EUROPEAN ALUMINIUM

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025 and EN 15804:2012 + A2:2019

COIL COATED ALUMINIUM SHEET OROFE® Falzip 0,7 mm; 1 mm

ELVAL COLOUR
Power to imagine

Owner of the declaration:	ELVAL COLOUR S.A.
Publisher and Programme holder:	EUROPEAN ALUMINIUM
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GENERAL INFORMATION

Owner of the declaration	ELVAL COLOUR 2-4 Mesogeion Ave., 11527 Athens, Greece www.elval-colour.com
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Publisher and Programme holder	EUROPEAN ALUMINIUM AISBL Avenue de Tervueren 168 B-1150 Brussels Belgium  Dr. Gerd Götz, Director General
The declaration is based on the Product Category Rules	European Aluminium General Programme Instructions version 3, 23rd of September 2020
Declared Unit	1 m^2 of OROFE® Falzip coil coated aluminium sheet
Scope of the Environmental Product Declaration	This EPD covers aluminium sheet of 0,7 mm and 1 mm thickness coated with a polyester or PVDF coating. This EPD has been developed from a pre-verified modelling tool via an i-report in GaBi 10. The input data to the tool have been collected by Elval Colour and refers to the year 2020. UN CPC code: 41534 Plates, sheets and strip, of aluminium, of a thickness exceeding 0.2 mm. The EPD may be used in a B2B context within the European Market.
Liability	The owner of the declaration is liable for the underlying manufacturing information and European Aluminium is not liable in this respect.
Disclaimers	This EPD cannot be used as a guarantee of the recycled content of the actual product sold on the market. A specific declaration may be asked to the supplier. The use of this EPD within BIM tools is in principle limited to the products explicitly included in the EPD. The scaling of results to model similar products can only be done if justified and transparently reported in the project report. Any responsibility regarding the misuse of this EPD by third parties is not accepted by the Programme Operator.

Verification

EN15804:2012 +A2:2019 serves as core PCR completed by European Aluminium PCR 03/2020	
Verification of the EPD by an independent third party in accordance with ISO 14025	
☐ Internally	☒ Externally

Verifier

Frank Werner

1 PRODUCT

1.1 Product description and applications

This Environmental Product Declaration (EPD) is for business-to-business communication. The EPD refers to "OROFE® Falzip" product family which is composed of aluminium coil-coated sheets specifically adapted for double bending standing seam roofing applications. The aluminium and aluminium alloy sheets are preliminary rolled to the required thickness and treated thermally in accordance with customer specifications. Aluminium coil is then pre-treated and then coated. The type of coating and the delivery dimensions (i.e., coil or sheet cut to length) are customised according to client requirements.

OROFE® Falzip coil coated aluminium coils or sheets are semi-finished products that are usually further processed (e.g., by cutting, forming or machining operations) to be converted into a final product to be installed on a building, e.g., roofing panel.

This EPD provides LCA results for the following OROFE® Falzip coil coated sheets:

- For aluminium sheet thicknesses: 0,7 mm and 1 mm
- Two types of coating: PVDF – 33 µm thick; VHDPE – 25 µm thick

The results included in this EPD are considered representative also for "OROFE® Falzip " with other types of coating since the top coating only accounts for 6% of the total impacts of the products.

1.2 Technical Data

The most relevant technical data are reported in Table 1.

Table 1 Most relevant technical data

Technical Datasheet Orofe® Falzip

EN AW 3005, H41

Product	Alloy/ Temper	Thickness range (mm)
Orofe Falzip	EN AW 3005 / H41	0,60-1,00
Composition (EN 573)	Si:0,60% max; Fe: 0,70% max, Mn: 1,0-1,50 %, Mg: 0,20-0,60%, Cu: 0,30% max, Ti: 0,05%, Zn: 0,25% max, Cr: 0,10% max, Other: 0,05% max, total others: 0,15% max, Al (%): Remainder	

Mechanical Characteristics (EN 485)	range	Typical
Rp0,2 (MPa)	105 min	120-135
Rm (MPa)	140-180	160-175
A50 (%)	8% min	10,0 - 12,0
Bending	Radius T 1,0 angle 180° without cracks Radius T0,0 angle 90° without cracks	

For the most up-to-date values of the technical data, please refer to the product specifications available on the ELVAL COLOUR website in the relevant product section.

Most relevant standards for applications of aluminium sheet products in buildings are EN 15088, EN 485-2, EN 485-4, EN 507, EN 508-2, EN 573-3, EN 1396, EN 13501-1, EN 14783, EN 13964/+

1.3 A1.Process description

The coil coated sheet is produced using an aluminium sheet and a top and a bottom coating. Other auxiliary materials are used, as the paint and some acids (sulphuric acid) or alkalis (sodium hydroxide). The aluminium production and the rolling are described in the environmental profile report.

The production phase includes mainly the following steps:

1. Aluminium production and rolling
2. Continuous coil coating

The main background production processes are reported in Figure 1.

