ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	Knauf Gips KG
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-KNG-20240526-IBI1-EN
Issue date	05/02/2025
Valid to	04/02/2030

Galvanised Drywall Profiles | 0.6mm & 2mm

Knauf Gips KG

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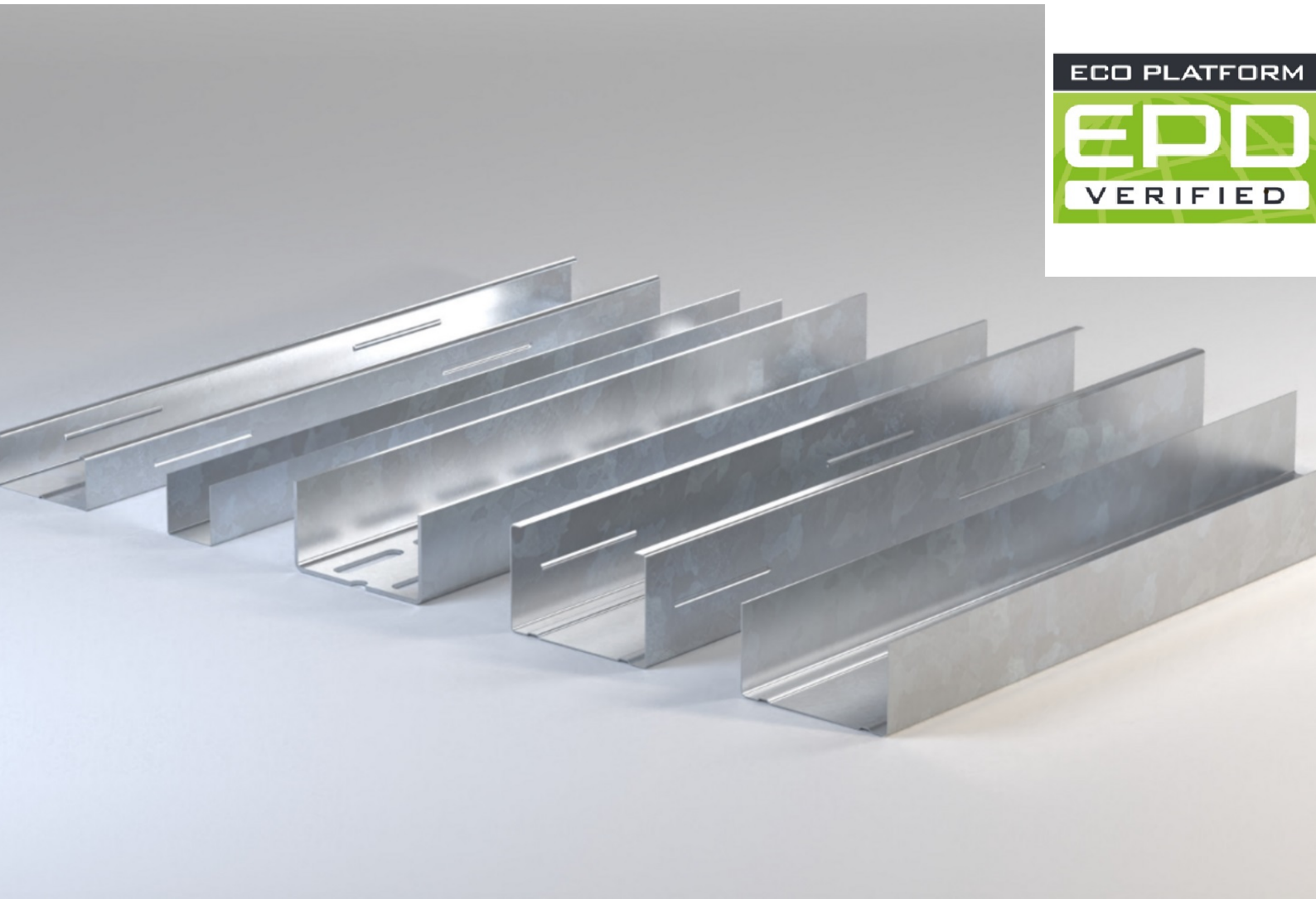


