ENVIRONMENTAL PRODUCT DECLARATION

as per /ISO 14025/ and /EN 15804/

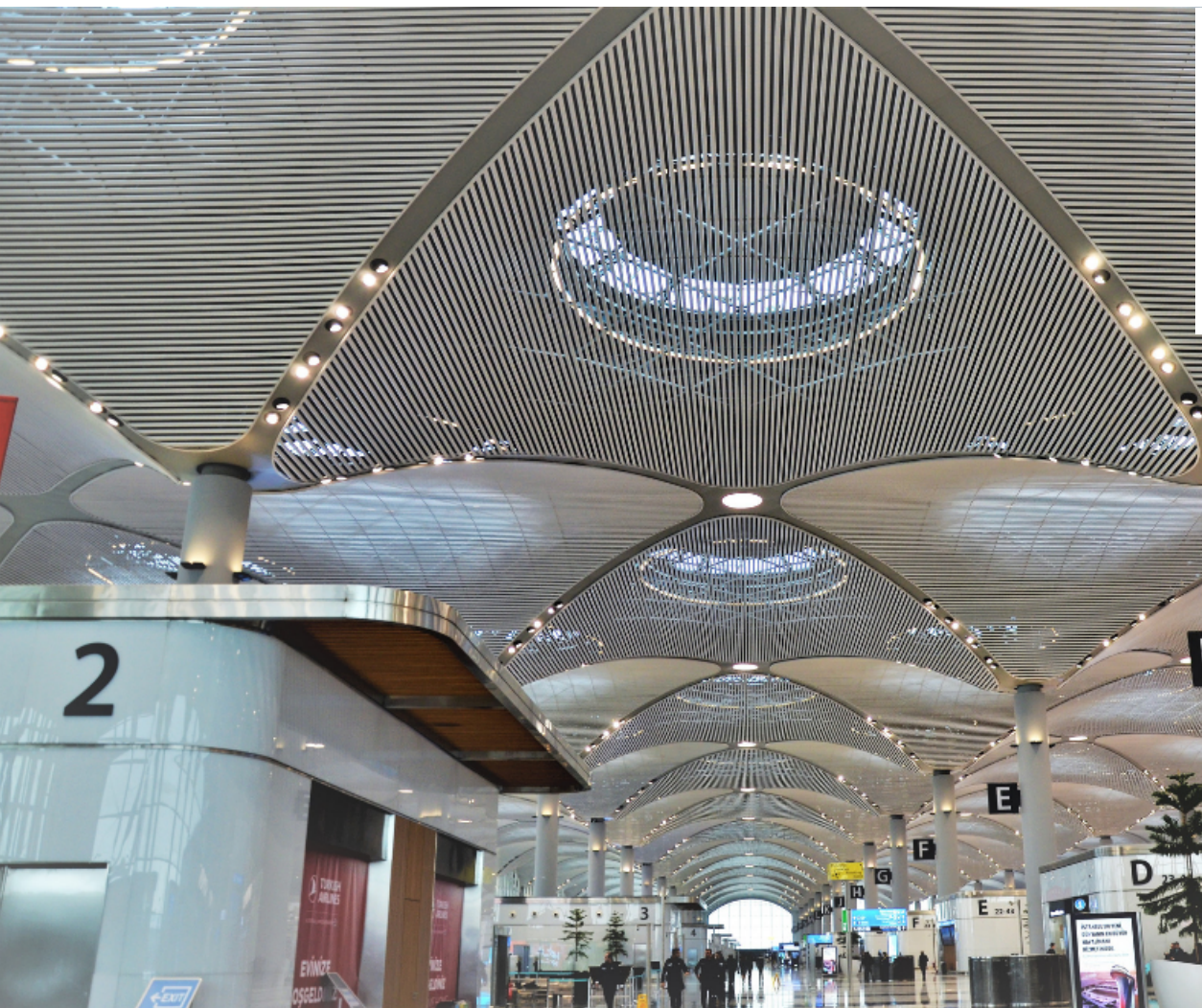
Owner of the Declaration	**Butem Metal Form Sanayi ve Ticaret A.S.**
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-BUT-20190022-IAC2-EN
Issue date	25.07.2019
Valid to	24.07.2024

Aluminium Suspended Ceiling Systems

Butem Metal Form Sanayi ve Ticaret A.S.

