

# ENVIRONMENTAL PRODUCT DECLARATION

## Steel profile systems

from Knauf Danogips GmbH

In accordance with ISO 14025 and EN 15804

**Programme:** The International EPD® System, [www.environdec.com](http://www.environdec.com)  
**Programme operator:** EPD International AB  
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**KNAUF**DANOGIPS

EPD®

## EPD Profile

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**Product category rules (PCR):** The International EPD System PCR for Construction Products and Construction Services 2012:01, version 2.33.

Independent third-party verification of the declaration and data, according to ISO 14025:2006:  
 EPD process certification  EPD verification

*The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.*

## Company information

### Description of the organisation

The Knauf Group is a family-run, global company with 220 production sites worldwide and one of Europe's leading manufacturers of construction products, producing mainly products made of cement, lime and plaster and thermal insulating materials. In Sävsjö and Åhus, Sweden, Knauf Danogips develops, produces and sells steel profile systems for constructions in a wide range of construction applications. Knauf Danogips GmbH is certified according to SS EN ISO 9001:2015, SS EN ISO 14001:2015 and OHSAS 18001:2007.

### Name and location of production site

Knauf Danogips' steel profile systems are produced at their production site in Sävsjö, Sweden and distributed from their production site in Åhus, Sweden.

## EPD Product information

**Product name and identification:** This EPD covers steel profile systems produced by Knauf Danogips GmbH at the facility in Sävsjö, Sweden. A list over these products is attached in Appendix A.

**Product description:** Steel profile systems are construction products used as e.g. beams, struts and attachments and come in different varieties to meet different performance requirements. Properties such as load-bearing, acoustic insulation and mechanical properties vary between different systems. The steel profile systems from Knauf Danogips are made of zinc-coated steel sheets, cut and bent to attain the right dimensions and characteristics. Some profiles additionally have a polyethylene sheet attached. The functional unit is modelled to represent an average of all products in the product category of steel profile systems from Knauf. Figure 1 shows an illustration of one of the products covered by this EPD.

**UN CPC code:** 42190



*Figure 1. Illustration of one of the products within the product category Steel profile systems, for which this EPD is valid.*

## LCA information

**Functional unit / declared unit:** The declared unit is 1 kg of steel profile systems from Knauf.

**Reference service life:** 50 years

**Time representativeness:** The specific data for the products and mass flows used for this EPD is from 2020. All specific and generic data used for modelling are representative for the past five years or more recently.

**Geographical scope:** The end-of-life scenario for the products has been calculated for scenarios in Sweden.

**Database(s) and LCA software used:** The LCA software SimaPro 9.1.0 was used for this study, with data from the database Ecoinvent 3.5

**Description of system boundaries:** All life cycle stages from raw material extraction to the transportation of the finished product to the construction site are included, plus the end of life scenario. The scope is therefore a Cradle-to-gate with options; stages A1-A4, B1-B7, C1-C4.

**Excluded lifecycle stages:** A5 was excluded, since data was not available for this stage.

### Standards:

The LCA is performed in accordance with the requirements of the following standards:

- ISO 14040:2006
- ISO 14044:2006
- EN 15804:2012+A1:2013
- PCR for Construction Products and Construction Services 2012:01(2.33).

### More information:

In accordance with the PCR, more than 95% of total inflows of mass and energy has been included in this Life Cycle Inventory. None of the raw materials used in the products hold SVHCs (Substances of Very High Concern).

If demolition of the effete product is conducted with care, the product could be reused. The recyclability of the packaging is 100%.

For more information about the EPD owner, visit [www.knaufdanogips.se](http://www.knaufdanogips.se).

For more information about the EPD Programme, visit [www.environdec.com](http://www.environdec.com)

For more information about the EPD producer, visit [www.dge.se](http://www.dge.se).

For more information about the underlying LCA study, contact the LCA practitioner Helena Lindh ([helena.lindh@dge.se](mailto:helena.lindh@dge.se)).



Figure 2. The concept of Life Cycle Assessment.