1. General Information

Knauf Gips KG

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-KNG-20240526-IBI1-EN

This declaration is based on the product category rules:

Thin walled profiles and profiled panels of metal, 01/08/2021
(PCR checked and approved by the SVR)

Issue date

05/02/2025

Valid to

04/02/2030

Dipl.-Ing. Hans Peters
(Chairman of Institut Bauen und Umwelt e.V.)

Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

Galvanised Drywall Profiles | 0.6mm & 2mm

Owner of the declaration

Knauf Gips KG
Am Bahnhof 7
97346 Iphofen
Germany

Declared product / declared unit

1 running meter of Galvanised Drywall Profiles | 0.6mm & 2mm

Scope:

This declaration applies for the galvanised profiles series manufactured by Knauf Gips KG in the Griesheim plant.

The declaration is representative for the galvanised profiles: CW 50/50/0.6 (representative product because best selling product), CD 70/27/0.6, Hutprofile 98/15/0.6, UD 28/27/0.6, UD 48/27/28/0.6, CW 50/50/0.6, CW 70/50/0.6, CW 75/50/0.6, CW 100/50/0.6, CW 125/50/0.6, CW 150/50/0.6, MW 75/50/0.6, MW 100/50/0.6, UW 50/40/0.6, UW 70/40/0.6, UW 75/40/0.6, UW 100/40/0.6, UW 125/40/0.6, UW 150/40/0.6, UA 50/40/2.0, UA 70/40/2.0, UA 75/40/2.0, UA 100/40/2.0, UA 125/40/2.0, UA 150/40/2.0

The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR				
Independent verification of the declaration and data according to ISO 14025:2011				
	☐	internally	☒	externally

Dr. Matthew Fishwick,
(Independent verifier)

2. Product

2.1 Product description/Product definition

Knauf fabricates a series of thin-walled profiles for application in dry walls and ceilings, made of galvanised steel with thickness 0.6 mm and 2 mm, respectively. The profile types in this EPD are CD/UD, CW/MW/UW and UA and CW 50/50/0.6 is chosen as the representative product since it represents the best-selling product within these series.
Complete list of profiles:
CD 60/27/0.6 (0.56 kg/m), CD 70/27/0.6 (0.61 kg/m), Hutprofile 98/15/0.6 (0.59 kg/m), UD 28/27/0.6 (0.36 kg/m), UD 48/27/28/0.6 (0.46 kg/m), CW 50/50/0.6 (0.69 kg/m), CW 70/50/0.6 (0.77 kg/m), CW 75/50/0.6 (0.80 kg/m), CW 100/50/0.6 (0.92 kg/m), CW 125/50/0.6 (1.03 kg/m), CW 150/50/0.6 (1.14 kg/m), MW 75/50/0.6 (1.09 kg/m), MW 100/50/0.6 (1.20 kg/m), UW 50/40/0.6 (0.57 kg/m), UW 70/40/0.6 (0.66 kg/m), UW 75/40/0.6 (0.69 kg/m), UW 100/40/0.6 (0.80 kg/m), UW 125/40/0.6 (0.92 kg/m), UW 150/40/0.6 (1.03 kg/m), UA 50/40/2.0 (1.81 kg/m), UA 70/40/2.0 (2.07 kg/m), UA 75/40/2.0 (2.15 kg/m), UA 100/40/2.0 (2.52 kg/m), UA 125/40/2.0 (2.89 kg/m), UA 150/40/2.0 (3.27 kg/m).

For the placing on the market of the product in the EU/EFTA (with the exception of Switzerland) Regulation (EU) No. 305/2011 (CPR) applies. The product has a declaration of performance and CE-marking according to EN 14195 Metal framing components for gypsum board systems - Definitions, requirements and test methods. For the application and use the respective national provisions apply.