Institut Bauen und Umwelt e.V.

www.ibu-epd.com / https://epd-online.com



1. General Information

Butem Metal Form Sanayi ve Ticaret A.S.

Programme holder
IBU - Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Declaration number
EPD-BUT-20190022-IAC2-EN

This declaration is based on the product category rules:
Metal ceilings, 07.2014
(PCR checked and approved by the SVR)

Issue date
25.07.2019

Valid to
24.07.2024

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

Dr. Alexander Röder
(Head of Board IBU)

Aluminium Metal Suspended Ceiling Systems

Owner of the declaration
Butem Metal Form Sanayi ve Ticaret A.S.
Osmangazi Mahallesi, Ziya Gökalp Caddesi, No:10
34522 Esenyurt / Istanbul

Declared product / declared unit
Aluminium suspended ceiling systems / 1m²

Scope:
Within this study a life cycle analysis according to /ISO14040/44/ is performed for aluminium suspended ceiling systems manufactured by Butem Metal at the production plant in Istanbul, Turkey. The EPD for Butem Metal for aluminium suspended ceiling systems is an average EPD which represents the life cycle analysis of the product group. The area weights for each product in aluminium product group varies depend on sheet thicknesses; accordingly the average thickness is accepted as 0.5 mm.

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.

Verification

The standard /EN 15804/ serves as the core PCR
Independent verification of the declaration and data according to /ISO 14025:2010/
☐ internally ☒ externally

Mr Carl-Otto Neven
(Independent verifier appointed by SVR)

2. Product

2.1 Product description / Product definition

Aluminium ceiling systems are manufactured from folded or roll-formed aluminium as complete construction kits or as individual components. The construction kit comprises the membrane component, e.g. linear panels or strip panel ceilings, as well as the substructure for suspending the metal ceiling systems. It can have various suspension heights and its design is governed by the form, functional requirements and weight of the membrane components.
For the use and application of the product the respective national provisions at the place of use apply, in Germany for example the building codes of the federal states and the corresponding national specifications.
The ceiling systems are manufactured by considering /TS EN 13964/ and /TS EN ISO 9224/.

2.2 Application

The metal ceiling systems made of aluminium outlined in this LCA study are used in interior and exterior designs as rectangular panels, strip panel ceilings, square tiles, chilled ceilings, expanded metal ceilings, ceiling grids, special geometrical design panels or canopy ceilings, all functioning as cladding of the interior ceiling. It is also a low VOC emitted interior product in compliance with /CDPH - CA Section 01350 v1.2/. Metal ceiling systems made of aluminium are produced in accordance with customer's requirements. In addition, metal ceiling panels can provide sound absorption.

2.3 Technical Data

Butem Metal ceiling systems made of aluminium are manufactured under the warranty of the /ISO 9001/ Quality Management System to comply with the product requirement specifications. The company also has /OHSAS 18001/ Occupational Health & Safety and /ISO 14001/ Environmental Management Systems in the manufacturing plant.
Depending on the project requirements; Butem Metal can supply additional acoustic enhancement materials, which provides sound absorption value as follows:

The Weighted sound absorption coefficient (αw) value: aw = 0.35 according to /TS EN ISO 11654/.

Constructional data

Name	Value	Unit
Sound absorption coefficient (/TS EN ISO 354/, /TS EN ISO 11654/)	35	%

2.4 Delivery status

The measurements of products can vary between different formats. It can have various suspension heights and its design is governed by the form, functional requirements and weight of the membrane components.

2.5 Base materials / Ancillary materials

Metal ceiling systems made of aluminium are primarily made of raw materials such as aluminium, glass wool acoustic tissue, adhesive and powder coating. The base raw materials for aluminium ceiling systems are;

- Aluminium: 90%
- Glass Wool: 2,35%
- Powder Coating: 7,26%
- Adhesive: 0,39%

No substances of very high concern are used in the product.