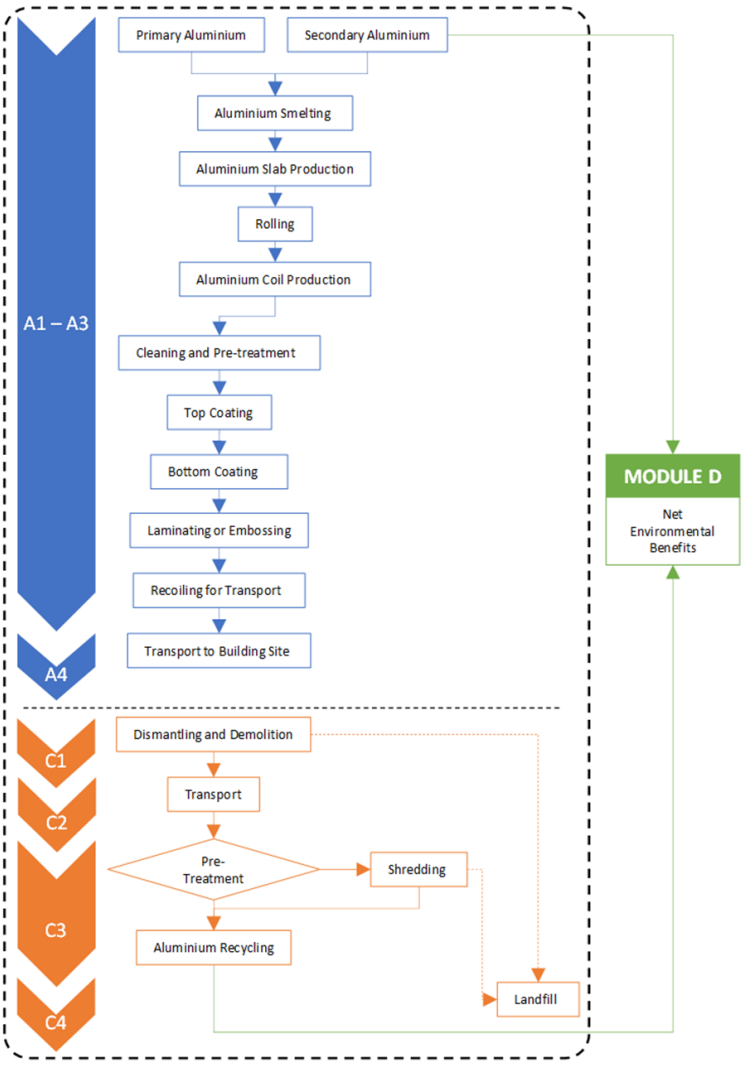

Figure 1 Main production processes and components of coil coated sheets

The upstream aluminium processes have been modelled using European Aluminium LCI datasets for the primary aluminium production, recycling and remelting as described in the European Aluminium Environmental profile report 2018.

At the end-of-life stage, the coil coated aluminium sheets should be specifically dismantled and collected in order to be treated since the aluminium can be efficiently recycled. After having been collected, the coil coated aluminium sheets are treated through shredding and sorting.

1.4 Health and safety aspects during production and installation

The coating process does not require the use of hazardous substances for the chemical conversion coating. The processing of "OROFE® Falzip " is chrome-free, i.e., no chromium is used in the production process. To the best of our knowledge, the products do not contain materials listed in the "candidate list of substances of very high concern for authorization".

There are no relevant aspects of occupational health and safety during the further processing and installation of coil coated sheets. Under normal installation, no measurable environmental impacts can be associated with the use of coil coated aluminium sheets. The appropriate safety measures need to be taken at the building site, especially if installation takes place on a high-rise building.

1.5 Reference service life

Since the use phase is not modelled, no specific information can be given about the Reference Service Life. In normal use, aluminium building products are not altered or corroded over time. A regular cleaning (e.g., once a year) of the product suffices to secure a long service life. However, the use of highly alkaline (pH >10) or highly acidic (pH < 4) cleaning solutions should be avoided. In practice, a service life of 50 years can be assumed in normal use for such application.

2 LCA – CALCULATION RULES

2.1 Declared unit & bill of materials

The Bill of Materials of the four analysed products is reported in Table 2. The declared unit corresponds to 1 m^2 of coil coated aluminium sheet.

Table 2 Bill of materials (kg) of the declared unit for the 2 products

Sheet thickness (mm)	Top coating	Aluminium mass (kg)
0,7 mm	PVDF	1,89 (100%)
1 mm	PVDF	2,7 (100%)
0,7 mm	VHDPE	1,89 (100%)
1 mm	VHDPE	2,7 (100%)

2.2 System boundary

This EPD is from cradle to gate with modules C1-C4 and module D, as reported in Table 4.

The production stage (modules A1-A3) includes processes that provide materials and energy input for the system, manufacturing and transport processes up to the factory gate, as well as waste processing. For the end of life, the default scenario defined in the General Product Instructions and detailed in 3.2 is applied.

Table 3 Modules declared

Production			Installation		Use stage							End-of-Life				Next product system
Raw material	Transport	Manufacturing	Transport to	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy	Operational water	Deconstruction	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	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

Note: ND: Not Declared; X: Module included in the LCA.

Module A4 is declared for a distance of 1 km to give the possibility to adjust the resulting environmental impact depending on the specific distance at hand.

2.3 Energy mix

In the models developed the background electricity mix used is the European electricity mix (EU-28 Electricity grid mix (2016)). Details about the electricity modelling in the datasets: production of primary aluminium, extrusion, rolling and recycling please refer to the Environmental Profile Report 2018.

2.4 Allocation

The scrap which are produced along the production chain are recycled into the same production chain and are modelled as “closed-loop” within Module A. This recycling loop has been modelled in the GaBi

model so that the aluminium coil coated sheet is the only product exiting the gate. Hence, the production process does not deliver any co-products.

At the end-of-life stage, the coil coated aluminium sheets are sent to an end-of-life treatment which is modelled according to the scenario reported in 3.2. The environmental burdens and benefits of recycling and energy recovery are calculated in module D accordingly.