2.2 Application

The CD, UD, CW, MW, UW and UA profiles are used as substructures for non-loadbearing partitions, wall linings, shaftwalls, installation walls and ceilings in accordance with DIN 18183-1, DIN 18168 and DIN EN 13964. The sub-constructions are suitable for use in normal air-conditioned interior rooms (Corrosion classes C1/C2). Corrosion protection complies with the provisions of DIN EN 14195 and DIN 18182-1.

2.3 Technical Data

The technical specifications of the products within the scope of the EPD are listed in the following table with reference to the test methods/test standards for each specification.

Constructional data

Name	Value	Unit
Profile weight	0.688	kg/rm
Thickness of the sheet	0.6	mm
Height of the profile	47	mm
Web width	48.8	mm

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to EN 14195 Metal framing components for gypsum board systems - Definitions, requirements and test methods.

2.4 Delivery status

The products are supplied in different lengths up to 12m. Several profiles are tied into a bundle and several bundles into a large bundle.

The delivery condition of the other profiles differs in the weight per linear meter, as well as in the number of bars per bundle and the bundles per large bundle. In terms of dimensions, sheet thickness, corrosion protection and tolerances, the profiles meet the requirements for profiles according to EN 14195 and DIN 18182-1

2.5 Base materials/Ancillary materials

The profiles are manufactured from galvanised steel sheet as DX 51-D or S 250-GD, t=0.6 mm or 2 mm (nominal) slit strip in accordance with *DIN EN 10346* and *DIN EN 10143* with Z 100 or Z 275 or comparable galvanising. The slit is manufactured out of steel master coils.

Inkjet ink is used for marking the profiles.

During the profile manufacturing process of the profiles at Knauf, lubricants are also used.

For the internal transport by forklifts, diesel is consumed. This product/article/at least one partial article contains substances listed in the candidate list (date: 19.01.2023) exceeding 0.1 percentage by mass: No

This product/article/at least one partial article contains other carcinogenic, mutagenic, reprotoxic (CMR) substances (Chrome VI) in categories 1A or 1B which are not on the candidate list, exceeding 0.1 percentage by mass: No

Biocide products were added to this construction product, or it has been treated with biocide products (this then concerns a treated product as defined by the (EU) Ordinance on Biocide Products No. 528/2012): No

2.6 Manufacture

The profiles are produced from galvanised steel slit strips by a cutting and forming process. The slit strip is continuously fed in the stripping process and formed by the profiling machine. In the first step, the openings are punched, surfaces are stamped and then roll-formed. In roll forming, the material is formed into a profile in several stages with the help of rollers. The shaping is done continuously. Afterwards, the profiles are marked by inkjet. Finally, the profiles are cut to length in a shearing process and packed into bundles of several pieces.

2.7 Environment and health during manufacturing

The Knauf Griesheim site complies with all requisite national guidelines relating to health and environmental protection. There are no anticipated risks to the environment or negative impacts on
production personnel during the manufacturing of the profiles.

Named measures do not go beyond legal requirements.

2.8 Product processing/Installation

The profiles are used as substructures for drywall systems. Processing/Installation involves the following steps:

1. Profiles are cut to length using suitable cutting tools (e.g. lever shears).
2. Perimeter profiles / runners are fastened to the wall and/or ceiling using appropriate fixings.
3. The profiles carrying the board are placed in the right spacing in accordance with the board manufacturer's installation guidelines.
4. Subsequent cladding is applied in accordance with the processing guidelines supplied by the cladding manufacturer.
5. In the walls or ceiling spaces, respectively, it is possible to introduce cavity damping in accordance with the requirements of fire protection, sound insulation or heat insulation.

2.9 Packaging

The profiles are compiled in bundles and then usually bound using polypropylene or polyethylene tapes. Several smaller bundles form a large bundle that is then usually (but not always) placed on wooden blocks to be transported to the customer.

All packaging materials used by Knauf Gips KG are registered as recyclable materials at Zentek.