2.6 Manufacture

The system components for metal ceilings are manufactured in a continuous manufacturing process. The sheet of aluminium comes mainly in coils, perforated (optional), punched (aligned as option), welded (optional) and cut to size. Where the membrane components do not comprise pre-coated material, they are usually powder or spray-painted after the cleaning process. A layer of acoustic tissue can then be applied to the back using a heating process. Adding heat activates a hot-melt adhesive embedded in the tissue which causes it to adhere to the back of the panel. Punching and perforation waste is gathered, collected by local disposal companies and redirected to the recycling facilities. All production steps are carried out in accordance with the requirements and test guidelines outlined in /TS EN 13964/.
Aluminium ceiling panel production in the factory is included the stages supply of raw material from stock, cutting, bending, dying, packaging and stockpiling in sequence.

2.7 Environment and health during manufacturing

Manufacturing conditions do not demand any particular health and safety measures with the exception of those designated by the authorities for special working areas, e.g. protective clothes, ear plugs, protective masks, helmets, safety shoes, dust protection masks. The threshold limit values are not exceeded at any point during the production process. Waste emissions generated during production are cleaned in accordance with statutory requirements. No contamination of water or soil occurs. Noise-intensive plant components such as perforation lines are isolated accordingly by structural measures.
/ISO 14001/ system and environment protection documents can be supplied upon request.

2.8 Product processing/Installation

The metal ceiling systems, ceiling kits and components are produced in individual sizes and can be supplied with or without substructures. Packaging is usually on pallets and in cardboard. Area weight (kg/m²) depends on the specific product. Installation should be done by trained personnel. The metal ceiling panel is recommended to install in the field of drywall construction.

2.9 Packaging

Wooden pallets, cardboard, polystyrene are used for packing the metal ceiling systems and components. The packaging material is easily separable and can be reused if necessary. Most of the packaging can be collected, sorted by type and directed to regional recycling services. However, since there is no follow-up application for packaging materials, worst case scenario has been considered, namely all packaging materials has been considered that they will be sent to landfill. These packaging materials have been modelled under Module A5 in order to observe biogenic carbon caused by the packaging products such as wood and cardboard.

2.10 Condition of use

The environmental impacts generated during the B1 phase is not in the scope of the study. Due to the wide range of products, general cleaning and maintenance recommendations are not possible. Their long service life is based on regular maintenance, maintenance and repair of the product. As a general rule, the material composition of the product does not change over its lifetime.

2.11 Environment and health during use

There is no known interaction between product, environment and health. Volatile organic compounds are below the valuation limit according to /CDPH - CA Section 01350 v1.2/.

2.12 Reference service life

The Reference Service Life (RSL) is not considered in this study because the life cycle was not reported as a whole. For information purposes, they are designated as an option and correspond to ≥ 50 years in accordance with /BBSR/ - Federal Office of Building and Regional Planning as specified under Code Nr. 353.211. This reference service life serves as a means of product selection according to the intended use of the building. Correct application, maintenance and care are the primary requirements to extend the product life.

2.13 Extraordinary effects

Fire

According to /TS EN 13501-1/, metal ceilings can be classified as A1 class of fire resistance rating, because they do not contribute to fire. Accordingly, you can find the details for A1 class below:

Fire protection

Name	Value
Building material class	Interior wall and ceiling finish material

Burning droplets	<= 25
Smoke gas development	<= 450

Water
Metal ceiling cannot react with water because they are an insoluble material.

Mechanical destruction
If not handled correctly the surface and edges may be broken or damaged.

2.14 Re-use phase
After the demolition and deconstruction stage, metal ceilings can be considered in recycling program. Panels from projects can be returned to the Butem Metal plant and upcycled into new ceilings.

2.15 Disposal
Generated metal waste is considered within Module A3 as it is recycled by being collected by local disposal companies and redirected to the recycling facilities.