2.5 Assumptions and Cut off criteria

The aluminium sheets were composed of a mix of 60% primary aluminium and 40% recycled aluminium. Such mix represents the typical sourcing of aluminium in Europe, all markets included. For the primary aluminium, a primary aluminium ingot consumption mix was considered (European production + net fraction of imports into Europe). Alloying elements were not considered, and a pure aluminium sheet has been assumed as a proxy. As far as VHDPE coating is concerned, the polyester was used as proxy data.

2.6 Data quality

Representativeness

Technological: All primary and secondary data were modelled to be specific to the technologies or technology mixes under study. Where technology-specific data were unavailable, proxy data were used. For the aluminium production, rolling and recycling, the datasets described in the Environmental Profile Report 2018 of European Aluminium have been used. The modelling reflects the specific BoM of the analysed products. Technological representativeness is considered to be very good.

Geographical: All primary data were collected specifically to the countries under study. Regarding secondary data, where EU region-specific data were unavailable, DE datasets were used. For the aluminium production, rolling and recycling, the datasets described in the Environmental Profile Report 2018 of European Aluminium have been used. Geographical representativeness is considered to be good.

Temporal: Primary data refer to the year 2020, and all secondary data come from the GaBi database SP40, including those on aluminium production, which are the most recent ones as described in the Environmental Profile Report 2018 of European Aluminium.

Completeness

All known operating data was taken into consideration in the analysis. Considering the long experience of data collection within the European Aluminium Industry, it can be assumed that the ignored processes or flows contribute to much less than 5% of the impact categories under review.

The process chain is considered sufficiently complete regarding the goal and scope of this study.

Overall, the data quality can be described as good.

2.7 Software and databases

These EPD results have been calculated from an LCA tool for EPD, based on the GaBi database. Currently the EPD software is using the software GaBi V10.5.0.78 and the Service Pack 40 (SP40).

2.8 Comparability

As a general rule, a comparison or evaluation of EPD data may be possible when all of the data to be compared has been drawn up in accordance with EN 15804+A2 and the building context or product-specific characteristics are taken into consideration.

3 LCA – SCENARIOS AND ADDITIONAL INFORMATION

3.1 Scenario for additional modules

Module A4 is taken into consideration in this Declaration, and it has been modelled according to the information reported in Table 4.

Table 4 Module A4 – Transport to the building site

Scenario information	Unit (expressed per DU)
Fuel type and consumption of vehicle or vehicle type used for transport e.g., long-distance truck, boat, etc.	Truck-trailer, Euro 4, 34 - 40t gross weight / 27t payload capacity, diesel driven
Distance	1 km
Capacity utilisation (including empty returns)	61 %
Bulk density of transported products	-
Volume capacity utilisation factor (factor = 1 or <1 or ≥1 for compressed or nested packaged products)	Not applicable

3.2 Scenario for Mod. C1-C4

The default scenario for the end of life of the coil coated sheet, as reported in the General Programme Instructions, is the following:

- collection rate: 99%;
- shredding efficiency: 99%;
- scrap recycled through refining process: 96.5%
- overall aluminium recycling rate: 95%.

Table 5 reports the main parameters of the end-of-life scenarios for the main materials and components.

Table 5 Parameters of the end-of-life scenarios for the main materials and components, related to the DU

Processes	Unit (expressed per FU or DU of components, products or materials and by type of material)	0,7 mm	1 mm
Collection process specified by type	kg collected separately	1,87	2,67
	Kg collected with mixed waste	0	0
Recovery system specified by type	kg for re-use	0	0
	kg for recycling	1,85	2,65
	kg for energy recovery	0	0
Disposal specified by type	Kg product or material for final deposition	0,0376	0,0537

Note to Table 5:

Material collected separately: This amount refers to the waste stream collected separately per material before being subjected to shredding

Material for recycling: This amount refers to the waste stream sent to recycling per material after the shredding process.

Material for final deposition – aluminium: this amount includes the aluminium not collected separately and the shredding losses.

3.3 Scenario Mod. D

Module D includes:

- a transport from the scrap dealers to the recycling plants, considering an average distance of 200 km;
- recycling of Aluminium through refining;
- a net credit for the avoided production of primary aluminium;

The calculation of module D has been implemented in line with the General Programme Instructions of European Aluminium, thus based on the difference between the scrap used at the input and output side. In some cases, this may result in environmental burdens instead of environmental benefits if the product system is a net consumer of valuable secondary material.

3.4 Additional environmental information

During use, the indoor air quality, i.e., VOC emission, is not affected by aluminium coiled coated sheets.

In case of fire, aluminium is a non-combustible construction material (European Fire Class A1) in accordance with Commission Decision 96/603/EC and does therefore not make any contribution to fire.

4 LCA RESULTS - COIL COATED ALUMINIUM SHEET OROFE® Falzip 0,7 mm with PVDF top coating

4.1 Result of the LCA – Environmental impact coil coated aluminium sheet OROFE® Falzip 0,7 mm, 1 m^2, with PVDF top coating

The tables below report the results of the LCA study for 1 m^2 coil coated aluminium sheet OROFE® Falzip 0,7 mm with PVDF top coating.

