Environmental Profile

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

Ecochain v3.5.80

Product:	3024364 - X-Stream PP Reducer BK 400x315 PVC
Unit:	1 piece
Manufacturer:	Wavin - PL -Buk - Extra products

Wavin X-Stream is a new generation of double-walled pipes and □ttings made of polypropylene. The system is

LCA standard:	EN15804+A2 (2019)
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 - PL -Buk - Extra products (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

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	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	6.40E+0	3.31E-1	1.92E-2	6.76E+0	1.39E-1	1.13E+1	6.62E-2	-7.43E+0	1.08E+1
GWP-f	kg CO2 eq	1.29E+1	3.31E-1	1.94E-2	1.33E+1	1.39E-1	4.68E+0	6.62E-2	-7.41E+0	1.08E+1
GWP-b	kg CO2 eq	-6.53E+0	2.01E-4	-2.05E-4	-6.53E+0	8.43E-5	6.60E+0	5.79E-5	-2.24E-2	4.76E-2
GWP-luluc	kg CO2 eq	7.05E-3	1.17E-4	1.98E-5	7.18E-3	4.91E-5	7.90E-4	1.13E-6	-4.11E-3	3.91E-3
ODP	kg CFC11 eq	5.61E-7	7.63E-8	1.10E-9	6.38E-7	3.20E-8	1.09E-7	1.67E-9	-4.00E-7	3.80E-7
AP	mol H+ eq	5.03E-2	1.88E-3	1.96E-4	5.23E-2	7.91E-4	4.63E-3	3.98E-5	-2.36E-2	3.42E-2
EP-fw	kg P eq	2.36E-4	2.72E-6	1.09E-6	2.40E-4	1.14E-6	2.29E-5	5.20E-8	-1.10E-4	1.55E-4
EP-m	kg N eq	9.01E-3	6.74E-4	2.06E-5	9.71E-3	2.83E-4	1.39E-3	2.75E-5	-4.73E-3	6.68E-3
EP-T	mol N eq	1.02E-1	7.43E-3	2.46E-4	1.09E-1	3.12E-3	1.53E-2	1.61E-4	-5.39E-2	7.41E-2
POCP	kg NMVOC eq	4.45E-2	2.12E-3	8.33E-5	4.67E-2	8.91E-4	4.76E-3	6.05E-5	-2.26E-2	2.99E-2
ADP-mm	kg Sb eq	3.49E-4	8.56E-6	2.61E-6	3.60E-4	3.59E-6	1.76E-5	4.01E-8	-6.20E-5	3.20E-4
ADP-f	MJ	4.21E+2	5.08E+0	1.80E-1	4.26E+2	2.13E+0	1.40E+1	1.22E-1	-2.18E+2	2.24E+2
WDP	m3 depriv.	8.16E+0	1.56E-2	6.93E-3	8.19E+0	6.54E-3	2.71E-1	6.19E-4	-3.77E+0	4.70E+0
PM	disease inc.	5.58E-7	2.99E-8	1.21E-9	5.89E-7	1.25E-8	7.38E-8	8.36E-10	-2.60E-7	4.16E-7
IR	kBq U-235 eq	3.14E-1	2.22E-2	1.35E-4	3.36E-1	9.31E-3	4.30E-2	5.65E-4	-1.36E-1	2.53E-1
ETP-fw	CTUe	1.12E+2	4.12E+0	1.60E+0	1.18E+2	1.73E+0	1.63E+1	1.07E-1	-5.19E+1	8.45E+1
HTP-c	CTUh	6.45E-9	1.47E-10	8.19E-11	6.68E-9	6.16E-11	2.01E-9	2.99E-12	-3.21E-9	5.54E-9
HTP-nc	CTUh	1.18E-7	4.92E-9	2.08E-9	1.25E-7	2.06E-9	2.39E-8	6.67E-11	-5.01E-8	1.01E-7
SQP	Pt	5.79E+2	4.35E+0	2.97E-1	5.83E+2	1.82E+0	1.11E+1	3.12E-1	-4.23E+2	1.74E+2
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.18E+2	7.29E-2	3.19E+0	1.22E+2	3.06E-2	6.80E-1	4.73E-3	-6.60E+1	5.63E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.18E+2	7.29E-2	3.19E+0	1.22E+2	3.06E-2	6.80E-1	4.73E-3	-6.60E+1	5.63E+1
PENRE	MJ	4.51E+2	5.39E+0	1.92E-1	4.57E+2	2.26E+0	1.49E+1	1.29E-1	-2.35E+2	2.39E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	4.51E+2	5.39E+0	1.92E-1	4.57E+2	2.26E+0	1.49E+1	1.29E-1	-2.35E+2	2.39E+2
PET	MJ	5.70E+2	5.47E+0	3.38E+0	5.79E+2	2.29E+0	1.56E+1	1.34E-1	-3.01E+2	2.96E+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	1.33E-1	5.75E-4	1.94E-4	1.34E-1	2.41E-4	8.62E-3	1.50E-4	-5.95E-2	8.32E-2

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.08E-4	1.30E-5	3.63E-11	1.21E-4	5.45E-6	2.35E-5	1.47E-7	-8.51E-5	6.50E-5
NHWD	kg	7.92E-1	3.15E-1	1.40E-4	1.11E+0	1.32E-1	7.21E-1	5.36E-1	-3.90E-1	2.11E+0
RWD	kg	3.24E-4	3.45E-5	1.46E-11	3.58E-4	1.45E-5	5.49E-5	7.94E-7	-1.34E-4	2.95E-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

Ecochain Technologies BV
H.J.E. Wenckebachweg 123, 1096 AM Amsterdam, The Netherlands
https://www.ecochain.com
+31 20 3035 777