Additionally, disposal of packaging waste is calculated within Module A5 as considering that they are sent to landfill as a worst case scenario since there is no an accepted program. Disposal of the product after it completed its service life is not included in this LCA. Besides, the manufacturer does not have a follow-up program for end-of-life products yet. However, it is foreseen that the waste product will be recycled as it has recyclable materials by positively effect of the tightening of zero-waste regulations around the world. In accordance with the European Waste Catalogue (EWC), the waste key for materials as components of metal ceiling systems:
17-04-02 _ aluminium
10-11-03 _ waste glass-based fibrous materials
11-01 _ wastes from chemical surface treatment and coating of metals and other materials

2.16 Further information
More information can be found at:
http://www.butemmetal.com/

3. LCA: Calculation rules

3.1 Declared Unit
The declared unit is 1 m^2 of 1 aluminium ceiling panel with the average thickness of 0.5 mm. The area weights for each product in aluminium product group varies depend on sheet thicknesses; accordingly the average thickness is accepted as 0.5 mm. All declared products are produced in the same production procedure with some minor differences like using several membrane elements for certain products or geometrical shape of the final product.

Declared unit

Name	Value	Unit
Conversion factor to 1 kg	2.55	-
Declared unit	1	m^2
Grammage	2.55	kg/m^2
Layer thickness (average)	0,0005	m

3.2 System boundary
This is a cradle-to-gate Life Cycle Analysis study. The product stage information modules A1, A2, and A3 are considered. In addition to the product stage, Module A5 is also considered within LCA scope. In detail, this LCA study includes production of raw material extraction and processing (A1), transport of the raw materials (A2) and transport the packaging materials to the manufacturer (A2), manufacturing of the product with the stages supply of raw material from stock, cutting, bending, dying, packaging and stockpiling (A3), recycling of recyclable waste generated during manufacturing (A3), and disposal of packaging materials (A5).

3.3 Estimates and assumptions
Butem Metal Aluminium Ceiling panels LCA study is conducted in accordance with all methodological considerations, such as performance, system boundaries, data quality, allocation procedures, and decision rules to evaluate inputs and outputs.
All estimations and assumptions regarding the cut off criteria and the allocation are declared in those parts. There are no other additional estimations and/or assumptions in the scope of this study.

3.4 Cut-off criteria
All inputs and outputs to a (unit) process are included in the calculation, for which data were available. The applied cut – off criteria is 1 % of renewable and non-renewable primary energy usage and 1 % of the total mass input of that unit process in case of insufficient input data or data gaps for a unit process.
The total of neglected input flows is a maximum of 5 % of energy usage and mass.
Product Stage (A1-A3) includes the provision of raw materials/packaging materials, transportation, energy and waste processing of final residues. However, production of capital goods, infrastructure, production of manufacturing equipment and personnel-related activities during production are not included in this LCA study.
The following processes are accounted for in this LCA study;
- Extraction and processing of raw materials
- The use of energy carriers such as electricity, coal and fuel oil
- Transportation of raw and packaging materials up to the factory gate
- Manufacturing of product and packaging
- Disposal of final waste

And not accounted for;
- HVAC (heating, ventilation, and air conditioning) and artificial lighting
- Production of manufacturing equipment
- No measured data or reports for accidental pollutions therefore they are not considered
- Personnel-related activities
- Substructure

3.5 Background data
The LCA model of aluminium ceiling system was made using the GaBi 6 software system for life cycle analysis by ERKE Sustainable Building Design Consultancy Ltd. All the background data was taken from /GaBi 6 Software/ from Thinkstep.
In this assessment, all data for the production stage; raw material extraction, manufacturing processes, transportation and packing and waste input were declared by the manufacturer.

All relevant upstream data necessary for the product stage (A1 – A3) modelling were taken from the GaBi DB version 6.115, year 2016. The input amounts for these production processes were taken from the manufacturer. This primary data collection was accomplished in the form of spreadsheet and questionnaires and supplemented by conversations with the manufacturer. Once the data was collected, it was imported into GaBi where the modelling was carried out.
Moreover, Lower Heating Values (Net Calorific Values) have been used in the energy declarations.

