Environmental Profile

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

Ecochain v3.5.80

Product:	3020559 - X-Stream PP Branch 45° BK 250
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	1.00E+1	4.03E-2	4.28E-2	1.01E+1	1.58E-1	8.54E+0	7.45E-2	-7.88E+0	1.10E+1
GWP-f	kg CO2 eq	1.38E+1	4.03E-2	4.32E-2	1.39E+1	1.58E-1	4.66E+0	7.45E-2	-7.86E+0	1.09E+1
GWP-b	kg CO2 eq	-3.78E+0	2.45E-5	-4.56E-4	-3.78E+0	9.59E-5	3.88E+0	6.50E-5	-2.57E-2	7.56E-2
GWP-luluc	kg CO2 eq	5.61E-3	1.43E-5	4.41E-5	5.66E-3	5.59E-5	8.97E-4	1.25E-6	-3.27E-3	3.35E-3
ODP	kg CFC11 eq	4.81E-7	9.28E-9	2.44E-9	4.93E-7	3.64E-8	1.20E-7	1.87E-9	-3.41E-7	3.10E-7
AP	mol H+ eq	5.16E-2	2.29E-4	4.36E-4	5.22E-2	9.00E-4	5.01E-3	4.44E-5	-2.40E-2	3.41E-2
EP-fw	kg P eq	2.21E-4	3.31E-7	2.43E-6	2.24E-4	1.30E-6	2.59E-5	5.76E-8	-1.05E-4	1.46E-4
EP-m	kg N eq	9.25E-3	8.21E-5	4.58E-5	9.37E-3	3.22E-4	1.47E-3	2.91E-5	-4.58E-3	6.62E-3
EP-T	mol N eq	1.05E-1	9.04E-4	5.48E-4	1.07E-1	3.55E-3	1.62E-2	1.81E-4	-5.13E-2	7.52E-2
POCP	kg NMVOC eq	4.53E-2	2.59E-4	1.85E-4	4.57E-2	1.01E-3	5.10E-3	6.78E-5	-2.26E-2	2.93E-2
ADP-mm	kg Sb eq	2.48E-4	1.04E-6	5.81E-6	2.55E-4	4.09E-6	1.97E-5	4.47E-8	-5.76E-5	2.21E-4
ADP-f	MJ	4.54E+2	6.18E-1	4.01E-1	4.55E+2	2.42E+0	1.57E+1	1.36E-1	-2.40E+2	2.33E+2
WDP	m3 depriv.	8.77E+0	1.90E-3	1.54E-2	8.79E+0	7.44E-3	3.04E-1	6.34E-4	-4.16E+0	4.94E+0
PM	disease inc.	5.10E-7	3.63E-9	2.68E-9	5.16E-7	1.43E-8	8.19E-8	9.36E-10	-2.42E-7	3.72E-7
IR	kBq U-235 eq	2.89E-1	2.70E-3	3.01E-4	2.92E-1	1.06E-2	4.78E-2	6.33E-4	-1.33E-1	2.18E-1
ETP-fw	CTUe	9.90E+1	5.02E-1	3.57E+0	1.03E+2	1.97E+0	1.76E+1	1.14E-1	-4.37E+1	7.91E+1
HTP-c	CTUh	5.47E-9	1.79E-11	1.82E-10	5.67E-9	7.01E-11	2.13E-9	3.29E-12	-2.62E-9	5.26E-9
HTP-nc	CTUh	1.12E-7	5.98E-10	4.63E-9	1.17E-7	2.35E-9	2.63E-8	7.31E-11	-4.64E-8	9.96E-8
SQP	Pt	3.48E+2	5.29E-1	6.62E-1	3.49E+2	2.07E+0	1.25E+1	3.50E-1	-2.79E+2	8.54E+1
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	7.05E+1	8.87E-3	7.10E+0	7.76E+1	3.48E-2	7.69E-1	5.30E-3	-4.37E+1	3.48E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	7.05E+1	8.87E-3	7.10E+0	7.76E+1	3.48E-2	7.69E-1	5.30E-3	-4.37E+1	3.48E+1
PENRE	MJ	4.88E+2	6.56E-1	4.27E-1	4.89E+2	2.57E+0	1.67E+1	1.45E-1	-2.59E+2	2.49E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	4.88E+2	6.56E-1	4.27E-1	4.89E+2	2.57E+0	1.67E+1	1.45E-1	-2.59E+2	2.49E+2
PET	MJ	5.58E+2	6.65E-1	7.53E+0	5.66E+2	2.61E+0	1.75E+1	1.50E-1	-3.03E+2	2.84E+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	1.37E-1	6.99E-5	4.31E-4	1.37E-1	2.74E-4	9.03E-3	1.68E-4	-6.44E-2	8.21E-2

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	1.10E-4	1.58E-6	8.07E-11	1.12E-4	6.20E-6	2.57E-5	1.64E-7	-7.51E-5	6.87E-5
NHWD	kg	1.03E+0	3.83E-2	3.12E-4	1.06E+0	1.50E-1	7.74E-1	6.01E-1	-3.30E-1	2.26E+0
RWD	kg	2.86E-4	4.20E-6	3.24E-11	2.90E-4	1.65E-5	6.08E-5	8.90E-7	-1.27E-4	2.42E-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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