

# Environmental Profile

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

Ecochain v3.5.64



Product: 3079977 - AS+ Bend DN 90 45°  
 Unit: 1 piece  
 Manufacturer: Wavin Germany Twist  
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 49767 Twist  
 Germany  
 Contact: <https://www.wavin.com/en-en>

LCA standard: EN15804+A2 (2019)  
 Standard database: Worldwide - Ecoinvent v 3.6 Cut-Off  
 Externally verified: Yes  
 Issue date: 08-04-2022  
 End of validity: 08-04-2027  
 Verifier: Harry van Ewijk - SGS Search



This LCA was evaluated according to EN15804+A2. It was concluded that the LCA complies with this standard.

Wavin AS+ is a mineral-reinforced polypropylene (PP) low noise soil and waste solution. The AS+ has a unique material composition for optimal noise reduction.

The LCA background information and project dossier have been registered in the online Ecochain application in the account Wavin Germany Twist (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 Climate Change [kg CO2 eq]; **GWP-f** = EF Climate change - Fossil [kg CO2 eq]; **GWP-b** = EF Climate Change - Biogenic [kg CO2 eq]; **GWP-luluc** = EF 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

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# Results

Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	6.48E-1	2.34E-2	3.16E-2	7.03E-1	9.90E-3	3.44E-1	2.10E-3	-3.84E-1	6.75E-1
GWP-f	kg CO2 eq	6.49E-1	2.33E-2	2.58E-2	6.98E-1	9.89E-3	3.26E-1	2.10E-3	-4.21E-1	6.16E-1
GWP-b	kg CO2 eq	-1.29E-3	1.08E-5	3.86E-3	2.59E-3	6.01E-6	1.79E-2	4.01E-6	3.70E-2	5.75E-2
GWP-luluc	kg CO2 eq	6.05E-4	8.55E-6	1.98E-3	2.60E-3	3.50E-6	8.11E-5	8.24E-8	-3.55E-4	2.33E-3
ODP	kg CFC11 eq	5.53E-8	5.15E-9	2.95E-9	6.34E-8	2.28E-9	1.93E-8	1.20E-10	-1.46E-8	7.06E-8
AP	mol H+ eq	2.90E-3	1.35E-4	1.24E-4	3.16E-3	5.63E-5	4.63E-4	2.85E-6	-1.41E-3	2.27E-3
EP-fw	kg P eq	1.81E-5	2.35E-7	3.93E-7	1.87E-5	8.14E-8	4.05E-6	3.75E-9	-8.27E-6	1.46E-5
EP-m	kg N eq	5.53E-4	4.77E-5	3.26E-5	6.33E-4	2.02E-5	1.22E-4	1.80E-6	-2.54E-4	5.23E-4
EP-T	mol N eq	6.21E-3	5.26E-4	3.44E-4	7.08E-3	2.22E-4	1.34E-3	1.16E-5	-2.83E-3	5.83E-3
POCP	kg NMVOC eq	2.14E-3	1.50E-4	9.87E-5	2.39E-3	6.35E-5	4.12E-4	3.73E-6	-1.22E-3	1.64E-3
ADP-mm	kg Sb eq	6.07E-5	5.91E-7	5.31E-7	6.18E-5	2.56E-7	1.62E-6	2.90E-9	-3.81E-6	5.98E-5
ADP-f	MJ	1.39E+1	3.52E-1	3.25E-1	1.46E+1	1.52E-1	1.42E+0	8.73E-3	-1.37E+1	2.45E+0
WDP	m3 depriv.	6.29E-1	1.26E-3	1.93E-1	8.24E-1	4.66E-4	3.23E-2	5.14E-5	-2.99E-1	5.57E-1
PM	disease inc.	2.68E-8	2.10E-9	1.68E-9	3.06E-8	8.93E-10	7.40E-9	6.01E-11	-1.41E-8	2.48E-8
IR	kBq U-235 eq	2.62E-2	1.48E-3	4.34E-4	2.81E-2	6.64E-4	5.02E-3	4.01E-5	-8.87E-3	2.50E-2
ETP-fw	CTUe	1.52E+2	3.14E-1	4.95E-1	1.52E+2	1.23E-1	3.39E+0	7.40E-3	-4.63E+0	1.51E+2
HTP-c	CTUh	2.62E-10	1.02E-11	2.12E-11	2.94E-10	4.39E-12	1.89E-10	2.16E-13	-9.44E-11	3.93E-10
HTP-nc	CTUh	7.15E-8	3.43E-10	5.22E-10	7.24E-8	1.47E-10	2.46E-9	4.39E-12	-2.85E-9	7.22E-8
SQP	Pt	3.46E+0	3.05E-1	3.16E-2	3.79E+0	1.30E-1	9.84E-1	2.24E-2	-7.28E+0	-2.35E+0
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	7.89E-1	4.41E-3	1.07E+0	1.86E+0	2.18E-3	1.26E-1	3.25E-4	-1.43E+0	5.61E-1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	7.89E-1	4.41E-3	1.07E+0	1.86E+0	2.18E-3	1.26E-1	3.25E-4	-1.43E+0	5.61E-1
PENRE	MJ	1.49E+1	3.74E-1	3.54E-1	1.56E+1	1.61E-1	1.51E+0	9.26E-3	-1.47E+1	2.56E+0
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.49E+1	3.74E-1	3.54E-1	1.56E+1	1.61E-1	1.51E+0	9.26E-3	-1.47E+1	2.56E+0
PET	MJ	1.57E+1	3.78E-1	1.42E+0	1.75E+1	1.63E-1	1.64E+0	9.58E-3	-1.62E+1	3.12E+0
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	1.44E-2	4.29E-5	4.55E-3	1.90E-2	1.72E-5	1.02E-3	1.07E-5	-5.09E-3	1.49E-2

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	7.10E-6	8.92E-7	4.00E-7	8.39E-6	3.88E-7	3.14E-6	1.06E-8	-2.76E-6	9.17E-6
NHWD	kg	5.84E-2	2.23E-2	1.63E-3	8.23E-2	9.41E-3	6.86E-2	3.84E-2	-1.37E-2	1.85E-1
RWD	kg	2.88E-5	2.31E-6	5.72E-7	3.16E-5	1.03E-6	6.34E-6	5.68E-8	-8.05E-6	3.10E-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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