3.6 Data quality

For the consistency and completeness of data, /GaBi 6 Software/ database which has been used for industrial and scientific applications worldwide is used. The data used was last revised 5 years ago. In the process of providing these datasets, they are crosschecked with other databases and values from industry and science. All processes were calculated using representative data on the products declared by the manufacturer. The manufacturer issues a declaration for the compatibility of technical data with physical reality. The /GaBi 6 Software/ provides the life cycle inventory data for several of the raw and process materials obtained from the background system.
The specific data quality coverages are;

- Geographical coverage: The study applies to the actual situation in Turkey.
- Time period covered: Goal of the study is to determine the actual environmental loads for 12 consecutive months in the year 2017.
- Technology coverage: The objective of the study is to use data that apply to average technology which represents actual situation.

3.7 Period under review

The period under consideration is defined as one year. The monthly data is collected by the producer and is averaged to obtain the yearly data. As explained here, the average data for the year 2017 is utilized within this study.

3.8 Allocation

The allocation was performed in which the product output fixed to 1 m2 and the corresponding amount of product was used in calculations. In the next stage the allocation of primary fuels direct emissions was realized accordingly. On the other hand, the allocation of waste and power was performed according to the product outcome which is fixed to 1 m2 in the model. Average breakdown was done by considering product total weight per year production. According to this, the total energy, water, and raw materials used to produce the product were divided by the total annual production.
In the factory, solar water heating systems, metal ceiling profiles and carrier systems, sauna and fin bath equipment and metal ceiling panels are produced. Galvanized steel and aluminium ceiling panels are the 2 types of metal ceiling panels which are produced in the factory. Since the production processes of metal ceilings are the same, the annual production percentages are taken into consideration to allocate water and energy consumption. Since water is used only for the production of metal ceilings, the annual water consumption in production is allocated in accordance with the percentages of annual production of galvanized steel and aluminium ceiling panels. Since electricity and natural gas are also used in the production of other products in the factory, the share of energy is calculated by proportioning over the turnover. There is no co-product in the production. As a specific waste “aluminium scrap” is generated during the production, the given value of waste is the actual value, so no allocation is required.

3.9 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.

. This LCA model of aluminium ceiling system was made by using the /GaBi 6 Software/.

4. LCA: Scenarios and additional technical information

The modules A4, B1, B3, B4, B5, Reference Service Life (RSL), B6, B7 and C1-C4 are neither considered nor declared in this study. In addition to the product stage (A1, A2, A3), Module A5 is also considered within LCA scope.

Module A5: In order to observe biogenic carbon caused by the packaging products such as wood and cardboard, this module has been included to the LCA scope. Biogenic carbon is leaving the life cycle in this module during installation of the product.

5. LCA: Results

The modules A4, B1, B3, B4, B5, Reference Service Life (RSL), B6, B7 and C1-C4 are neither considered nor declared in this study. Cradle-to-gate life cycle impact assessment results are shown for CML November 2010 calculation methodology in below tables. Due to the relative approach of LCA, the results include only amount of life cycle impact category parameters based on functional unit. The functional unit of this LCA study is 1 m2 aluminium ceiling panel. The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

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

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	MND	X	MND	MND	MNR	MNR	MNR	MND	MND	MND	MND	MND	MND	MND

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 m² aluminium suspended ceiling systems

Parameter	Unit	A1-A3	A5
Global warming potential	[kg CO_2-Eq.]	2.16E+1	1.88E-2
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	6.04E-9	2.01E-12
Acidification potential of land and water	[kg SO_2-Eq.]	1.17E-1	7.73E-5
Eutrophication potential	[kg $(PO_4)^{3-}$-Eq.]	6.28E-3	1.47E-5
Formation potential of tropospheric ozone photochemical oxidants	[kg ethene-Eq.]	6.90E-3	6.12E-6
Abiotic depletion potential for non-fossil resources	[kg Sb-Eq.]	2.15E-5	7.45E-9
Abiotic depletion potential for fossil resources	[MJ]	2.52E+2	1.13E-1