4.1.1 Core environmental impact indicators

Table 6 Core environmental impact indicators for 1 m^2 coil coated aluminium sheet OROFE® Falzip 0,7 mm with PVDF top coating

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP - total	kg CO_2 eq.	1,32E+01	9,22E-05	3,06E-01	1,83E-02	6,00E-02	5,54E-04	-8,43E+00
GWP – fossil	kg CO_2 eq.	1,32E+01	9,15E-05	3,03E-01	1,82E-02	5,95E-02	5,69E-04	-8,41E+00
GWP – biogenic	kg CO_2 eq.	2,16E-02	4,60E-08	2,46E-03	9,16E-06	3,70E-04	-1,65E-05	-1,78E-02
GWP - luluc	kg CO_2 eq.	4,19E-03	5,95E-07	4,40E-04	1,18E-04	1,45E-04	1,67E-06	-1,10E-03
ODP	kg CFC 11 eq.	3,43E-07	2,37E-20	7,20E-15	4,71E-18	1,87E-15	2,21E-18	-6,39E-11
AP	mol H^+ eq.	6,40E-02	5,17E-07	6,36E-04	1,03E-04	1,02E-04	4,05E-06	-4,88E-02
EP - freshwater	kg PO_4^{3-} eq.	1,30E-05	1,90E-10	8,11E-07	3,79E-08	2,52E-07	9,55E-10	-3,62E-06
EP - marine	kg N eq.	1,05E-02	2,55E-07	1,54E-04	5,07E-05	2,86E-05	1,05E-06	-6,70E-03
EP - terrestrial	mol N eq.	1,15E-01	2,82E-06	1,62E-03	5,61E-04	2,99E-04	1,16E-05	-7,31E-02
POCP	kg NMVOC eq.	3,26E-02	4,88E-07	4,17E-04	9,70E-05	7,21E-05	3,19E-06	-2,04E-02
ADP-MM (**)	kg Sb eq.	3,10E-06	8,05E-12	8,86E-08	1,60E-09	2,26E-08	5,37E-11	-1,91E-06
ADPF (**)	MJ	1,81E+02	1,23E-03	5,38E+00	2,44E-01	7,53E-01	7,54E-03	-1,03E+02
WDP (**)	m^3	1,80E+00	3,60E-07	4,82E-02	7,16E-05	1,34E-03	6,10E-05	-1,25E+00

Note: GWP – Global Warming Potential; ODP – Ozone Depletion; AP – acidification potential for soil and water; EP – Eutrophication potential; POCP – formation potential of tropospheric ozone; ADP - MM – abiotic depletion potential for non fossil resources; ADPF – Abiotic depletion potential for fossil resources; WDP – Water deprivation potential.

(**) **Disclaime**r: the results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

4.1.2 Additional environmental impact indicators

Table 7 Additional environmental impact indicators for 1 m² coil coated aluminium sheet OROFE® Falzip 0,7 mm with PVDF top coating

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Particular Matter emissions	Disease incidence	8,43E-07	1,77E-12	5,40E-09	3,53E-10	7,53E-10	5,03E-11	-6,86E-07
Ionising radiation - human health (*)	[kBq U235 eq.]	1,75E+00	1,12E-07	1,31E-01	2,23E-05	6,98E-03	8,31E-06	-1,19E+00
Eco-toxicity (freshwater) (**)	[CTUe]	6,11E+01	1,02E-03	2,27E+00	2,03E-01	3,00E-01	4,30E-03	-3,42E+01
Human toxicity - cancer effects (**)	[CTUh]	3,88E-09	2,02E-14	6,42E-11	4,01E-12	4,15E-11	6,34E-13	-2,13E-09
Human toxicity - non-cancer effects (**)	[CTUh]	1,62E-07	1,06E-12	2,43E-09	2,10E-10	3,42E-10	7,00E-11	-6,11E-08
Land Use related impacts/ Soil quality (**)	dimensionless	1,47E+01	3,84E-04	1,70E+00	7,65E-02	3,72E-01	1,52E-03	-2,84E+00

(*) **Disclaimer**: 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 nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

(**) **Disclaimer**: the results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

4.2 Result of the LCA – Resource use coil coated aluminium sheet OROFE® Falzip 0,7 mm, 1 m^2, with PVDF top coating

Table 8 Resource use for 1 m^2 coil coated aluminium sheet OROFE® Falzip 0,7 mm with PVDF top coating

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
PERE	MJ	6,30E+01	7,12E-05	2,47E+00	1,42E-02	4,07E-01	1,02E-03	-4,74E+01
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	6,30E+01	7,12E-05	2,47E+00	1,42E-02	4,07E-01	1,02E-03	-4,74E+01
PENRE	MJ	1,81E+02	1,23E-03	5,38E+00	2,44E-01	7,53E-01	7,55E-03	-1,03E+02
PENRM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,81E+02	1,23E-03	5,38E+00	2,44E-01	7,53E-01	7,55E-03	-1,03E+02
SM	kg	8,20E-01	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	1,50E-01	6,33E-08	2,40E-03	1,26E-05	2,19E-04	1,86E-06	-1,20E-01

Note: 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 materials; RSF – Use of renewable secondary fuels; NRSF – use of non-renewable secondary fuels; FW – use of net fresh water.

