YOUR EPD

ENVIRONMENTAL PRODUCT DECLARATION

Sapa ARTLINE XL

Sliding door 2-pane 3-glass, coated

YOUR EPD

YOUR PRODUCT CARBON FOOTPRINT

(GWP > Global Warming Potential)

97%

of the aluminium used in this project is CIRCAL

CIRCAL 75R = 2.3 kg CO2 per kg Aluminium
Hydro CIRCAL is a range of products made with recycled, post consumer scrap. Through the use of recycled content we reduce energy use drastically while still being able to offer high quality products. We can always guarantee a CO2 footprint below 2.3 kg CO2 per 1 kg Aluminium produced with Hydro CIRCAL.

Hydro is today the only producer in the world capable of supplying prime quality, end-of-life, recycled Aluminium

0%

of the Aluminium used in this project is REDUXA*

REDUXA 4.0 = 4 kg CO2 per kg Aluminium
Hydro REDUXA is our series of low carbon aluminium. Through the use of renewable energy sources like hydro power we reduce the carbon footprint per kg aluminium to less than a fourth of the global average.
The result is the world's lowest carbon aluminium to date

3% of the Aluminium used in this project is Hydro Primary Billets

Hydro Primary Billets = 5.7 kg CO2 per kg Aluminium

Aluminium CO2 Footprint by Origin

2.3	4.0	5.7	8.6*	16.7*
kg CO2 per kg Aluminium	kg CO2 per kg Aluminium	kg CO2 per kg Aluminium	kg CO2 per kg Aluminium	kg CO2 per kg Aluminium
Hydro CIRCAL	Hydro REDUXA	Hydro BILLETS	Primary consumed in Europe Average	Primary Global Average

*8.6 = primary aluminium used in Europe (cradle to gate) - European Aluminium 2018 report
**Global average: 16.7 kgCO2e / kg (Source: IAI 2018 report based on 2015 data)

EPD » YOUR PROJECT DETAILS

YOUR PRODUCT CARBON FOOTPRINT

(GWP > Global Warming Potential)

YOUR PRODUCT
If you had used primary Aluminium from:

YOUR PRODUCT Carbon Footprint	YOUR PRODUCT If you had use exclusively CIRCAL	Europe	Worldwide**
504.28 kg CO2	497.43 kg CO2	879.45 kg CO2	1,370.62 kg CO2

By using our solutions on this project, you reduce by:

-375.17 kg CO2	-43%	The carbon footprint of your systems, compared to using primary Aluminium consumed in Europe
-866.34 kg CO2	-63%	The carbon footprint of your systems, compared to using primary Aluminium global average

DID YOU KNOW?

You can ask your sales expert to have this project exclusively in CIRCAL to reduce even more the carbon footprint of your building systems

If you decide to use exclusively CIRCAL on this project, you reduce by:

-382.02 kg CO2	-43%	The carbon footprint of your systems, compared to using primary Aluminium consumed in Europe
-873.19 kg CO2	-64%	The carbon footprint of your systems, compared to using primary Aluminium global average

*Europe = 8.6 kg CO2 / kg Aluminium = primary Aluminium used in Europe (cradle to gate). European Aluminium 2018 report

**Global average: 16.7 kgCO2e / kg (Source: IAI 2018 report based on 2015 data)

EPD HOW TO READ IT

Hydro

Your EPD is generated by IBU (IBU - Institut Bauen und Umwelt e.V.), verified by an independant third party according to ISO 14025. The CEN standard EN 15804 serves as the core PCR

This EPD was automatically generated for your project

It includes all systems described including their components as well as the selected glazing, in the given dimensions