**System diagram**

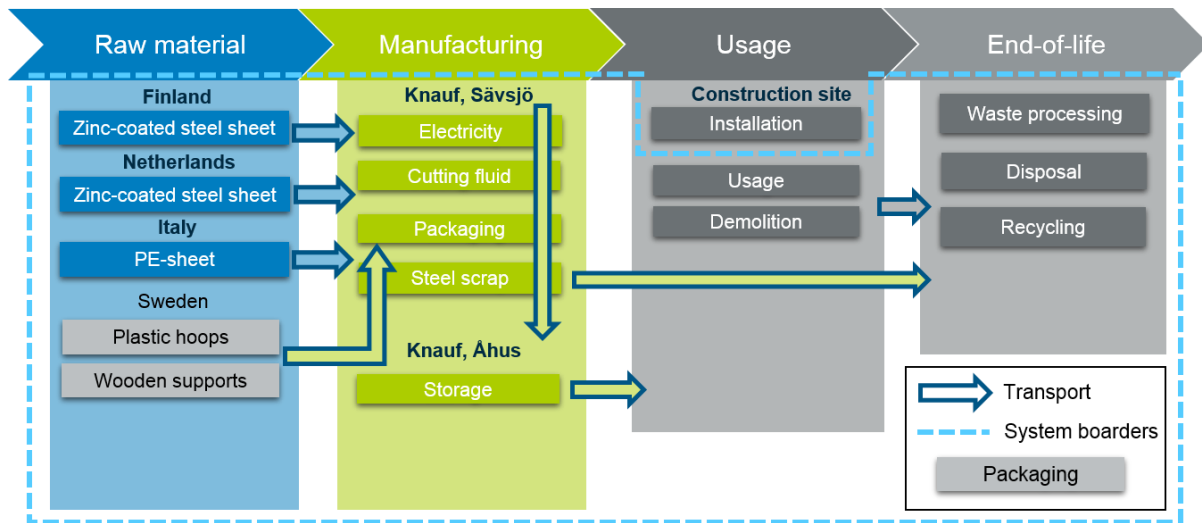


Figure 3. Flow diagram of the product life cycle, beginning with raw material collection through extraction, followed by manufacturing, usage and end-of life. Each step of the life cycle is described in further detail below.

Table 1. Table declaring the life cycle stages included in the EPD. X= included in the EPD, MND=Module Not Declared

Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
Raw materials	Transport	Manufacturing	Transport	Construction-Installation	Use stage	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction	Transport	Waste processing	Disposal	Reuse-recovery-recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	MND	X	X	X	X	X	X	X	X	X	X	X	MND

## Description of life cycle stages A1-A3: Raw material extraction and supply, transport and manufacture

Table 2. Description of life cycle stages A1, A2 and A3, covering the upstream and core processes of the product life cycle.

Stage	Description
<b>A1 Raw materials</b>	Extraction and processing of raw material occurring upstream from the manufacturing process, including the energy generation needed for these processes (extraction, refining and transport of energy from primary energy sources). Recycling processes of secondary materials from a previous product system that are used in the manufacturing process are also included, however processes that are part of the waste processing in the previous product system are excluded, referring to the polluter-pays principle.
<b>A2 Transport</b>	The external transportation of raw materials to the manufacturing site. The modelling includes transportation with truck, train and ship with processes for each supplier.
<b>A3 Manufacturing</b>	The manufacturing process, including the use of packaging materials and treatment of waste generated in this process up to the end-of-waste state or disposal of final residues, including any packaging not leaving the factory gate with the product. Production and transport of manufacturing fuels to the manufacturing site is included, as well as the recycling process of purchased recycled material, and recycled material transported to the manufacturing site.

## Description of life cycle stage A4: Transport from production gate to construction site

Table 3. Description of life cycle stage A4 – the first downstream process of the product life cycle

Stage	Parameter	Value
<b>A4 Transport from production gate to customer</b>	Vehicle type used for transport	42-ton sized truck, EURO 6 emission class.
	Vehicle load capacity	28 ton
	Gross vehicle weight	34 ton
	Fuel type and consumption	Diesel: 0,01699 kg/tonkm
	Distance to customer	An average distance of 350 km is assumed
	Capacity utilization factor	0,71

## Description of life cycle stage B1-B7: Usage stages

During the seven usage stages of the products' life cycle, they need neither maintenance, repair, replacement, refurbishment nor use energy or water. Hence, there is no contribution to the life cycle impact of the product from this life cycle stage.

**Description of life cycle stage C1-C4: End of life stages**

The End-of-life scenario used in this EPD is presented in Table 5. However, if demolition of the effete product is conducted with care, the product could be reused. Additionally, the packaging materials are 100% recyclable.

