ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration	Aspen Yapı ve Zemin Sistemleri Sanayi ve Ticaret A.Ş.
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ASP-20160110-CAC1-EN
Issue date	14/09/2016
Valid to	13/09/2021

Targa Raised Access Flooring Systems

Institut Bauen und Umwelt e.V.

www.bau-umwelt.com / https://epd-online.com

General Information

Aspen Yapı ve Zemin Sistemleri Sanayi ve Ticaret A.Ş.

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

Declaration number
EPD-ASP-20160110-CAC1-EN

This Declaration is based on the Product Category Rules:
System floors, 11.2014
(PCR tested and approved by the SVR)

Issue date
14/09/2016

Valid to
13/09/2021

Prof. Dr.-Ing. Horst J. Bossenmayer
(President of Institut Bauen und Umwelt e.V.)

Dr. Burkhart Lehmann
(Managing Director IBU)

Targa

Owner of the Declaration
Aspen Yapı ve Zemin Sistemleri Sanayi ve Ticaret A.Ş.
Leylak Sokak Murat İş Merkezi B Blok 3/14
34387 Mecidiyeköy / İstanbul

Declared product / Declared unit
Targa / 1 m2

Scope:
Within this study a life cycle analysis (LCA) according to /ISO 14040/44/ is performed for Targa raised system floor manufactured by Aspen Yapı ve Zemin Sistemleri Sanayi ve Ticaret A.Ş at the production plant in Sakarya, Turkey. The LCA is based on the data declared by the manufacturer. The EPD for Targa raised system floor is an EPD which represents the cradle-to-gate life cycle analysis of the Targa product. The declaration refers to an average product from one plant of one manufacturer. 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 CEN Norm /EN 15804/ serves as the core PCR
Independent verification of the declaration according to /ISO 14025/
☐ internally ☒ externally

Prof. Dr. Birgit Grahl
(Independent verifier appointed by SVR)

Product

Product description
Targa Raised Access Flooring Systems produced by Aspen have been designed to provide the space required for data, power, air conditioning, fire and security infrastructures that have become a necessity for all commercial spaces.
Targa Raised Access Flooring Systems enable a fast and cost-free intervention to the space formed under finishing level with their modular structure and thus render the space functional. It consists of 60 x 60 cm panels freely laying on pedestals, stringers and braces which form the substructure. Panel core can be chipboard or calcium sulfate according to project requirements.

Application
In general, raised floor installation areas are offices, IT rooms, public, commercial and private buildings in order to create cavities/installation space.

Technical Data
Each model of raised access flooring systems has its own technical data.

Constructional data

Name	Value	Unit
System construction (total, FF)	up to 1500	mm
Substructure (from - to)	30 - 1500	mm
Grammage / system weight	20 - 50	kg/m²
Density of the base course	600 - 1600	kg/m³
Break load Statics (/EN 12825/ / /EN 13213/)	min 4000	N
Point load Statics (/EN 12825/ / /EN 13213/)	min 2	kN
Deflection	0 - 4	mm
Fire protection (/EN 13501/DIN 4102/) building material class	B/C	-
Fire protection (/EN 13501/DIN 4102/) Fire resistance	B/C	-
Electrostatics (/DIN EN 1081/)	1000000 - 10000000000	Ω
Working load	1.8 - 3.2	kN
Maximum load	>= 4	kN
Safety factor	2-3	
Panel load class	1-2	

Panel deflection class	A-C	
Panel dimension class	1	

Base materials / Ancillary materials

ASPEN Targa Raised Access Flooring Systems are primarily made of particle board, steel, PVC and other auxiliary substances. Main raw materials as mass percentage are;

Name	Value	Unit
Chipboard	60	%
Steel	30	%
PVC	5	%
Ancillary Substances	5	%

Reference service life

According to /EN 15084/, the reference service life (RSL) shall only be declared in the EPDs which cover the entire life cycle of a product. The modules declared in this EPD are the production stage information modules from A1 to A3. However, based on the market feedback and the fact that the Targa products which were used in the projects that were carried out 20 years ago have still been well functioning, it can be noted that, unless there is inconformity in the working conditions and maintenance methods, Targa products are expected to be usable for more than 20 years without losing stability and functional properties.