2.10 Condition of use

The profiles are fitted in non-loadbearing drywall constructions. These constructions are used in rooms with normal climates and are therefore not exposed to any chemical loads.

The mechanical loads are covered by *DIN EN 14195* and *DIN 18168-2.*

2.11 Environment and health during use

When used as designated, there are no known modifications of the profiles or emissions of dangerous substances into the environment.

2.12 Reference service life

The life span of dry lining structures and/or dry lining profiles is > 50 years in accordance with the *BNB Table*. No influences on the ageing of the product when applied in accordance with the rules of technology are known.

2.13 Extraordinary effects

Fire

Information on the fire performance according to EN 13501:1

Fire protection

Name	Value
Building material class	A1
Smoke gas development	-
Burning droplets	-

Water

Despite galvanising, unforeseeable and longer impact by moisture can trigger a corrosion process (surface corrosion) caused by electrochemical decomposition of the zinc plating.

Mechanical destruction

Mechanical destruction of the profiles leads to deformation of the cross-section and can cause damage to the zinc plating.

2.14 Re-use phase

Dry lining profiles are connected purely mechanically with other building materials and structures. They are therefore easily de-constructed. Profiles made from galvanised steel sheets or slit strips can be recycled infinitely.

2.15 Disposal

The profiles are governed by the *waste code /17 04 05 / Iron and Steel* in accordance with the *European Waste Index*.

2.16 Further information

Profile & Stützen (knauf.com)

3. LCA: Calculation rules

3.1 Declared Unit

Declared unit and mass reference

Name	Value	Unit
Conversion factor to 1 kg	1.453	
Linear density	0.688	kg/lm
Declared unit	1	rm

The profiles are produced in various product variants, which differ mainly in the profile height, delivery length and thus in the mass of one linear meter.

The CW50/50/0,6 profile was selected as the representative product, it is the most widely used/sold product. For all types of profiles, the same statements apply to applicable standards, production, transport and recycling. The selected representative profile also covers the profiles that are also offered in identical product widths.

3.2 System boundary

Type of the EPD: Cradle to gate with options, modules C1–C4, and module D (A1–A3 + C + D and additional modules A4 and A5).

The following modules were considered for calculating the LCA:
- A1: Raw material supply and processing
- A2: Transport and delivery of the base material
- A3: Production process
- A4: Transporting the profiles to the construction site
- A5: Handling waste from product packaging
- C1: De-construction/ demolition
- C2: Transport
- C3: Waste processing
- C4: Disposal
- D: Re-use, recovery and/or recycling potential

3.3 Estimates and assumptions

Wherever available, primary data were used for all production processes. Generic data were used to match the primary data with the impact indicators. Assumptions were made for Modules A5 (Handling waste from product packaging), C1, (Deconstruction), C2 (transport to treatment sites), C3 (Waste processing), C4 (Landfilling) and D (Re-use, recovery and/or recycling potential).
The profiles are used throughout Germany with the result that an average delivery distance of 181 km and average capacity of 55 % is assumed (taking in to account the empty return).
For the transport to the different disposal sites (C2), the following distances are assumed:
-30km distance to the waste treatment site (shredding facility),
-50km to landfill and
-100 km to the recycling facility.
For C2 an average load of 55% is assumed as well. The profiles are connected exclusively mechanically to other construction materials, which enable clean segregation of materials during demolition or deconstruction. Accordingly, a recycling rate of 98 % can be assumed for the profiles. Landfilling is assumed for the remaining 2 % steel scrap.

3.4 Cut-off criteria

The following elements are being cutoff in this analysis:

- Production and disposal of infrastructures. Infrastructures include machines, transport vehicles, roads, etc., as well as their maintenance. (All except D)
- Packaging of the material flows (except the steel profile packaging). This includes the packaging of input raw materials and ancillaries at each module. (A1-A3)

- Installation waste (steel scraps) of the steel profiles. (A5)
- Installation and deinstallation energy and ancillaries. (A5 & C1)

3.5 Background data

LCA for Experts, Sphera 2024.1 software system developed by Sphera was used for analysing the LCA and/or life cycle of steel profiles. The data sets contained herein are either industrial data (e.g. *worldsteel*), suppliers EPDs, or from Sphera Managed LCA Content (MLC).