RESULTS OF THE LCA - RESOURCE USE: 1 m² aluminium suspended ceiling systems

Parameter	Unit	A1-A3	A5
Renewable primary energy as energy carrier	[MJ]	111.86	0.02
Renewable primary energy resources as material utilization	[MJ]	IND	IND
Total use of renewable primary energy resources	[MJ]	111.86	0.02
Non-renewable primary energy as energy carrier	[MJ]	295.22	0.13
Non-renewable primary energy as material utilization	[MJ]	IND	IND
Total use of non-renewable primary energy resources	[MJ]	295.22	0.13
Use of secondary material	[kg]	IND	IND
Use of renewable secondary fuels	[MJ]	IND	IND
Use of non-renewable secondary fuels	[MJ]	IND	IND
Use of net fresh water	[m³]	268.56	0.01

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 m² aluminium suspended ceiling systems

Parameter	Unit	A1-A3	A5
Hazardous waste disposed	[kg]	3.33E-7	2.95E-10
Non-hazardous waste disposed	[kg]	2.94E+1	2.54E-2
Radioactive waste disposed	[kg]	1.71E-2	8.05E-6
Components for re-use	[kg]	IND	IND
Materials for recycling	[kg]	IND	IND
Materials for energy recovery	[kg]	IND	IND
Exported electrical energy	[MJ]	IND	IND
Exported thermal energy	[MJ]	IND	IND

