Environmental Profile

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

Ecochain v3.5.80

Product:	3071029 - X-Stream PP Reducer BK 200x110 PVC Nor
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	2.71E+0	5.83E-2	1.88E-2	2.78E+0	3.87E-2	3.53E+0	1.98E-2	-2.17E+0	4.20E+0
GWP-f	kg CO2 eq	4.21E+0	5.82E-2	1.90E-2	4.29E+0	3.87E-2	1.98E+0	1.98E-2	-2.23E+0	4.11E+0
GWP-b	kg CO2 eq	-1.51E+0	3.53E-5	-2.00E-4	-1.51E+0	2.35E-5	1.54E+0	1.77E-5	5.76E-2	9.13E-2
GWP-luluc	kg CO2 eq	2.69E-3	2.06E-5	1.94E-5	2.73E-3	1.37E-5	2.08E-4	3.45E-7	-1.44E-3	1.51E-3
ODP	kg CFC11 eq	3.27E-7	1.34E-8	1.07E-9	3.42E-7	8.92E-9	3.04E-8	5.04E-10	-1.44E-7	2.38E-7
AP	mol H+ eq	1.76E-2	3.32E-4	1.91E-4	1.82E-2	2.21E-4	1.33E-3	1.21E-5	-6.51E-3	1.32E-2
EP-fw	kg P eq	8.94E-5	4.79E-7	1.07E-6	9.09E-5	3.19E-7	6.11E-6	1.58E-8	-3.37E-5	6.36E-5
EP-m	kg N eq	3.11E-3	1.19E-4	2.01E-5	3.25E-3	7.89E-5	4.10E-4	1.08E-5	-1.32E-3	2.42E-3
EP-T	mol N eq	3.50E-2	1.31E-3	2.41E-4	3.65E-2	8.70E-4	4.52E-3	4.89E-5	-1.50E-2	2.69E-2
POCP	kg NMVOC eq	1.51E-2	3.74E-4	8.14E-5	1.56E-2	2.49E-4	1.37E-3	1.83E-5	-6.13E-3	1.11E-2
ADP-mm	kg Sb eq	3.75E-4	1.51E-6	2.55E-6	3.79E-4	1.00E-6	4.75E-6	1.21E-8	-2.51E-5	3.60E-4
ADP-f	MJ	1.31E+2	8.93E-1	1.76E-1	1.32E+2	5.94E-1	3.76E+0	3.68E-2	-6.14E+1	7.48E+1
WDP	m3 depriv.	2.65E+0	2.74E-3	6.77E-3	2.66E+0	1.82E-3	7.85E-2	1.84E-4	-1.07E+0	1.67E+0
PM	disease inc.	1.98E-7	5.25E-9	1.18E-9	2.04E-7	3.49E-9	2.00E-8	2.53E-10	-7.13E-8	1.57E-7
IR	kBq U-235 eq	1.48E-1	3.91E-3	1.32E-4	1.52E-1	2.60E-3	1.16E-2	1.72E-4	-4.13E-2	1.25E-1
ETP-fw	CTUe	5.20E+1	7.26E-1	1.57E+0	5.43E+1	4.83E-1	5.53E+0	3.98E-2	-1.82E+1	4.22E+1
HTP-c	CTUh	1.96E-9	2.58E-11	8.00E-11	2.07E-9	1.72E-11	5.40E-10	9.15E-13	-8.33E-10	1.79E-9
HTP-nc	CTUh	3.92E-8	8.65E-10	2.03E-9	4.21E-8	5.75E-10	6.80E-9	2.20E-11	-1.41E-8	3.53E-8
SQP	Pt	1.40E+2	7.64E-1	2.91E-1	1.42E+2	5.08E-1	2.94E+0	9.43E-2	-1.08E+2	3.67E+1
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	2.72E+1	1.28E-2	3.12E+0	3.03E+1	8.53E-3	1.82E-1	1.48E-3	-1.72E+1	1.33E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	2.72E+1	1.28E-2	3.12E+0	3.03E+1	8.53E-3	1.82E-1	1.48E-3	-1.72E+1	1.33E+1
PENRE	MJ	1.40E+2	9.49E-1	1.87E-1	1.41E+2	6.31E-1	4.00E+0	3.91E-2	-6.63E+1	7.97E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.40E+2	9.49E-1	1.87E-1	1.41E+2	6.31E-1	4.00E+0	3.91E-2	-6.63E+1	7.97E+1
PET	MJ	1.67E+2	9.61E-1	3.31E+0	1.72E+2	6.39E-1	4.18E+0	4.05E-2	-8.35E+1	9.30E+1
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	4.90E-2	1.01E-4	1.89E-4	4.93E-2	6.72E-5	3.15E-3	4.55E-5	-1.81E-2	3.44E-2

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	4.12E-5	2.28E-6	3.54E-11	4.35E-5	1.52E-6	6.78E-6	4.43E-8	-2.82E-5	2.37E-5
NHWD	kg	2.84E-1	5.54E-2	1.37E-4	3.40E-1	3.68E-2	2.08E-1	1.62E-1	-1.02E-1	6.44E-1
RWD	kg	1.72E-4	6.08E-6	1.42E-11	1.78E-4	4.04E-6	1.48E-5	2.41E-7	-4.17E-5	1.55E-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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