3.6 Data quality

To produce galvanized steel coils, lubricating oil, packaging and other preliminary products, aggregated generic datasets were used. The age of the background data used (2022 for *worldsteel* and packaging data and 2024 for other data) from industry and *Sphera* is less than 2 years and can be considered representative for the period under consideration.
All the products covered by this EPD are produced on the same site, with the same technology and the same raw materials. The only difference between the products is their weight per linear meter.

3.7 Period under review

The year 2023 was selected as the period of review. All internal data was collated for this period.

3.8 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Germany

3.9 Allocation

No co-products arise during the manufacture of profiles which is why no allocations were necessary. Credits are awarded for recycling the steel profiles which are declared in Module D.

3.10 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account. Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to EN 15804 and the building context, respectively the product-specific characteristics of performance, are considered.

Only background data from *LCA for Experts, Sphera 2024.1* has been included in this LCA.

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

The content of biogenic carbon in the product is less than 1 % and is therefore not indicated separately. The product packaging consists of plastic straps (PP/PE) without biogenic content and wood with about 1 % of the total mass content.

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	0.00253	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO_2.

The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a building assessment if modules are not declared (MND).

Transport to the building site (A4)

Name	Value	Unit
Transport distance	181	km
Capacity utilisation (including empty runs)	55	%

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site	0.0149	kg

Currently, no primary data is available on installation, which is why no information is available here, for example on the fuel, electricity, etc. required, and this is not taken into account in the calculation. The installation phase therefore only includes the environmental impact of disposal of the product packaging.

In case a reference service life according to applicable ISO standards is declared then the assumptions and in-use conditions underlying the determined RSL shall be declared. In addition, it shall be stated that the RSL applies to the reference conditions only.

The same holds for a service life declared by the manufacturer. Corresponding information related to in-use conditions needs not be provided if a service life taken from the list of service life by BNB is declared.

Reference service life

Name	Value	Unit
Life Span (according to BBSR)	50	a

The RSL applies to the reference conditions only.

End of life (C1-C4)

Name	Value	Unit
Collected separately waste type	0.688	kg
Recycling	0.674	kg
Landfilling	0.014	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information

Module D includes material credits for product recycling. These credits are based on German average data for electrical and thermal energy and steel production.

Name	Value	Unit
Scrap credits	0.506	kg

5. LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

Product stage			Construction process stage		Use stage							End of life stage				Benefits and loads beyond the system boundaries
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	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	X	MND	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 rm Representative product : CW 50/50/0.6

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	1.59E+00	1.44E-02	3.76E-02	0	1.07E-02	5.84E-03	2.06E-04	-8.74E-01
GWP-fossil	kg CO_2 eq	1.59E+00	1.42E-02	3.71E-02	0	9.86E-03	5.73E-03	2.06E-04	-8.79E-01
GWP-biogenic	kg CO_2 eq	-4.2E-04	-8.13E-05	4.51E-04	0	6.59E-04	-8.65E-08	-1.42E-06	5.18E-03
GWP-luluc	kg CO_2 eq	1.19E-03	2.73E-04	4.92E-06	0	1.89E-04	1.12E-04	1.24E-06	-1.17E-04
ODP	kg CFC11 eq	2.06E-13	4.48E-15	1.35E-14	0	3.11E-15	2.1E-15	5.55E-16	1.18E-12
AP	mol H^+ eq	4.26E-03	8.84E-05	7.15E-06	0	6.13E-05	9.79E-06	1.46E-06	-2.15E-03
EP-freshwater	kg P eq	8.38E-07	3.86E-08	3.5E-09	0	2.68E-08	1.62E-08	4.68E-10	-2.05E-07
EP-marine	kg N eq	1.03E-03	4.36E-05	1.81E-06	0	3.02E-05	2.96E-06	3.76E-07	-3.45E-04
EP-terrestrial	mol N eq	1.09E-02	4.84E-04	3.38E-05	0	3.35E-04	3.47E-05	4.14E-06	-3.1E-03
POCP	kg NMVOC eq	3.63E-03	8.59E-05	4.71E-06	0	5.95E-05	9.37E-06	1.15E-06	-1.4E-03
ADPE	kg Sb eq	3.72E-07	2.41E-09	1.45E-10	0	1.67E-09	1E-09	1.33E-11	-4.98E-06
ADPF	MJ	1.86E+01	1.86E-01	2.02E-02	0	1.29E-01	1.44E-01	2.71E-03	-8.74E+00
WDP	m^3 world eq deprived	5.41E-02	1.02E-04	3.51E-03	0	7.05E-05	6.75E-05	2.36E-05	-5.93E-02