LCA: Calculation rules

Declared Unit

The declared unit is 1 m2 of Targa raised system floor. The average mass of the product is approximately 63 kg. According to the data from the year 2015 of the manufacturer, of 63 kg of mass of the product produced in 2015, 60% is particleboard, 30% is steel sheet, 4% is PVC, 2% is rubber, 1% is glue, and only 0.82% is calcium sulfate. The classification of the declaration is 1c, which is *declaration of an average product from one plant of one manufacturer*, based on PCR-A Chapter 5.2.

The average breakdown of the input materials, i.e. raw materials, energy, and water, is based on the normalized percentages of the two alternatives, namely particleboard and calcium sulfate, and is given in a range in the table below. According to this, for the year 2015, 98.6% and 1.4% of the input materials are used by the particleboard and calcium sulfate options, respectively.

Name of component	Particleboard	Calcium sulfate
Raw materials (Mkg)	2.958–3.944	0.42–0.56
Energy (TkWh)	157.76–162.69	2.24–2.31
Water (TL)	78.88–83.81	1.12–1.19

Note: Mkg = million kilograms, TkWh = tnousand kilowatt.hours, ML = thousand liters

Declared unit

Name	Value	Unit
Declared unit	1	m^2
Grammage (incl. subconstruction)	63	kg/m^2
Conversion factor to 1 kg	0.0158	-

System boundary

The type of the EPD: cradle-to-gate

The system boundary includes the production of Targa raised system floor from the extraction of raw materials to the production of finished packaged products at the factory gate - cradle-to-gate.

In this study, the product stage information modules A1, A2, and A3 are considered. These modules include extraction and processing of raw materials, A1; transport of the raw materials to the manufacturer, A2; and manufacturing, including the packaging of the product, A3. As stated by PCR A version 1.5, a potential release of carbon in C4 is to be declared. Therefore, assuming that 90% of particleboard is composed of wood, with the carbon content of 52%, the potential CO2 emission in C4 can be calculated as to be 65.08 kg CO2-equiv., which is caused by the use of wood in particleboard part of the product. The CO2 sequestered in the containerboard used in the packaging has not been included given the negligible mass of the material. The results of the analysis in terms of the mass contributions of all processes to global warming potential are also given in the table below.

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.

LCA: Scenarios and additional technical information

The modules A4, A5, B1, B2, B3, B4, B5, Reference Service Life (RSL), B6, B7, and C1-C4 are neither considered nor declared in this study.

Of the weight of the Targa raised system floor product, 1% comprises of the materials used in the packaging of the product. These materials are wooden pallets and cardboard boxes, in which the product is placed. The weight of the pallets is slightly over then 0.10 kg per m2 of product, whereas of cardboard box is slightly less than 0.30 kg per m2 of product.

LCA: Results

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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	MND

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: Targa Ceiling system / 1 m²

Parameter	Unit	A1-A3	C4
Global warming potential	[kg CO_2-Eq.]	8.62E+0	6.51E+1
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	3.77E-9	IND
Acidification potential of land and water	[kg SO_2-Eq.]	2.95E-1	IND
Eutrophication potential	[kg $(PO_4)^{3-}$-Eq.]	3.40E-2	IND
Formation potential of tropospheric ozone photochemical oxidants	[kg ethene-Eq.]	4.24E-2	IND
Abiotic depletion potential for non-fossil resources	[kg Sb-Eq.]	3.65E-3	IND
Abiotic depletion potential for fossil resources	[MJ]	1.02E+3	IND

