

# Environmental Profile

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

Ecochain v3.5.80



Product: 3072511 - KG Branch 45° DN250xDN150 FIN  
 Unit: 1 piece  
 Manufacturer: Wavin - PL -Buk - Extra products

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

This document and supporting material contain confidential and proprietary business information of Wavin - PL -Buk - Extra products. These materials may be printed or (photo) copied or otherwise used only with the written consent of Wavin - PL -Buk - Extra products.

# Results

| Environmental impact | Unit         | A1       | A2       | A3       | A1-A3    | C2       | C3      | C4       | D        | Total    |
|----------------------|--------------|----------|----------|----------|----------|----------|---------|----------|----------|----------|
| GWP-total            | kg CO2 eq    | 6.30E+0  | 4.26E-1  | 1.45E-4  | 6.73E+0  | 1.05E-1  | 5.48E+0 | 3.26E-2  | -4.55E+0 | 7.79E+0  |
| GWP-f                | kg CO2 eq    | 1.14E+1  | 4.25E-1  | 1.46E-4  | 1.18E+1  | 1.05E-1  | 3.09E+0 | 3.26E-2  | -5.17E+0 | 9.89E+0  |
| GWP-b                | kg CO2 eq    | -5.15E+0 | 2.58E-4  | -1.54E-6 | -5.15E+0 | 6.36E-5  | 2.38E+0 | 4.24E-5  | 6.25E-1  | -2.15E+0 |
| GWP-luluc            | kg CO2 eq    | 4.95E-2  | 1.50E-4  | 1.49E-7  | 4.97E-2  | 3.71E-5  | 1.37E-3 | 8.23E-7  | -8.47E-3 | 4.26E-2  |
| ODP                  | kg CFC11 eq  | 4.95E-6  | 9.80E-8  | 8.26E-12 | 5.04E-6  | 2.42E-8  | 3.87E-7 | 1.24E-9  | -2.34E-6 | 3.11E-6  |
| AP                   | mol H+ eq    | 5.64E-2  | 2.42E-3  | 1.47E-6  | 5.89E-2  | 5.97E-4  | 6.59E-3 | 2.99E-5  | -2.19E-2 | 4.41E-2  |
| EP-fw                | kg P eq      | 5.16E-4  | 3.50E-6  | 8.24E-9  | 5.19E-4  | 8.63E-7  | 4.61E-5 | 3.79E-8  | -2.35E-4 | 3.31E-4  |
| EP-m                 | kg N eq      | 1.11E-2  | 8.67E-4  | 1.55E-7  | 1.19E-2  | 2.14E-4  | 1.63E-3 | 1.90E-5  | -4.16E-3 | 9.65E-3  |
| EP-T                 | mol N eq     | 1.21E-1  | 9.55E-3  | 1.85E-6  | 1.31E-1  | 2.35E-3  | 1.80E-2 | 1.20E-4  | -4.55E-2 | 1.05E-1  |
| POCP                 | kg NMVOC eq  | 4.01E-2  | 2.73E-3  | 6.28E-7  | 4.28E-2  | 6.73E-4  | 5.37E-3 | 4.11E-5  | -1.51E-2 | 3.38E-2  |
| ADP-mm               | kg Sb eq     | 8.56E-3  | 1.10E-5  | 1.97E-8  | 8.57E-3  | 2.71E-6  | 2.60E-5 | 2.96E-8  | -1.01E-4 | 8.50E-3  |
| ADP-f                | MJ           | 2.62E+2  | 6.53E+0  | 1.36E-3  | 2.69E+2  | 1.61E+0  | 1.75E+1 | 9.03E-2  | -1.21E+2 | 1.67E+2  |
| WDP                  | m3 depriv.   | 1.78E+1  | 2.00E-2  | 5.22E-5  | 1.78E+1  | 4.94E-3  | 6.93E-1 | 4.13E-4  | -7.49E+0 | 1.10E+1  |
| PM                   | disease inc. | 5.26E-7  | 3.84E-8  | 9.08E-12 | 5.65E-7  | 9.46E-9  | 8.11E-8 | 6.21E-10 | -2.07E-7 | 4.49E-7  |