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential)

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 rm Representative product : CW 50/50/0.6

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	5.46E-01	2.06E-02	1.08E-02	0	1.43E-02	8.67E-03	4.73E-04	3.45E-01
PERM	MJ	3.95E-03	0	-3.95E-03	0	0	0	0	0
PERT	MJ	5.5E-01	2.06E-02	6.84E-03	0	1.43E-02	8.67E-03	4.73E-04	3.45E-01
PENRE	MJ	1.83E+01	1.86E-01	3.29E-01	0	1.29E-01	1.44E-01	2.71E-03	-8.74E+00
PENRM	MJ	3.09E-01	0	-3.09E-01	0	0	0	0	0
PENRT	MJ	1.86E+01	1.86E-01	2.02E-02	0	1.29E-01	1.44E-01	2.71E-03	-8.74E+00
SM	kg	1.16E-01	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m^3	2.99E-02	1.93E-05	8.42E-05	0	1.34E-05	1.81E-05	7.19E-07	-8.89E-02

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 rm Representative product : CW 50/50/0.6

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	7.12E-10	9.07E-12	1.51E-11	0	6.29E-12	7.17E-12	6.76E-13	-6.54E-08
NHWD	kg	7.94E-03	3.15E-05	3.7E-03	0	2.18E-05	3.07E-05	1.38E-02	1.06E-01
RWD	kg	2.07E-05	2.96E-07	5.84E-07	0	2.06E-07	6.06E-06	2.84E-08	9.58E-07
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	1.55E-02	0	0	0	0	0	6.74E-01	0
MER	kg	0	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0	0	0

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:
1 rm Representative product : CW 50/50/0.6

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	Disease incidence	1.57E-07	3.77E-10	7.59E-11	0	2.62E-10	1.05E-10	1.83E-11	-2.02E-08
IR	kBq U235 eq	1.13E-02	3.13E-05	6.21E-05	0	2.17E-05	4.72E-04	3.29E-06	1.97E-02
ETP-fw	CTUe	3.17E+00	1.45E-01	8.41E-03	0	1E-01	6.64E-02	1.56E-03	-4.59E-01
HTP-c	CTUh	5.56E-10	2.88E-12	6.01E-13	0	2E-12	1.47E-12	3.69E-14	3.59E-10
HTP-nc	CTUh	3.52E-09	1.21E-10	4.44E-11	0	8.42E-11	6.53E-11	1.43E-12	1.71E-09
SQP	SQP	1.24E+00	1.24E-01	7.23E-03	0	8.59E-02	5.12E-02	7.47E-04	-1.13E-01