Aluminium | **Thermal Break Profiles**

Glass | **Gaskets** | **Hardwares** | **...***

*** All other components that you are ordering from Sapa**

Your Project | **Materials included in this EPD**

All other building materials are excluded from this EPD

SCOPE OF YOUR EPD

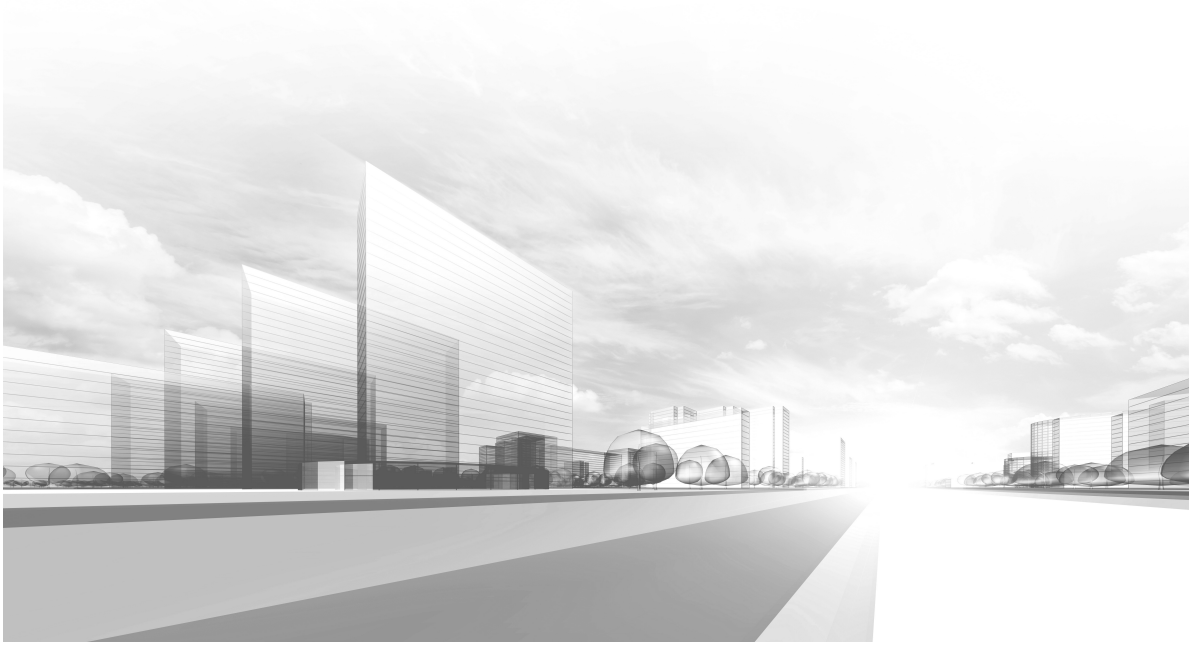
PRODUCT STAGE	**A1: RAW MATERIAL SUPPLY** **Raw material:** Aluminium, Thermal break profiles, gaskets, hardware, glass, ...	**A2: TRANSPORT** Transport of the Aluminium billets and all other components to our production plant	**A3: MANUFACTURING** Aluminium extrusion and production of our systems
CONSTRUCTION STAGE	**A4: TRANSPORT FROM OUR PLANT TO YOU** Delivery of our systems and of the glazing to your fabrication site		**A5: ASSEMBLY** Assembly & Fabrication of our systems
USE STAGE	**B1 TO B7: USE, MAINTENANCE, REPAIR, REPLACEMENT, REFURBISHMENT, OPERATIONAL ENERGY & WATER USE**		
END OF LIFE STAGE	**C1 TO C2: DE-CONSTRUCTION / DEMOLITION & WASTE TRANSPORT** Deconstruction & demolition of the building and transport of the waste to the waste sorting plant		**C3 & C4: WASTE PROCESSING & DISPOSAL** Waste sorting and disposal of our end of life systems

BENEFITS & LOADS BEYOND THE SYSTEM BOUNDARYS | **REUSE - RECOVERY - RECYCLING POTENTIAL**

Is included in your EPD

Is excluded from your EPD

Environmental product declaration
Summarized EPD



Declaration owner: Hydro Building Systems Germany GmbH
Construction project: EPD - Rapport
Publisher: Hydro Building Systems Sweden AB

Date of issue: 24/04/2023

The Summarized EPD includes the following listed products

Declaration number	Declared product	Declared unit (mm)
Sapa ARTLINE XL Sliding door 2-pane 3-glass, coated	K.EPD_Rapport.2.10.2023.10.24.16 AM	2,400 x 3,000

LCA: Results

The results of the impact assessment, resource use and waste and other output streams are shown below
The results are calculated from the values of the individual EPDs.

SPECIFICATION OF THE SYSTEM LIMITS (X = INCLUDED IN LIFE CYCLE ASSESSMENT, MND = MODULE NOT DECLARED)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARYS
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement[1)]	Refurbishment[1)]	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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X

RESULTS OF THE LIFE CYCLE ASSESSMENT ENVIRONMENTAL IMPACT:

Parameter	Parameter	Unit	A1-A3	A4	C3	C4	D
GWP	Global warming potential	[kg CO_2-Eq.]	504.28	13.90	49.97	6.30E-01	-71.29
ODP	Depleting the stratospheric ozone layer	[kg CFC_{11}-Eq.]	7.96E-06	0.00	5.70E-07	1.05E-14	-2.73E-06
AP	Acidification potential of soil and water	[kg SO_2-Eq.]	3.75E00	0.04	5.66E-02	1.81E-04	-3.49E-01
EP	Eutrophication	[kg $(PO_4)^3$-Eq.]	3.42E-01	0.01	1.32E-02	6.12E-04	-2.06E-02
POCP	Forming potential for tropospheric ozone	[kg Ethen-Eq.]	-1.98E-01	-0.01	2.78E-03	1.58E-04	-2.63E-02
ADPE	Potential for the abiotic degradation of non-fossil resources	[kg Sb-Eq.]	6.57E-03	0.00	9.80E-05	9.16E-09	-3.90E-03
ADPF	Potential for the abiotic degradation of fossil fuels	[MJ]	7,633.86	189.41	91.01	5.49E-01	-782.78