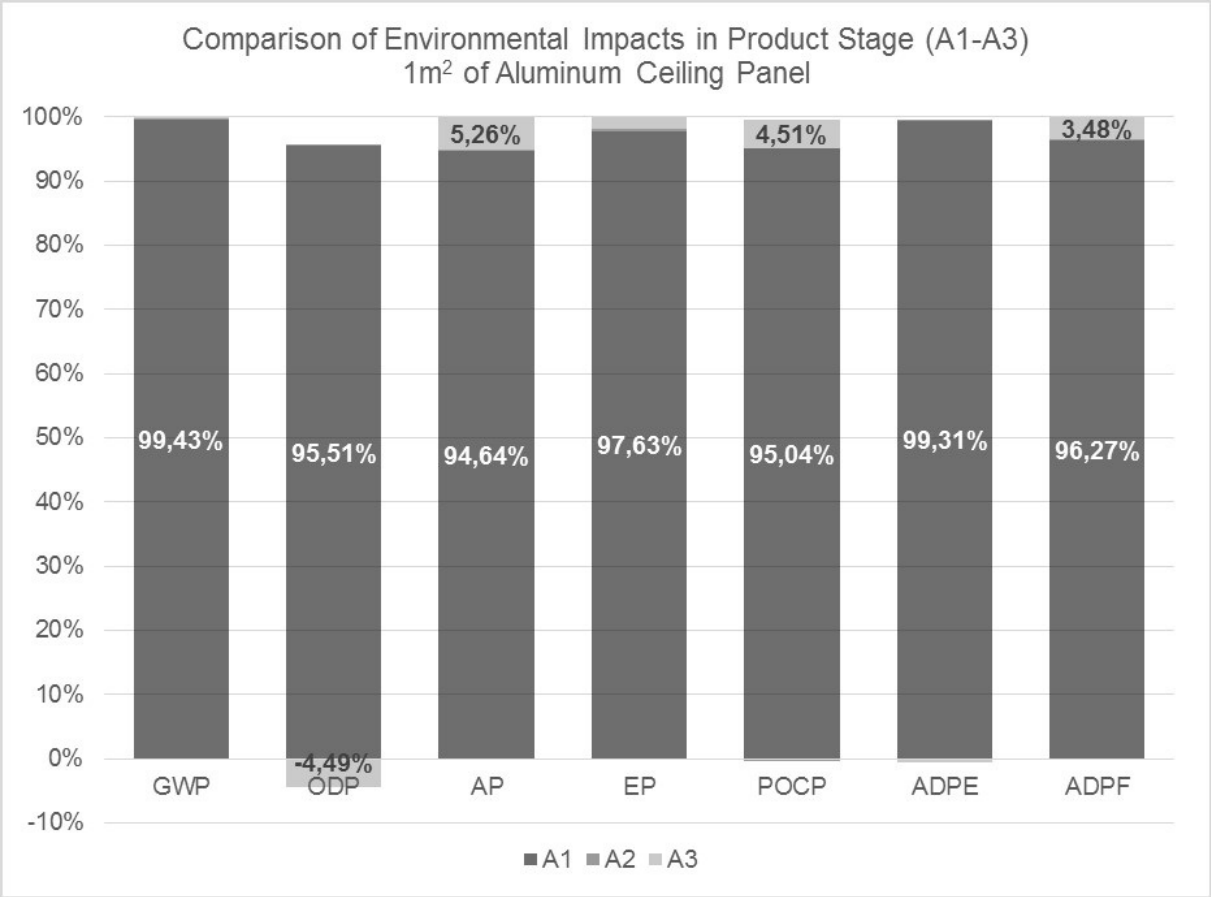
6. LCA: Interpretation

The greatest contributor to the environmental indicators for the production of metal ceiling systems made of aluminium is the raw material preparation (A1 module) process within product stage (A1-A3). The module consistently demonstrated the considerable inputs in environmental considerations of the product's development as seen on the chart.

The raw material process accounted for nearly 99% of the total ADPE (Abiotic Depletion Potential for non-fossil resources) and GWP (Global Warming Potential), also presented as a major contributor to other environmental impacts. The raw material value is primarily dominated by aluminium (approx. 96%) and the remaining 4% is accounted for by other raw materials such as coating powder, adhesive and glass wool. The LCA study also revealed that the manufacturing process has a relatively lower environmental impacts profile as compared to the raw material process. The transportation of raw material contributed the least to all environmental impact categories. The A2 (transportation) module is

responsible for less than 1% of the related environmental impact categories. Aluminium which is playing the biggest role as raw material by its weight ratio is locally supplied within short distances.

As it is seen in the graph given below, while the Modules A1, A2, A3 are checked, it is seen that effects of Module A1 higher than the others in each category because of the reason of the raw materials' supply processes. On the other hand, thanks to the preferred truck types, POCP are calculated as negative in the Module A2, moreover, thanks to recycling potential of aluminium scrap, ODP and ADPE are calculated as negative in the Module A3.



When energy parameters are checked, it is seen that that the biggest energy consumption is occurred during aluminium production. However, when steel and aluminium products are compared, it is seen that environmental impacts of aluminium product is lower than steel product even if more energy and water are consumed during aluminium production.

On the other hand, besides product stage, Module A5 has very high environmental impact potential. Since there is no follow up strategy for the packaging materials which include biogenic carbon such as wood and cardboard, these materials are considered to be sent to landfill as a worst case scenario. Because of this reason, the impacts are so high, however in real less impacts are expected as waste recovery strategies are improved.

7. Requisite evidence

The metal ceiling panel is a low VOC emitted interior product in compliance with CDPH Standard v1.1 as you can find the details below.

Test Method : /CDPH - CA Section 01350 v1.2/

Testing Laboratory : UL International Italia S.r.l, ATTN: IAQ Laboratory, Via Europa, 9, I – 22060 – Cabiate (Como), Italia

Test Description : The product was received by UL Environment as packaged and shipped by the customer. The package was visually inspected and stored in a controlled environment immediately following sample check-in. Just prior to loading, the product was unpackaged and prepared for the required loading. The sample was placed inside the environmental chamber, and tested according to the specified protocol.