*Table 4. Description of life cycle stages C1-C4, covering the final downstream processes i.e. the end of life stages of the product life cycle.*

Stage	Description	Parameter	Value
<b>C1 Deconstruction</b>	Deconstruction including demolition of the product from the construction, including initial on-site sorting of the materials.  Propane fueled building machine, 0,0359 MJ/kg assumed.	Collection process specified by type	95% collected separately for metal recycling  5% collected with mixed construction waste
<b>C2 Transport</b>	Transportation of the discarded product to a recycling site, and transportation of waste to final sorting yard or disposal	Assumptions for scenario development	units as appropriate
<b>C3 Waste processing</b>	Collection of waste fractions from deconstruction, as well as processing of material flows intended for reuse, recycling and energy recovery	Recovery system specified by type	0% for re-use  95% for recycling  0% for energy recovery  <i>Packaging: 80% for energy recovery 20% for recycling</i>
<b>C4 Disposal</b>	Waste disposal, including physical pre-treatment and management of the disposal site, as well as emissions from the disposal	Disposal specified by type	5% for landfill

## Environmental performance

### Knauf steel profile systems

#### Environmental impact

Table 5. The results from the LCA showing the environmental impacts from the steel profile systems during the different life cycle stages.

Impact Category	Unit	A1-A3	A4	B1-B7	C1	C2	C3	C4	TOTAL
<b>AP</b>	kg SO <sub>2</sub> eq.	5,27E-03 97,7%	7,08E-05 1,3%	0,00E+00 0,0%	7,92E-06 0,1%	3,12E-05 0,6%	6,51E-06 0,1%	8,10E-06 0,2%	<b>5,40E-03</b>
<b>EP</b>	kg PO <sub>4</sub> <sup>3-</sup> eq.	6,69E-04 95,2%	1,52E-05 2,2%	0,00E+00 0,0%	1,49E-06 0,2%	6,54E-06 0,9%	3,79E-06 0,5%	6,51E-06 0,9%	<b>7,03E-04</b>
<b>GWP</b>	kg CO <sub>2</sub> eq.	2,42E+00 98,0%	2,59E-02 1,0%	0,00E+00 0,0%	3,12E-03 0,1%	8,72E-03 0,4%	1,03E-03 0,0%	1,07E-02 0,4%	<b>2,47E+00</b>
<b>POCP</b>	kg C <sub>2</sub> H <sub>4</sub> eq.	5,31E-04 98,7%	4,07E-06 0,8%	0,00E+00 0,0%	8,87E-07 0,2%	1,43E-06 0,3%	2,22E-07 0,0%	2,44E-07 0,0%	<b>5,38E-04</b>
<b>ADPE</b>	kg Sb eq.	9,14E-05 99,9%	5,07E-08 0,1%	0,00E+00 0,0%	1,20E-09 0,0%	2,61E-08 0,0%	1,62E-09 0,0%	1,10E-09 0,0%	<b>9,14E-05</b>
<b>ADPF</b>	MJ	2,63E+01 97,7%	4,25E-01 1,6%	0,00E+00 0,0%	4,02E-02 0,1%	1,32E-01 0,5%	1,14E-02 0,0%	1,46E-02 0,1%	<b>2,69E+01</b>
<b>ODP</b>	kg CFC-11 eq.	1,07E-08 58,6%	5,20E-09 28,4%	0,00E+00 0,0%	4,91E-10 2,7%	1,61E-09 8,8%	1,13E-10 0,6%	1,73E-10 0,9%	<b>1,83E-08</b>

<b>AP</b>	Acidification potential	<b>ADPE</b>	Abiotic depletion potential - Elements
<b>EP</b>	Eutrophication potential	<b>ADPF</b>	Abiotic depletion potential – Fossil resources
<b>GWP</b>	Global warming potential (100a)	<b>ODP</b>	Depletion potential of the stratospheric ozone layer
<b>POCP</b>	Formation potential of tropospheric ozone		



## Knauf steel profile systems

### Use of resources

Table 6. The results from the LCA showing the resource consumption from Knauf's steel profile systems throughout the life cycle.