RESULTS OF THE LIFE CYCLE ASSESSMENT RESOURCE ACCOUNT:

Parameter	Parameter	Unit	A1-A3	A4	C3	C4	D
PERE	Renewable primary energy as an energy source	[MJ]	929.89	10.47	1.33E01	4.03E-02	-162.97
PERM	Renewable primary energy to the material use	[MJ]	1.47	0.00	0.00	0.00	0.00
PERT	Total reneweable primary energy	[MJ]	931.36	10.47	1.39E01	4.62E-02	-297.20
PENRE	Non-renewable primary energy as an energy source	[MJ]	6,283.06	189.41	448.21	5.22E-01	-406.84
PENRM	Non-renewable primary enerhy to the material use	[MJ]	358.36	0.00	-341.49	0.00	0.00
PENRT	Total non-renewable primary energy	[MJ]	6,641.35	189.41	106.72	5.70E-01	-950.41
SM	Use of secondary materials	[kg]	120.25	0.00	0.00	0.00	0.00
RSF	Renewable secondary fuels	[MJ]	0.00	0.00	0.00	0.00	0.00
NRSF	Non-renewable secondary fuels	[MJ]	0.00	0.00	0.00	0.00	0.00
FW	Use of freshwater resources	[m^3]	1.70E00	0.02	1.32E-01	8.58E-05	-6.92E-01

RESULTS OF LIFE CYCLE ASSESSMENT OUTPUT RIVERS AND WASTE CATEGORIES:

Parameter	Parameter	Unit	A1-A3	A4	C3	C4	D
HWD	Hazardous waste of landfill	[kg]	5.35E-02	0.00	3.62E-01	3.50E-09	3.49E-02
NHWD	Discarded non-hazardous waste	[kg]	93.75	0.02	6.96E01	3.08E00	-21.41
RWD	Discarded radioactive waste	[kg]	1.53E-01	0.00	1.88E-03	8.29E-06	-4.10E-02
CRU	Components for reuse	[kg]	0.00	0.00	0.00	0.00	0.00
MFR	Materials for recycling	[kg]	0.00	0.00	54.69	0.00	275.03
MER	Materials for the energy recovery	[kg]	0.00	0.00	1.58	0.00	0.00
EEE	Exported electrical energy	[MJ]	0.37	0.00	51.80	19.14	0.00
EET	Exported thermal energy	[MJ]	0.73	0.00	92.40	34.21	0.00

LCA: Scenarios and technical information

(according table chapter 4)

The following informations are basis fort he declared modules and products in this summary EPD:

Transport to construction site (A4)

Designation	Value	Unit
Liters of fuel		
Train (electric)	0.01158	l / 100 km
Plane (kerosine)	0.42164	l / 100 km
40 t truck (Diesel)	0.00165	l / 100 km
7,5 t truck (Diesel)	0.00591	l / 100 km
22 t truck (Diesel)	0.00231	l / 100 km
Ship (heavy heating oil)	0.00040	l / 100 km
Transport distance		
Train	0.00	km
Plane	0.00	km
40 t truck	0.00	km
7,5 t truck	0.00	km
22 t truck	500.00	km
Ship	0.00	km
Utilisation (including empty runs)		
Train	51	%
Plane	61	%
40 t truck	55	%
7,5 t truck	40	%
22 t truck	66	%
Ship	48	%
Volume utilisation factor	1	-

*) The transport distance indicates the easy distance from the place of manufacture to he construction site.

End of life cycle (C1-C4)

Designation	Value	Unit
Seperatly collected waste type	285.76	kg
Collected as mixed construction waste	56.28	kg
For reuse	0.00	kg
For recycling (D)	323.41	kg
For energy recovery (C3)	16.53	kg
For landfilling (C4)	4.44	kg
For thermal utilisation (C4)	0.00	kg

Listing of the raw materials and the auxilary materials

(according table chapter 2.5)

Designation	Value	Unit
ZP5	0.13	kg
EN AW-6063	2.02	kg
PE Foam	0.29	kg
A2-20H	0.25	kg
Miscellaneous	1.69	kg
POM	0.89	kg
PE HD	0.15	kg
PA66	0.07	kg
PP	6.89	kg
X5CrNi18-10	2.40	kg
EPDM	0.08	kg
Float glass	262.37	kg
PA66 GF25 RE	6.67	kg
CIRCAL 75	58.62	kg
Pulverbeschichtung	1.35	kg
Eloxierung	0.00	kg
PA66 GF25	0.06	kg
Silicone	0.45	kg
Total weight	344.38	kg