Test Date : 5/24/2019 - 6/7/2019

TEST RESULTS COMPARISON TO STANDARD CRITERIA				
Environment	Classroom		Office	
Surface Area	89.2 m²		11.1 m²	
Criterion / Meets?	Criterion	Meets?	Criterion	Meets?
Individual VOC	≤ ½ CREL	Yes	≤ ½ CREL	Yes
Formaldehyde	≤ 9.0 µg/m³	Yes	≤ 9.0 µg/m³	Yes

Environment	Classroom	Office
Surface Area	89.2 m²	11.1 m²
TVOC	0.5 mg/m³ or less	0.5 mg/m³ or less

8. References

/Institut Bauen und Umwelt/
Institut Bauen und Umwelt e.V. Berlin(pub): Generation of Environmental Product Declarations (EPDs)

General Principles
EPD range of Institute Bauen und Umwelt e.V. (IBU), 2013/04

/Product Category Rules for Building Products, Part A/:
Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report

/Product Category Rules for Building-Related Products and Services, Part B/:
Requirements on the EPD for Metal Ceilings

/ISO 9001/
DIN EN ISO 9001:2008, Quality Management System Requirements

/ISO 14001/
DIN EN ISO 14001:2004, Environmental Management System Requirement

/GaBi 6 Software/
thinkstep AG; LBP-GaBi, University of Stuttgart: GaBi Software System, Leinfelden-Echterdingen / Germany, 2011

/OHSAS 18001/
Occupational Health and Safety Management Systems Requirements

/ASTM C423 – 09A/
Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method

/ISO 11654:1997/
Acoustics – Sound absorbers for use in Buildings – Rating of sound absorption

/EU No 305/2011/
Construction Products Regulation

/TS EN 13964/
Suspended ceilings - Requirements and test methods

/TS EN ISO 9224/
Corrosion of metals and alloys - Corrosivity of atmospheres - Guiding values for the corrosivity categories

/TS EN ISO 11654/
Acoustics-Sound absorbers for use in buildings-Rating of sound absorption

/TS EN ISO 354/
Acoustics - Measurement of sound absorption in a reverberation room

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

/CDPH - CA Section 01350 v1.2/
CDPH - CA Section 01350 Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers Version 1.2

/BBSR/
Federal Office of Building and Regional Planning Nutzungsdauern von Bauteilen für Lebenszyklusanalysen nach Bewertungssystem Nachhaltiges Bauen (BNB). Available on:
https://www.nachhaltigesbauen.de/fileadmin/pdf/baustoff_gebauededaten/BNB_Nutzungsdauern_von_Bauteilen_2017-02-24.pdf

/IBU 2016/
IBU (2016): General Programme Instructions for the Preparation of EPDs at the Institut Bauen und Umwelt e.V., Version 1.1 Institut Bauen und Umwelt e.V., Berlin.
www.ibu-epd.de

/ISO 14025/
DIN EN /ISO 14025:2011-10/, Environmental labels and declarations — Type III environmental declarations — Principles and procedures

/EN 15804/
/EN 15804:2012-04+A1 2013/, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

Publisher
Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Tel +49 (0)30 3087748- 0
Fax +49 (0)30 3087748- 29
Mail info@ibu-epd.com
Web **www.ibu-epd.com**

Programme holder
Institut Bauen und Umwelt e.V.
Panoramastr 1
10178 Berlin
Germany

Tel +49 (0)30 - 3087748- 0
Fax +49 (0)30 – 3087748 - 29
Mail info@ibu-epd.com
Web **www.ibu-epd.com**

Author of the Life Cycle Assessment
ERKE Sustainable Building Design LCC.
Kisikli mah. Hanimseti sok. No:5
34692 Üsküdar / Istanbul
Turkey

Tel +90 216 369 73 93
Fax +90 216 369 73 96
Mail info@erketasarim.com
Web **www.erketasarim.com**

Owner of the Declaration
Butem Metal Form San. Ve Tic. A.S.
Osmangazi Mah. Ziya Gökalp Cad.
Esenyurt 10
34522 Istanbul
Turkey

Tel +902128863300
Fax +902128863310
Mail info@butemmetal.com.tr
Web **www.butemmetal.com**