4.3 Result of the LCA – Output flows, waste categories coil coated aluminium sheet OROFE® Falzip 0,7 mm, 1 m^2, with PVDF top coating

Table 9 Output flows, waste categories – coil coated aluminium sheet OROFE® Falzip 0,7 mm (1 m^2) with PVDF top coating

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
HWD	kg	1,21E-07	5,13E-14	1,41E-09	1,02E-11	5,85E-10	8,01E-13	-5,67E-08
NHWD	kg	3,16E+00	1,98E-07	3,80E-03	3,94E-05	7,79E-04	3,76E-02	-2,39E+00
RWD	kg	9,79E-03	1,18E-09	7,96E-04	2,34E-07	7,09E-05	7,91E-08	-6,22E-03
CRU	kg	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	1,85E+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
EEE	MJ	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

Note: 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

5 LCA RESULTS - COIL COATED ALUMINIUM SHEET OROFE® Falzip 1 mm with PVDF top coating

5.1 Result of the LCA – Environmental impact coil coated aluminium sheet OROFE® Falzip 1 mm, 1 m^2, with PVDF top coating

The tables below report the results of the LCA study for 1 m^2 coil coated aluminium sheet OROFE® Falzip 1 mm with PVDF top coating

5.1.1 Core environmental impact indicators

Table 10 Core environmental impact indicators for 1 m^2 coil coated aluminium sheet OROFE® Falzip 1 mm with PVDF top coating

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP - total	kg CO_2 eq.	1,81E+01	1,32E-04	4,38E-01	2,62E-02	8,58E-02	7,91E-04	-1,20E+01
GWP – fossil	kg CO_2 eq.	1,81E+01	1,31E-04	4,34E-01	2,60E-02	8,50E-02	8,12E-04	-1,20E+01
GWP – biogenic	kg CO_2 eq.	2,28E-02	6,58E-08	3,45E-03	1,31E-05	5,28E-04	-2,36E-05	-2,54E-02
GWP - luluc	kg CO_2 eq.	5,46E-03	8,50E-07	6,37E-04	1,69E-04	2,07E-04	2,39E-06	-1,58E-03
ODP	kg CFC 11 eq.	3,43E-07	3,38E-20	1,03E-14	6,74E-18	2,67E-15	3,16E-18	-9,12E-11
AP	mol H^+ eq.	8,99E-02	7,39E-07	9,15E-04	1,47E-04	1,46E-04	5,79E-06	-6,97E-02
EP - freshwater	kg PO_4^{3-} eq.	1,61E-05	2,72E-10	1,16E-06	5,41E-08	3,60E-07	1,36E-09	-5,17E-06
EP - marine	kg N eq.	1,46E-02	3,64E-07	2,23E-04	7,24E-05	4,09E-05	1,50E-06	-9,57E-03
EP - terrestrial	mol N eq.	1,60E-01	4,03E-06	2,34E-03	8,02E-04	4,27E-04	1,65E-05	-1,04E-01
POCP	kg NMVOC eq.	4,50E-02	6,97E-07	6,05E-04	1,39E-04	1,03E-04	4,55E-06	-2,91E-02
ADP-MM (**)	kg Sb eq.	4,18E-06	1,15E-11	1,27E-07	2,29E-09	3,23E-08	7,67E-11	-2,72E-06
ADPF (**)	MJ	2,43E+02	1,75E-03	7,70E+00	3,49E-01	1,08E+00	1,08E-02	-1,47E+02
WDP (**)	m^3	2,49E+00	5,14E-07	6,89E-02	1,02E-04	1,91E-03	8,72E-05	-1,79E+00

Note: GWP – Global Warming Potential; ODP – Ozone Depletion; AP – acidification potential for soil and water; EP – Eutrophication potential; POCP – formation potential of tropospheric ozone; ADP - MM – abiotic depletion potential for non fossil resources; ADPF – Abiotic depletion potential for fossil resources; WDP – Water deprivation potential.

(**) **Disclaime**r: the results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

5.1.2 Additional environmental impact indicators

Table 11 Additional environmental impact indicators for 1 m² coil coated aluminium sheet OROFE® Falzip 1 mm with PVDF top coating

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Particular Matter emissions	Disease incidence	1,19E-06	2,53E-12	7,78E-09	5,04E-10	1,08E-09	7,19E-11	-9,79E-07
Ionising radiation - human health (*)	[kBq U235 eq.]	2,43E+00	1,60E-07	1,87E-01	3,19E-05	9,98E-03	1,19E-05	-1,70E+00
Eco-toxicity (freshwater) (**)	[CTUe]	8,13E+01	1,46E-03	3,26E+00	2,90E-01	4,29E-01	6,14E-03	-4,89E+01
Human toxicity - cancer effects (**)	[CTUh]	4,99E-09	2,88E-14	9,19E-11	5,73E-12	5,93E-11	9,06E-13	-3,05E-09
Human toxicity - non-cancer effects (**)	[CTUh]	1,95E-07	1,51E-12	3,49E-09	3,00E-10	4,89E-10	1,00E-10	-8,73E-08
Land Use related impacts/ Soil quality (**)	dimensionless	1,95E+01	5,49E-04	2,43E+00	1,09E-01	5,32E-01	2,18E-03	-4,06E+00

(*) **Disclaimer**: 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 nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

(**) **Disclaimer**: the results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

5.2 Result of the LCA – Resource use coil coated aluminium sheet OROFE® Falzip 1 mm, 1 m^2, with PVDF top coating

Table 12 Resource use for 1 m^2 coil coated aluminium sheet OROFE® Falzip 1 mm with PVDF top coating

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
PERE	MJ	8,80E+01	1,02E-04	3,52E+00	2,03E-02	5,81E-01	1,45E-03	-6,77E+01
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	8,80E+01	1,02E-04	3,52E+00	2,03E-02	5,81E-01	1,45E-03	-6,77E+01
PENRE	MJ	2,43E+02	1,75E-03	7,70E+00	3,49E-01	1,08E+00	1,08E-02	-1,47E+02
PENRM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	2,43E+02	1,75E-03	7,70E+00	3,49E-01	1,08E+00	1,08E-02	-1,47E+02
SM	kg	1,17E+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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	2,11E-01	9,04E-08	3,43E-03	1,80E-05	3,13E-04	2,66E-06	-1,71E-01

Note: 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 materials; RSF – Use of renewable secondary fuels; NRSF – use of non-renewable secondary fuels; FW – use of net fresh water.