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

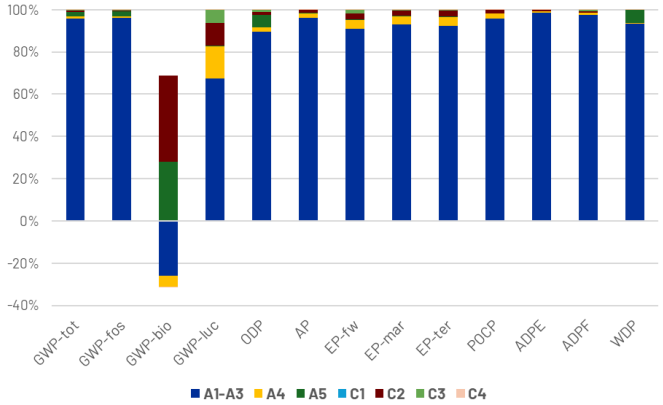
Disclaimer 1 – for the indicator 'Potential Human exposure efficiency relative to U235'. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators 'abiotic depletion potential for non-fossil resources', 'abiotic depletion potential for fossil resources', 'water (user) deprivation potential, deprivation-weighted water consumption', 'potential comparative toxic unit for ecosystems', 'potential comparative toxic unit for humans – cancerogenic', 'Potential comparative toxic unit for humans - not cancerogenic', 'potential soil quality index'. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

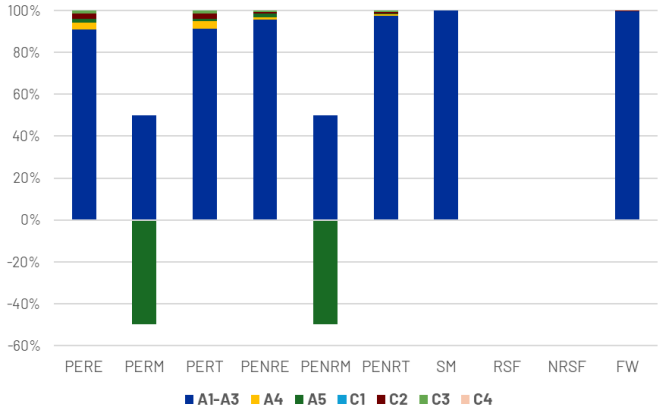
6. LCA: Interpretation

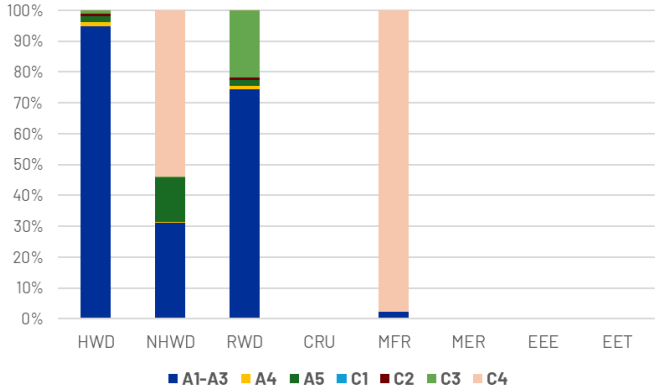
In order to interpret the results of the LCA, both the aggregateindicators of the Life Cycle Inventory Analysis and the estimated impact were analysed in a dominance analysis.

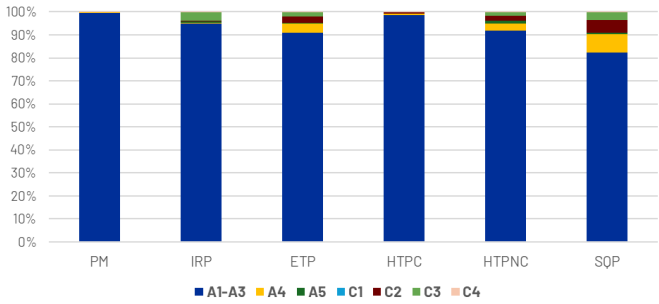
The following graph displays the contribution by module for main environmental impact indicators.



The same graph is made for the resource use indicators, waste categories, output flows and additional impact categories. These are given below in the previously stated order.







