

# Environmental Profile

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

Ecochain v3.5.64



Product: 3079994 - AS+ Branch DN 150x150 45°  
 Unit: 1 piece  
 Manufacturer: Wavin Germany Twist  
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 Germany  
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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	4.40E+0	1.60E-1	2.17E-1	4.78E+0	6.70E-2	2.32E+0	1.40E-2	-2.56E+0	4.62E+0
GWP-f	kg CO2 eq	4.41E+0	1.60E-1	1.77E-1	4.74E+0	6.70E-2	2.17E+0	1.39E-2	-2.87E+0	4.13E+0
GWP-b	kg CO2 eq	-6.90E-3	7.37E-5	2.65E-2	1.96E-2	4.07E-5	1.49E-1	2.71E-5	3.13E-1	4.82E-1
GWP-luluc	kg CO2 eq	4.41E-3	5.85E-5	1.36E-2	1.80E-2	2.37E-5	5.54E-4	5.54E-7	-2.84E-3	1.58E-2
ODP	kg CFC11 eq	3.69E-7	3.52E-8	2.02E-8	4.24E-7	1.54E-8	1.33E-7	8.07E-10	-1.01E-7	4.72E-7
AP	mol H+ eq	1.97E-2	9.25E-4	8.50E-4	2.14E-2	3.81E-4	3.18E-3	1.92E-5	-9.87E-3	1.51E-2
EP-fw	kg P eq	1.25E-4	1.61E-6	2.69E-6	1.29E-4	5.51E-7	2.77E-5	2.52E-8	-6.14E-5	9.60E-5
EP-m	kg N eq	3.81E-3	3.26E-4	2.23E-4	4.36E-3	1.36E-4	8.36E-4	1.19E-5	-1.78E-3	3.56E-3
EP-T	mol N eq	4.26E-2	3.60E-3	2.36E-3	4.85E-2	1.50E-3	9.23E-3	7.82E-5	-1.99E-2	3.94E-2
POCP	kg NMVOC eq	1.45E-2	1.03E-3	6.76E-4	1.62E-2	4.30E-4	2.83E-3	2.51E-5	-8.46E-3	1.10E-2
ADP-mm	kg Sb eq	3.89E-4	4.04E-6	3.64E-6	3.97E-4	1.73E-6	1.11E-5	1.95E-8	-2.57E-5	3.84E-4
ADP-f	MJ	9.36E+1	2.41E+0	2.23E+0	9.82E+1	1.03E+0	9.72E+0	5.89E-2	-9.34E+1	1.57E+1
WDP	m3 depriv.	4.27E+0	8.61E-3	1.32E+0	5.60E+0	3.15E-3	2.20E-1	3.41E-4	-2.12E+0	3.70E+0
PM	disease inc.	1.82E-7	1.43E-8	1.15E-8	2.08E-7	6.05E-9	5.08E-8	4.05E-10	-1.02E-7	1.64E-7
IR	kBq U-235 eq	1.76E-1	1.01E-2	2.97E-3	1.89E-1	4.49E-3	3.44E-2	2.71E-4	-6.38E-2	1.64E-1
ETP-fw	CTUe	1.04E+3	2.15E+0	3.39E+0	1.05E+3	8.35E-1	2.32E+1	4.93E-2	-3.61E+1	1.04E+3
HTP-c	CTUh	1.78E-9	6.96E-11	1.45E-10	1.99E-9	2.97E-11	1.29E-9	1.45E-12	-6.75E-10	2.64E-9
HTP-nc	CTUh	4.89E-7	2.35E-9	3.57E-9	4.95E-7	9.95E-10	1.68E-8	2.94E-11	-2.05E-8	4.92E-7
SQP	Pt	2.56E+1	2.09E+0	2.16E-1	2.79E+1	8.80E-1	6.72E+0	1.51E-1	-6.05E+1	-2.49E+1
Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	5.81E+0	3.01E-2	7.31E+0	1.32E+1	1.47E-2	8.59E-1	2.19E-3	-1.17E+1	2.31E+0
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	5.81E+0	3.01E-2	7.31E+0	1.32E+1	1.47E-2	8.59E-1	2.19E-3	-1.17E+1	2.31E+0
PENRE	MJ	1.00E+2	2.55E+0	2.43E+0	1.05E+2	1.09E+0	1.03E+1	6.25E-2	-1.00E+2	1.63E+1
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.00E+2	2.55E+0	2.43E+0	1.05E+2	1.09E+0	1.03E+1	6.25E-2	-1.00E+2	1.63E+1
PET	MJ	1.06E+2	2.59E+0	9.74E+0	1.18E+2	1.11E+0	1.12E+1	6.47E-2	-1.12E+2	1.87E+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	9.77E-2	2.93E-4	3.11E-2	1.29E-1	1.16E-4	6.88E-3	7.23E-5	-3.68E-2	9.93E-2

Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	4.83E-5	6.10E-6	2.74E-6	5.71E-5	2.63E-6	2.15E-5	7.14E-8	-1.91E-5	6.22E-5
NHWD	kg	4.01E-1	1.53E-1	1.11E-2	5.65E-1	6.37E-2	4.68E-1	2.59E-1	-9.78E-2	1.26E+0
RWD	kg	1.91E-4	1.58E-5	3.92E-6	2.11E-4	6.99E-6	4.35E-5	3.83E-7	-5.80E-5	2.04E-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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