5.3 Result of the LCA – Output flows, waste categories coil coated aluminium sheet OROFE® Falzip 1 mm, 1 m^2, with PVDF top coating

Table 13 Output flows, waste categories – coil coated aluminium sheet OROFE® Falzip 1 mm (1 m^2) with PVDF top coating

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
HWD	kg	1,67E-07	7,33E-14	2,02E-09	1,46E-11	8,36E-10	1,14E-12	-8,09E-08
NHWD	kg	4,49E+00	2,83E-07	5,43E-03	5,63E-05	1,11E-03	5,38E-02	-3,42E+00
RWD	kg	1,35E-02	1,68E-09	1,14E-03	3,35E-07	1,01E-04	1,13E-07	-8,89E-03
CRU	kg	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	2,65E+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
EEE	MJ	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

Note: 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

6 LCA RESULTS - COIL COATED ALUMINIUM SHEET OROFE® Falzip 0,7 mm with VHDPE top coating

6.1 Result of the LCA – Environmental impact coil coated aluminium sheet OROFE® Falzip 0,7 mm, 1 m^2, with VHDPE top coating

The tables below report the results of the LCA study for 1 m^2 coil coated aluminium sheet OROFE® Falzip 0,7 mm with VHDPE top coating.

6.1.1 Core environmental impact indicators

Table 14 Core environmental impact indicators for 1 m^2 coil coated aluminium sheet OROFE® Falzip 0,7 mm with VHDPE top coating

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP - total	kg CO_2 eq.	1,27E+01	9,22E-05	3,06E-01	1,83E-02	6,00E-02	5,54E-04	-8,43E+00
GWP – fossil	kg CO_2 eq.	1,27E+01	9,15E-05	3,03E-01	1,82E-02	5,95E-02	5,69E-04	-8,41E+00
GWP – biogenic	kg CO_2 eq.	1,68E-02	4,60E-08	2,46E-03	9,16E-06	3,70E-04	-1,65E-05	-1,78E-02
GWP - luluc	kg CO_2 eq.	3,63E-03	5,95E-07	4,40E-04	1,18E-04	1,45E-04	1,67E-06	-1,10E-03
ODP	kg CFC 11 eq.	8,54E-11	2,37E-20	7,20E-15	4,71E-18	1,87E-15	2,21E-18	-6,39E-11
AP	mol H^+ eq.	6,26E-02	5,17E-07	6,36E-04	1,03E-04	1,02E-04	4,05E-06	-4,88E-02
EP - freshwater	kg PO_4^{3-} eq.	1,14E-05	1,90E-10	8,11E-07	3,79E-08	2,52E-07	9,55E-10	-3,62E-06
EP - marine	kg N eq.	1,03E-02	2,55E-07	1,54E-04	5,07E-05	2,86E-05	1,05E-06	-6,70E-03
EP - terrestrial	mol N eq.	1,12E-01	2,82E-06	1,62E-03	5,61E-04	2,99E-04	1,16E-05	-7,31E-02
POCP	kg NMVOC eq.	3,17E-02	4,88E-07	4,17E-04	9,70E-05	7,21E-05	3,19E-06	-2,04E-02
ADP-MM (**)	kg Sb eq.	3,01E-06	8,05E-12	8,86E-08	1,60E-09	2,26E-08	5,37E-11	-1,91E-06
ADPF (**)	MJ	1,71E+02	1,23E-03	5,38E+00	2,44E-01	7,53E-01	7,54E-03	-1,03E+02
WDP (**)	m^3	1,79E+00	3,60E-07	4,82E-02	7,16E-05	1,34E-03	6,10E-05	-1,25E+00

Note: GWP – Global Warming Potential; ODP – Ozone Depletion; AP – acidification potential for soil and water; EP – Eutrophication potential; POCP – formation potential of tropospheric ozone; ADP - MM – abiotic depletion potential for non fossil resources; ADPF – Abiotic depletion potential for fossil resources; WDP – Water deprivation potential.

(**) **Disclaime**r: the results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

6.1.2 Additional environmental impact indicators

Table 15 Additional environmental impact indicators for 1 m² coil coated aluminium sheet OROFE® Falzip 0,7 mm with VHDPE top coating

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Particular Matter emissions	Disease incidence	8,31E-07	1,77E-12	5,40E-09	3,53E-10	7,53E-10	5,03E-11	-6,86E-07
Ionising radiation - human health (*)	[kBq U235 eq.]	1,71E+00	1,12E-07	1,31E-01	2,23E-05	6,98E-03	8,31E-06	-1,19E+00
Eco-toxicity (freshwater) (**)	[CTUe]	5,68E+01	1,02E-03	2,27E+00	2,03E-01	3,00E-01	4,30E-03	-3,42E+01
Human toxicity - cancer effects (**)	[CTUh]	3,52E-09	2,02E-14	6,42E-11	4,01E-12	4,15E-11	6,34E-13	-2,13E-09
Human toxicity - non-cancer effects (**)	[CTUh]	1,57E-07	1,06E-12	2,43E-09	2,10E-10	3,42E-10	7,00E-11	-6,11E-08
Land Use related impacts/ Soil quality (**)	dimensionless	1,34E+01	3,84E-04	1,70E+00	7,65E-02	3,72E-01	1,52E-03	-2,84E+00

(*) **Disclaimer**: 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 nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