RESULTS OF THE LCA - RESOURCE USE: Targa Ceiling system / 1 m²

Parameter	Unit	A1-A3	C4
Renewable primary energy as energy carrier	[MJ]	4.43E+2	IND
Renewable primary energy resources as material utilization	[MJ]	6.59E+2	IND
Total use of renewable primary energy resources	[MJ]	1.10E+3	IND
Non-renewable primary energy as energy carrier	[MJ]	1.08E+3	IND
Non-renewable primary energy as material utilization	[MJ]	5.17E+1	IND
Total use of non-renewable primary energy resources	[MJ]	1.13E+3	IND
Use of secondary material	[kg]	0.00E+0	IND
Use of renewable secondary fuels	[MJ]	0.00E+0	IND
Use of non-renewable secondary fuels	[MJ]	0.00E+0	IND
Use of net fresh water	[m³]	4.94E-1	IND

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: Targa Ceiling system / 1 m²

Parameter	Unit	A1-A3	C4
Hazardous waste disposed	[kg]	4.03E-6	IND
Non-hazardous waste disposed	[kg]	1.50E+0	IND
Radioactive waste disposed	[kg]	1.77E-2	IND
Components for re-use	[kg]	0.00E+0	IND
Materials for recycling	[kg]	0.00E+0	IND
Materials for energy recovery	[kg]	0.00E+0	IND
Exported electrical energy	[MJ]	0.00E+0	IND
Exported thermal energy	[MJ]	0.00E+0	IND

**Assuming that the product may be incinerated at the end of its life, the biogenic CO2 emissions generated during the incineration is declared in the column C4. Thus, this value of GWP represents the global warming potential including the biogenic carbon from the incineration.*

References

GaBi 6
GaBi 6: Software and Database for Life Cycle Engineering, IKP [Institute for Polymer Testing and Polymer Science] University of Stuttgart and thinkstep AG, Leinfelden-Echterdingen, 2013

GaBi 6 Documentation of Datasets
GaBi 6: Documentation of GaBi6-Datasets for life cycle engineering. LBP University of Stuttgart and thinkstep AG, 2013. http://documentation.gabi-software.com/

IBU 2016
PCR - Part A: Calculation rules for the Life Cycle Assessment and Requirements on the Background Report, Institut Bauen und Umwelt e.V., www.bau-umwelt.com, March 2016

PCR 2014
PCR Guidance-Texts for Building-Related Products and Services from the range of Environmental Product Declarations of Institute Construction and Environment e.V. (IBU), Part B: Requirements on the EPD for System floors, November 2014

EN 15084
EN 15804:2012: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

ISO 14044:2006
DIN EN ISO 14044:2006-10: Environmental management - Life cycle assessment - Requirements and guidelines

EN 12825
EN 12825:2001 - Raised access floors

EN 13213
EN 13213:2001 - Hollow floors

EN 13501
EN 13501-1:2007 - Fire classification of construction products and building elements. Classification using test data from reaction to fire tests

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

General principles
for the EPD range of Institut Bauen und Umwelt e.V. (IBU), 2013/04
www.bau-umwelt.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@bau-umwelt.com
Web **www.bau-umwelt.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@bau-umwelt.com
Web **www.bau-umwelt.com**

Author of the Life Cycle Assessment
Burak Sen
Istiklal Cad Beyoglu Is Merkezi 187/5
34433 Istanbul
Turkey

Tel +902122446780
Fax +902122446780
Mail b.sen@reimers-partners.com
Web **www.reimerspartners.com**

Owner of the Declaration
Aspen Yapi ve Zemin Sistemleri Sanayi ve Ticaret A.S.
Leylak Sokak Murat Is Merkezi B Blok 3/14
34387 Mecidiyeköy / Istanbul
Turkey

Tel (0212) 318 88 88
Fax (0212) 275 36 84
Mail info@aspen.com.tr
Web **http://www.aspen.com.tr/**