It can clearly be stated that the manufacturing stage, and more specifically, the galvanised steel itself is the biggest contributor to almost all impact indicators. The exceptions are "Material for recycling (MFR)" and "Non-hazardous waste disposal (NHWD)" as most of the recycling and disposal are done at the end of life stage.

The different profiles differ in the amount of galvanised steel sheet used, the electricity needed to produce them and the weight of the losses during manufacturing. The table below displays the total GWP for each profile as the percentage change with respect to the representative product. This share differs for the vast majority with about 10% and at most 15% for the other impact indicators.

Profile	CW 50/50	CD 60/27	CD 70/27	CW 100/50	CW 125/50	CW 150/50	CW 70/50	CW 75/50	Hutprofil 98/15	Magnum + CW 50/50	Magnum CW 75/50	MW 100/50	MW 75/50	UA 100/40	UA 125/40	UA 150/40
GWP-total [kgCO2-eq]	7,87E-01	6,53E-01	7,30E-01	1,01E+00	1,14E+00	1,25E+00	8,85E-01	9,00E-01	7,92E-01	9,05E-01	6,87E-01	1,30E+00	1,20E+00	3,39E+00	3,84E+00	4,14E+00
GWP-total [%]	100%	83%	93%	129%	144%	159%	112%	114%	101%	115%	87%	166%	153%	431%	488%	526%

Profile	UA 50/40	UA 70/40	UA 75/40	UD 28/27	UD 48/27	UW 100/40	UW 125/40	UW 150/40	UW 50/40	UW 70/40	UW 75/40
GWP-total [kgCO2-eq]	2,32E+00	2,96E+00	2,99E+00	4,51E-01	5,60E-01	8,92E-01	1,01E+00	1,12E+00	6,67E-01	7,47E-01	7,78E-01
GWP-total [%]	294%	376%	380%	57%	71%	113%	128%	142%	85%	95%	99%

7. Requisite evidence

Requirements for profiles

The drywall profiles are produced in compliance with *DIN 18182-1* and *EN 14195.* They are subject to initial type testing and continuous factory production control. The profiles bear the CE-Marking under AVCP System 4.

Sound protection, mechanical resistance and fire resistance

The CD, UD, CW, MW, UW and UA profiles are used as substructures for drywall systems. Tests regarding fire resistance, mechanical resistance and sound insulation were performed using the relevant European and national standards to fulfil the requirements of the building regulations. Tests were performed by *MPA Braunschweig*, *MFPA Leipzig, Fraunhofer IBP*, the building physics department of the Knauf Group and other recognized institutes.

8. References

BNB Table 2017 of the BBSR - German Bundesinstitut für Bau-, Stadt- und Raumforschung: Service life of components for
life cycle analysis in accordance with the sustainable building evaluation system - Substructures: drywall profiles (steel, wood)

Commission decision 2000/532/EC2: European waste catalogue

DIN 18183-1: Partitions and wall linings with gypsum boards on metal framing - Part 1: Cladding with gypsum plasterboards

DIN 18168-1: Ceiling linings and suspended ceilings with gypsum plasterboards - Part 1: Requirements for construction

DIN EN 13964: Suspended ceilings - Requirements and test methods

DIN EN 14195: Metal framing components for gypsum board systems - Definitions, requirements and test methods

DIN 18182-1: Accessories for use with gypsum boards - Part 1: Steel plate sections

DIN EN 10346: Continuously hot-dip coated steel flat products for cold forming - Technical delivery conditions

DIN EN 10143: Continuously hot-dip coated steel sheet and strip - Tolerances on dimensions and shape

EN 13501-1: Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests

EN 15804:2012+A2:2019+AC:2021, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

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Regulation (EU) No 1907/2006 of the European Parliament and of the Council specifying the candidate list of substances of high or very high concern within REACH

Regulation (EU) No 305/2011 of the European Parliament and of the Council laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC

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Product Category Rules for Construction Products, Part B : Requirements on the EPD for thin-walled profiles and profile sheets made of metal, version v10. 2024-04

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