| IR                   | kBq U-235 eq | 6.29E-1  | 2.85E-2  | 1.02E-6  | 6.58E-1  | 7.03E-3  | 6.27E-2 | 4.18E-4  | -2.63E-1 | 4.65E-1  |
| ETP-fw               | CTUe         | 3.48E+2  | 5.30E+0  | 1.21E-2  | 3.53E+2  | 1.31E+0  | 1.37E+2 | 1.51E+0  | -1.20E+2 | 3.73E+2  |
| HTP-c                | CTUh         | 1.24E-8  | 1.89E-10 | 6.17E-13 | 1.26E-8  | 4.65E-11 | 1.87E-9 | 2.38E-12 | -3.51E-9 | 1.10E-8  |
| HTP-nc               | CTUh         | 2.99E-7  | 6.32E-9  | 1.57E-11 | 3.05E-7  | 1.56E-9  | 4.71E-8 | 2.87E-10 | -1.01E-7 | 2.53E-7  |
| SQP                  | Pt           | 5.09E+2  | 5.58E+0  | 2.24E-3  | 5.14E+2  | 1.38E+0  | 1.06E+1 | 2.32E-1  | -2.76E+2 | 2.50E+2  |
| Resource use         | Unit         | A1       | A2       | A3       | A1-A3    | C2       | C3      | C4       | D        | Total    |
| PERE                 | MJ           | 1.02E+2  | 9.36E-2  | 2.40E-2  | 1.02E+2  | 2.31E-2  | 1.26E+0 | 3.46E-3  | -4.81E+1 | 5.50E+1  |
| PERM                 | MJ           | 0        | 0        | 0        | 0        | 0        | 0       | 0        | 0        | 0        |
| PERT                 | MJ           | 1.02E+2  | 9.36E-2  | 2.40E-2  | 1.02E+2  | 2.31E-2  | 1.26E+0 | 3.46E-3  | -4.81E+1 | 5.50E+1  |
| PENRE                | MJ           | 2.81E+2  | 6.93E+0  | 1.44E-3  | 2.88E+2  | 1.71E+0  | 1.86E+1 | 9.58E-2  | -1.30E+2 | 1.79E+2  |
| PENRM                | MJ           | 0        | 0        | 0        | 0        | 0        | 0       | 0        | 0        | 0        |
| PENRT                | MJ           | 2.81E+2  | 6.93E+0  | 1.44E-3  | 2.88E+2  | 1.71E+0  | 1.86E+1 | 9.58E-2  | -1.30E+2 | 1.79E+2  |
| PET                  | MJ           | 3.83E+2  | 7.02E+0  | 2.55E-2  | 3.90E+2  | 1.73E+0  | 1.99E+1 | 9.92E-2  | -1.78E+2 | 2.34E+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           | 2.56E-1  | 7.39E-4  | 1.46E-6  | 2.57E-1  | 1.82E-4  | 1.91E-2 | 1.11E-4  | -9.44E-2 | 1.82E-1  |

| Output flows and waste categories | Unit | A1      | A2      | A3       | A1-A3   | C2      | C3      | C4      | D        | Total   |
|-----------------------------------|------|---------|---------|----------|---------|---------|---------|---------|----------|---------|
| HWD                               | kg   | 1.28E-3 | 1.67E-5 | 2.73E-13 | 1.29E-3 | 4.11E-6 | 2.89E-5 | 1.08E-7 | -1.11E-4 | 1.21E-3 |
| NHWD                              | kg   | 1.59E+0 | 4.05E-1 | 1.05E-6  | 1.99E+0 | 9.97E-2 | 6.35E-1 | 3.99E-1 | -4.78E-1 | 2.65E+0 |
| RWD                               | kg   | 6.04E-4 | 4.44E-5 | 1.10E-13 | 6.49E-4 | 1.09E-5 | 6.75E-5 | 5.90E-7 | -2.39E-4 | 4.89E-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       |



Ecochain Technologies BV  
H.J.E. Wenckebachweg 123, 1096 AM Amsterdam, The Netherlands  
<https://www.ecochain.com>  
+31 20 3035 777