Resource use	Unit	A1-A3	A4	B1-B7	C1	C2	C3	C4	TOTAL	
<b>PERE</b>	<b>MJ</b>	1,34E+00	4,58E-03	0,00E+00	3,08E-04	1,41E-03	3,32E-03	2,70E-04	<b>1,35E+00</b>	
<b>PERM</b>	<b>MJ</b>	1,81E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>1,81E-01</b>	
<b>PERT</b>	<b>MJ</b>	1,52E+00	4,58E-03	0,00E+00	3,08E-04	1,41E-03	3,32E-03	2,70E-04	<b>1,53E+00</b>	
<b>PENRE</b>	<b>MJ</b>	1,78E+01	4,33E-01	0,00E+00	4,07E-02	1,34E-01	2,06E-02	1,50E-02	<b>1,84E+01</b>	
<b>PENRM</b>	<b>MJ</b>	4,52E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>4,52E-01</b>	
<b>PENRT</b>	<b>MJ</b>	1,82E+01	4,33E-01	0,00E+00	4,07E-02	1,34E-01	2,06E-02	1,50E-02	<b>1,89E+01</b>	
<b>SM</b>	<b>kg</b>	8,17E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>8,17E-02</b>	
<b>RSF</b>	<b>MJ</b>	1,17E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>1,17E-05</b>	
<b>NRSF</b>	<b>MJ</b>	1,12E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>1,12E-04</b>	
<b>FW</b>	<b>m<sup>3</sup></b>	2,61E-03	9,31E-05	0,00E+00	3,91E-06	2,27E-05	5,92E-06	4,01E-05	<b>2,77E-03</b>	
<b>PERE</b>	Renewable primary energy as energy carrier					<b>SM</b>	Use of secondary material			
<b>PERM</b>	Renewable primary energy used as material					<b>RSF</b>	Use of renewable secondary fuels			
<b>PERT</b>	Total renewable primary energy use					<b>FW</b>	Net use of fresh water			
<b>PENRE</b>	Non-renewable primary energy as energy carrier									
<b>PENRM</b>	Non-renewable primary energy used as material									
<b>PENRT</b>	Total non-renewable primary energy use									

## Waste production and output flows

### Knauf steel profile systems

#### Waste production

Table 7. The results from the LCA showing the waste production from the steel profile systems during the different life cycle stages.

Wastes	Unit	A1-A3	A4	B1-B7	C1	C2	C3	C4	TOTAL
<b>HWD</b>	<b>kg</b>	3,30E-02	1,41E-06	0,00E+00	0,00E+00	3,33E-07	0,00E+00	0,00E+00	<b>3,30E-02</b>
<b>NHWD</b>	<b>kg</b>	1,50E-01	2,63E-02	0,00E+00	0,00E+00	6,06E-03	0,00E+00	4,95E-02	<b>2,32E-01</b>
<b>RWD</b>	<b>kg</b>	4,86E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>4,86E-04</b>
<b>HWD</b>	Hazardous waste disposed		<b>NHWD</b>	Non-hazardous waste disposed			<b>RWD</b>	Radioactive waste disposed	

#### Output flows

Table 8. The results from the LCA showing the output flows from the steel profile systems during the different life cycle stages.

Output flows	Unit	A1-A3	A4	B1-B7	C1	C2	C3	C4	TOTAL
<b>CFR</b>	<b>kg</b>	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>MFR</b>	<b>kg</b>	1,28E-03	4,52E-04	0,00E+00	0,00E+00	1,04E-04	9,42E-01	0,00E+00	<b>9,44E-01</b>
<b>MER</b>	<b>kg</b>	8,71E-04	6,31E-04	0,00E+00	1,85E-05	1,49E-04	0,00E+00	2,01E-02	<b>2,17E-02</b>
<b>EE</b>	<b>MJ</b>	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>CFR</b>	Components for re-use				<b>MER</b>	Materials for energy recovery			
<b>MFR</b>	Materials for recycling				<b>EE</b>	Exported energy			

## References

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## Appendix A

Table A1 lists the steel profile system products from Knauf Danogips for which this EPD is valid.

*Table A1. The steel profile system products covered by this EPD.*

### Products covered in this EPD

Skena SK
Skena SKP
Skena SKT
Skena med urklipp SKU
Förstärkningsskena FSK
Förstärkningsskena FSKP
Standardregel R
Akustikregel AR
Multiregel MR
Dörregel DR
Hörnregel HR
Hörnregel med tätlistor HRT
Förstärkningsregel FR
Vinkelprofil H
Vinkelprofil HP
T-skarv
Hörnskydd HSK
L-profil LP
Pelrhörnlist PHL
Primärprofil P
Sekundärprofil S
Akustikprofil AP
Primär-/sekundärprofil CD-2
CD-1 tvärprofil för CD-taksystem
Skena YSK
Ytterväggsskena polyetenklädd YSKP
Ytterväggsregel YR
Ytterväggsregel polyetenklädd YRP
Ytterväggsregel karm YRK
Påsalningsprofil PZ
Påsalningsprofil PU
Avväxlingsprofil AV