(**) **Disclaimer**: the results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

6.2 Result of the LCA – Resource use coil coated aluminium sheet OROFE® Falzip 0,7 mm, 1 m^2, with VHDPE top coating

Table 16 Resource use for 1 m^2 coil coated aluminium sheet OROFE® Falzip 0,7 mm with VHDPE top coating

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
PERE	MJ	6,15E+01	7,12E-05	2,47E+00	1,42E-02	4,07E-01	1,02E-03	-4,74E+01
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	6,15E+01	7,12E-05	2,47E+00	1,42E-02	4,07E-01	1,02E-03	-4,74E+01
PENRE	MJ	1,71E+02	1,23E-03	5,38E+00	2,44E-01	7,53E-01	7,55E-03	-1,03E+02
PENRM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,71E+02	1,23E-03	5,38E+00	2,44E-01	7,53E-01	7,55E-03	-1,03E+02
SM	kg	8,20E-01	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	1,47E-01	6,33E-08	2,40E-03	1,26E-05	2,19E-04	1,86E-06	-1,20E-01

Note: 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 materials; RSF – Use of renewable secondary fuels; NRSF – use of non-renewable secondary fuels; FW – use of net fresh water.

6.3 Result of the LCA – Output flows, waste categories coil coated aluminium sheet OROFE® Falzip 0,7 mm, 1 m^2, with VHDPE top coating

Table 17 Output flows, waste categories – coil coated aluminium sheet OROFE® Falzip 0,7 mm (1 m^2) with VHDPE top coating

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
HWD	kg	1,13E-07	5,13E-14	1,41E-09	1,02E-11	5,85E-10	8,01E-13	-5,67E-08
NHWD	kg	3,15E+00	1,98E-07	3,80E-03	3,94E-05	7,79E-04	3,76E-02	-2,39E+00
RWD	kg	9,46E-03	1,18E-09	7,96E-04	2,34E-07	7,09E-05	7,91E-08	-6,22E-03
CRU	kg	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	1,85E+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
EEE	MJ	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

Note: 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

7 LCA RESULTS - COIL COATED ALUMINIUM SHEET OROFE® Falzip 1 mm with VHDPE top coating

7.1 Result of the LCA – Environmental impact coil coated aluminium sheet OROFE® Falzip 1 mm, 1 m^2, with VHDPE top coating

The tables below report the results of the LCA study for 1 m^2 coil coated aluminium sheet OROFE® Falzip 1 mm with VHDPE top coating

7.1.1 Core environmental impact indicators

Table 18 Core environmental impact indicators for 1 m^2 coil coated aluminium sheet OROFE® Falzip 1 mm with VHDPE top coating

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP - total	kg CO_2 eq.	1,75E+01	1,32E-04	4,38E-01	2,62E-02	8,58E-02	7,91E-04	-1,20E+01
GWP – fossil	kg CO_2 eq.	1,75E+01	1,31E-04	4,34E-01	2,60E-02	8,50E-02	8,12E-04	-1,20E+01
GWP – biogenic	kg CO_2 eq.	1,81E-02	6,58E-08	3,45E-03	1,31E-05	5,28E-04	-2,36E-05	-2,54E-02
GWP - luluc	kg CO_2 eq.	4,90E-03	8,50E-07	6,37E-04	1,69E-04	2,07E-04	2,39E-06	-1,58E-03
ODP	kg CFC 11 eq.	1,22E-10	3,38E-20	1,03E-14	6,74E-18	2,67E-15	3,16E-18	-9,12E-11
AP	mol H^+ eq.	8,86E-02	7,39E-07	9,15E-04	1,47E-04	1,46E-04	5,79E-06	-6,97E-02
EP - freshwater	kg PO_4^{3-} eq.	1,45E-05	2,72E-10	1,16E-06	5,41E-08	3,60E-07	1,36E-09	-5,17E-06
EP - marine	kg N eq.	1,44E-02	3,64E-07	2,23E-04	7,24E-05	4,09E-05	1,50E-06	-9,57E-03
EP - terrestrial	mol N eq.	1,57E-01	4,03E-06	2,34E-03	8,02E-04	4,27E-04	1,65E-05	-1,04E-01
POCP	kg NMVOC eq.	4,41E-02	6,97E-07	6,05E-04	1,39E-04	1,03E-04	4,55E-06	-2,91E-02
ADP-MM (**)	kg Sb eq.	4,09E-06	1,15E-11	1,27E-07	2,29E-09	3,23E-08	7,67E-11	-2,72E-06
ADPF (**)	MJ	2,34E+02	1,75E-03	7,70E+00	3,49E-01	1,08E+00	1,08E-02	-1,47E+02
WDP (**)	m^3	2,47E+00	5,14E-07	6,89E-02	1,02E-04	1,91E-03	8,72E-05	-1,79E+00

Note: GWP – Global Warming Potential; ODP – Ozone Depletion; AP – acidification potential for soil and water; EP – Eutrophication potential; POCP – formation potential of tropospheric ozone; ADP - MM – abiotic depletion potential for non fossil resources; ADPF – Abiotic depletion potential for fossil resources; WDP – Water deprivation potential.

