Environmental Profile

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

Ecochain v3.5.80

Product:	3015149 - X-Stream PP Bend 15° BK 250 S/S
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	4.66E+0	1.29E-1	2.85E-2	4.81E+0	5.33E-2	1.81E+0	2.51E-2	-2.64E+0	4.06E+0
GWP-f	kg CO2 eq	4.63E+0	1.29E-1	2.88E-2	4.79E+0	5.32E-2	1.81E+0	2.51E-2	-2.63E+0	4.05E+0
GWP-b	kg CO2 eq	2.19E-2	7.81E-5	-3.04E-4	2.16E-2	3.23E-5	-2.13E-3	2.18E-5	-8.92E-3	1.06E-2
GWP-luluc	kg CO2 eq	1.41E-3	4.55E-5	2.95E-5	1.49E-3	1.88E-5	3.01E-4	4.35E-7	-5.11E-4	1.30E-3
ODP	kg CFC11 eq	1.41E-7	2.97E-8	1.63E-9	1.72E-7	1.23E-8	3.95E-8	6.30E-10	-1.34E-7	9.09E-8
AP	mol H+ eq	1.73E-2	7.33E-4	2.91E-4	1.83E-2	3.03E-4	1.67E-3	1.51E-5	-7.12E-3	1.32E-2
EP-fw	kg P eq	7.57E-5	1.06E-6	1.62E-6	7.84E-5	4.38E-7	8.69E-6	1.98E-8	-2.90E-5	5.86E-5
EP-m	kg N eq	2.83E-3	2.62E-4	3.06E-5	3.12E-3	1.09E-4	4.92E-4	9.73E-6	-1.27E-3	2.46E-3
EP-T	mol N eq	3.19E-2	2.89E-3	3.66E-4	3.52E-2	1.20E-3	5.42E-3	6.11E-5	-1.41E-2	2.78E-2
POCP	kg NMVOC eq	1.44E-2	8.26E-4	1.24E-4	1.54E-2	3.42E-4	1.71E-3	2.29E-5	-6.41E-3	1.10E-2
ADP-mm	kg Sb eq	7.46E-5	3.33E-6	3.88E-6	8.18E-5	1.38E-6	6.54E-6	1.52E-8	-1.72E-5	7.26E-5
ADP-f	MJ	1.56E+2	1.98E+0	2.68E-1	1.58E+2	8.17E-1	5.24E+0	4.60E-2	-8.02E+1	8.43E+1
WDP	m3 depriv.	3.10E+0	6.06E-3	1.03E-2	3.11E+0	2.51E-3	1.03E-1	2.59E-4	-1.41E+0	1.81E+0
PM	disease inc.	1.52E-7	1.16E-8	1.79E-9	1.66E-7	4.81E-9	2.74E-8	3.16E-10	-5.85E-8	1.40E-7
IR	kBq U-235 eq	9.36E-2	8.63E-3	2.01E-4	1.02E-1	3.57E-3	1.58E-2	2.13E-4	-3.89E-2	8.32E-2
ETP-fw	CTUe	3.63E+1	1.60E+0	2.38E+0	4.03E+1	6.64E-1	5.95E+0	3.85E-2	-1.04E+1	3.66E+1
HTP-c	CTUh	1.53E-9	5.71E-11	1.22E-10	1.71E-9	2.36E-11	7.55E-10	1.14E-12	-4.43E-10	2.05E-9
HTP-nc	CTUh	4.12E-8	1.91E-9	3.09E-9	4.62E-8	7.91E-10	9.04E-9	2.49E-11	-1.26E-8	4.34E-8
SQP	Pt	8.41E+0	1.69E+0	4.42E-1	1.05E+1	6.99E-1	4.19E+0	1.18E-1	-2.26E+0	1.33E+1
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.11E+1	2.83E-2	4.74E+0	2.59E+1	1.17E-2	2.58E-1	1.77E-3	-1.01E+0	2.51E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.11E+1	2.83E-2	4.74E+0	2.59E+1	1.17E-2	2.58E-1	1.77E-3	-1.01E+0	2.51E+1
PENRE	MJ	1.68E+2	2.10E+0	2.85E-1	1.70E+2	8.68E-1	5.58E+0	4.88E-2	-8.66E+1	9.00E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.68E+2	2.10E+0	2.85E-1	1.70E+2	8.68E-1	5.58E+0	4.88E-2	-8.66E+1	9.00E+1
PET	MJ	1.89E+2	2.13E+0	5.02E+0	1.96E+2	8.80E-1	5.84E+0	5.06E-2	-8.76E+1	1.15E+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	4.89E-2	2.24E-4	2.88E-4	4.95E-2	9.25E-5	3.05E-3	5.66E-5	-2.08E-2	3.19E-2

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	2.23E-5	5.05E-6	5.38E-11	2.74E-5	2.09E-6	8.59E-6	5.57E-8	-2.18E-5	1.63E-5
NHWD	kg	1.87E-1	1.22E-1	2.08E-4	3.10E-1	5.07E-2	2.68E-1	2.03E-1	-6.40E-2	7.67E-1
RWD	kg	8.89E-5	1.34E-5	2.16E-11	1.02E-4	5.56E-6	2.01E-5	3.00E-7	-3.53E-5	9.30E-5
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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