

# Annex

## Reinforced aluminium foil facing

### For mineral wool insulation material: low, medium and high bulk density range

to the

#### **ENVIRONMENTAL PRODUCT DECLARATION**

as per *ISO 14025* and *EN 15804+A1*

<b>Owner of the Declaration</b>	FMI Fachverband Mineralwolleindustrie e.V.
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## General Information

This appendix contains the LCA results for a declared unit of 1 m<sup>2</sup> reinforced aluminium foil facing with a grammage of 80 g/m<sup>2</sup>.

## General Information on use stages

By adding the environmental impacts of the mineral wool and the declared facing, a simplified calculation of the environmental impacts of faced products shall be made possible. For this purpose, the volume-based declaration of the mineral wool is to be related to the square metres used, taking into account the specific product thickness.

In the case of double-sided facing, the environmental impact from 1 m<sup>2</sup> of facing is to be considered twice.

## 2. LCA: Scenarios and additional technical information

The facings declared represent surface-applied layers. The following life cycle phases of the facing are taken into account for the calculations:

- Module A1-A3: Production of the precursors of the facing incl. 500 km transport to the factory
- Module A4: Transport to the construction site (360 km transport distance)
- Module A5: 2% loss of material
- Module C2: Transport to landfill (50 km default-scenario)
- Module C4: Landfilling of the composite material (share of facing)

The information for the modelling of the facing was collected as part of the data collection for the EPD creation.

It should be noted that the data and methodological assumptions used for the preparation of the LCAs of the products listed comply with the requirements of *EN 15804+A1* as well as *IBU, PCR Part A* and are thus suitable for use in an EPD.

### 3. 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	X	X	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

#### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT acc. to EN 15804+A1: 1 m<sup>2</sup> reinforced aluminium foil facing (80 g/m<sup>2</sup>)

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP	[kg CO <sub>2</sub> -Eq.]	5,75E-01	1,71E-03	1,16E-02	0,00E+00	2,37E-04	0,00E+00	1,09E-03	0,00E+00
ODP	[kg CFC11-Eq.]	4,52E-15	4,23E-19	9,05E-17	0,00E+00	5,88E-20	0,00E+00	6,00E-18	0,00E+00
AP	[kg SO <sub>2</sub> -Eq.]	1,83E-03	2,52E-06	3,68E-05	0,00E+00	3,50E-07	0,00E+00	6,93E-06	0,00E+00
EP	[kg (PO <sub>4</sub> ) <sup>3-</sup> -Eq.]	1,40E-04	5,49E-07	2,82E-06	0,00E+00	7,63E-08	0,00E+00	7,80E-07	0,00E+00
POCP	[kg ethene-Eq.]	1,33E-04	-5,66E-07	2,66E-06	0,00E+00	-7,86E-08	0,00E+00	5,26E-07	0,00E+00
ADPE	[kg Sb-Eq.]	7,74E-08	1,40E-10	1,55E-09	0,00E+00	1,95E-11	0,00E+00	1,10E-10	0,00E+00
ADPF	[MJ]	7,04E+00	2,29E-02	1,42E-01	0,00E+00	3,19E-03	0,00E+00	1,54E-02	0,00E+00

Caption: 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

#### RESULTS OF THE LCA - RESOURCE USE acc. to EN 15804+A1: 1 m<sup>2</sup> reinforced aluminium foil facing (80 g/m<sup>2</sup>)

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	2,36E+00	1,34E-03	4,74E-02	0,00E+00	1,85E-04	0,00E+00	2,08E-03	0,00E+00
PERM	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	2,36E+00	1,34E-03	4,74E-02	0,00E+00	1,85E-04	0,00E+00	2,08E-03	0,00E+00
PENRE	[MJ]	8,45E+00	2,32E-02	1,70E-01	0,00E+00	3,22E-03	0,00E+00	1,59E-02	0,00E+00
PENRM	[MJ]	7,97E-01	0,00E+00	1,59E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	8,45E+00	2,32E-02	1,70E-01	0,00E+00	3,22E-03	0,00E+00	1,59E-02	0,00E+00
SM	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m <sup>3</sup> ]	4,50E-03	1,56E-06	9,02E-05	0,00E+00	2,16E-07	0,00E+00	4,01E-06	0,00E+00

Caption: PERE = Use of renewable primary energy excluding non-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 – OUTPUT FLOWS AND WASTE CATEGORIES acc. to EN 15804+A1: 1 m<sup>2</sup> reinforced aluminium foil facing (80 g/m<sup>2</sup>)

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	[kg]	5,68E-09	1,07E-09	1,43E-10	0,00E+00	1,49E-10	0,00E+00	2,43E-10	0,00E+00
NHWD	[kg]	1,16E-01	3,67E-06	3,92E-03	0,00E+00	5,10E-07	0,00E+00	8,01E-02	0,00E+00
RWD	[kg]	5,41E-04	4,27E-08	1,08E-05	0,00E+00	5,93E-09	0,00E+00	1,81E-07	0,00E+00
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Caption: 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; EEE = Exported thermal energy