(**) **Disclaimer**: the results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

7.1.2 Additional environmental impact indicators

Table 19 Additional environmental impact indicators for 1 m² coil coated aluminium sheet OROFE® Falzip 1 mm with VHDPE r top coating

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Particular Matter emissions	Disease incidence	1,18E-06	2,53E-12	7,78E-09	5,04E-10	1,08E-09	7,19E-11	-9,79E-07
Ionising radiation - human health (*)	[kBq U235 eq.]	2,39E+00	1,60E-07	1,87E-01	3,19E-05	9,98E-03	1,19E-05	-1,70E+00
Eco-toxicity (freshwater) (**)	[CTUe]	7,71E+01	1,46E-03	3,26E+00	2,90E-01	4,29E-01	6,14E-03	-4,89E+01
Human toxicity - cancer effects (**)	[CTUh]	4,62E-09	2,88E-14	9,19E-11	5,73E-12	5,93E-11	9,06E-13	-3,05E-09
Human toxicity - non-cancer effects (**)	[CTUh]	1,90E-07	1,51E-12	3,49E-09	3,00E-10	4,89E-10	1,00E-10	-8,73E-08
Land Use related impacts/ Soil quality (**)	dimensionless	1,81E+01	5,49E-04	2,43E+00	1,09E-01	5,32E-01	2,18E-03	-4,06E+00

(*) **Disclaimer**: 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 nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

(**) **Disclaimer**: the results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

7.2 Result of the LCA – Resource use coil coated aluminium sheet OROFE® Falzip 1 mm, 1 m^2, with VHDPE top coating

Table 20 Resource use for 1 m^2 coil coated aluminium sheet OROFE® Falzip 1 mm with VHDPE top coating

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
PERE	MJ	8,65E+01	1,02E-04	3,52E+00	2,03E-02	5,81E-01	1,45E-03	-6,77E+01
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	8,65E+01	1,02E-04	3,52E+00	2,03E-02	5,81E-01	1,45E-03	-6,77E+01
PENRE	MJ	2,34E+02	1,75E-03	7,70E+00	3,49E-01	1,08E+00	1,08E-02	-1,47E+02
PENRM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	2,34E+02	1,75E-03	7,70E+00	3,49E-01	1,08E+00	1,08E-02	-1,47E+02
SM	kg	1,17E+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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	2,07E-01	9,04E-08	3,43E-03	1,80E-05	3,13E-04	2,66E-06	-1,71E-01

Note: 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 materials; RSF – Use of renewable secondary fuels; NRSF – use of non-renewable secondary fuels; FW – use of net fresh water.

7.3 Result of the LCA – Output flows, waste categories coil coated aluminium sheet OROFE® Falzip 1 mm, 1 m^2, with VHDPE top coating

Table 21 Output flows, waste categories – coil coated aluminium sheet OROFE® Falzip 1 mm (1 m^2) with VHDPE top coating

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
HWD	kg	1,59E-07	7,33E-14	2,02E-09	1,46E-11	8,36E-10	1,14E-12	-8,09E-08
NHWD	kg	4,48E+00	2,83E-07	5,43E-03	5,63E-05	1,11E-03	5,38E-02	-3,42E+00
RWD	kg	1,31E-02	1,68E-09	1,14E-03	3,35E-07	1,01E-04	1,13E-07	-8,89E-03
CRU	kg	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	2,65E+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
EEE	MJ	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

Note: 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

8 LCA – INTERPRETATION

The results are analysed and interpreted for modules A1-A3 and for modules C1-D. Results for module A4 are not further interpreted, as calculated only for 1 km.

Production stages: modules A1 to A3.

The environmental impacts come from the aluminium production which id influenced by the mass of aluminium in the declared unit: the higher the aluminium mass, the higher the indicator. Hence, the GWP indicator evolves from 13,2 [kg CO_2-eq] and 12,7 [kg CO2-eq] for the OROFE® Falzip 0,7 mm with PVDF and Polyester top coating respectively, to 18,1 [kg CO2-eq] and 17,5 [kg CO2-eq] for the OROFE® Falzip 1 mm with PVDF and Polyester top coating respectively.

Within the aluminium production processes, the primary aluminium production is dominant, especially the alumina production and the electrolysis. The recycled ingot production, which presents a much lower impact than the primary ingot production, is used in Module A1-A3 for the fraction of aluminium coming from recycling. The extrusion process which converts ingot, i.e., billets, into profile is much less significant. The LCA modelling and the impact of the primary aluminium production are detailed in the Environmental Profile Report 2018.

End of life stage: modules C1-C4 and module D

Modules C1-C3: they are negligible for all products compared to modules A1-A3 (<3%).

Module C4: the contribution of module C4 (disposal) is very limited compared to modules A1-A3 and module D.

Module D: The environmental benefits come from the recycling of aluminium. About 67% of GWP savings are obtained in Module D compared to the value calculated for module A1-A3. These calculations show the relevance to consider Module D in the full assessment of coil coated sheet in the building context.

9 OTHER INFORMATION

ELVAL COLOUR Group's operation and development is founded on the concept of corporate responsibility and includes recognition of the need for positive actions, and continuous support and development of the local communities that neighbour our facilities.

Through its Environmental Management System, certified according to ISO 14001:2015, ELVAL COLOUR actively implements best practices regarding environmental protection through significant investments and measures, by optimizing the production cycle, implementing new procedures that reduce the energy footprint of our plants, and the vigilant prevention of any possibility of environmental pollution.

Additional information about ELVAL COLOUR, its corporate responsibility and sustainability policy and the products can be found at ELVAL COLOUR website www.elval-colour.com.

These EPD results have been calculated from an LCA tool for EPD, based on the GaBi database, initially realised by Sphera GmbH in 2013 and updated by Ecoinnovazione in 2019 (Ecoinnovazione S.r.l. – spin-off ENEA Via d'Azeglio 51, 40123 Bologna www.ecoinnovazione.it)

10 REFERENCES

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