.61E-4
CRU	kg	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0	0
EE	MJ	0	0	0	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0	0	0

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