ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

Opta Waterdown LLC
RED Industrial Products

EPD HUB, EPD number N/A
Publishing May 8, 2023 , last updated Nov 30, 2023, valid until May 8, 2024

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Opta Glass (Opta Waterdown LLC)
Address	104–3027 Harvester Rd Burlington
Contact details	cszabo@optagroupllc.com
Website	https://optaglass.com

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022
Sector	Construction product
Category of EPD	Non-verified EPD
Scope of the EPD	A1- A3
EPD author	Craig Szabo, Opta Waterdown LLC
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ⬜ External verification
EPD verifier	Non-verified

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Re-Act 4 ™
Additional labels	
Product reference	Product sold and distributed by RED Industrial Products of Grove City, PA
Place of production	Canada
Period for data	2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	5 %

ENVIRONMENTAL DATA SUMMARY

Declared unit	Metric tonne
Declared unit mass	1000 kg
GWP-fossil, A1-A3 (kgCO2e)	51.7
GWP-total, A1-A3 (kgCO2e)	51.8
Secondary material, inputs (%)	0.119
Secondary material, outputs (%)	0.0
Total energy use, A1-A3 (kWh)	831.0
Total water use, A1-A3 (m3e)	1.24

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

PRODUCT DESCRIPTION

Re-Act 4 is a premium performance grade supplementary cementitious material made from 100% recycled soda-lime glass. It meets ASTM C1866 and CSA A3000-18 specifications.

Further information can be found at
https://optagroupllc.com/opta-minerals/.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	0	
Minerals	100	Recycled glass
Fossil materials	0	
Bio-based materials	0	

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	Taken as 0; no credit
Biogenic carbon content in packaging, kg C	Taken as 0; no credit

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	Metric tonne
Mass per declared unit	1000 kg
Functional unit	n/a
Reference service life	

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
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	MND	MND		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

Municipal recycling facility (MRF) glass waste contains a blend of crushed glass along with other waste (paper, plastic, metals, organics).
This LCA study assumes a product yield of 90% from the raw feed.
The moisture content of the MRF glass can vary from 2-10%. This LCA study assumes a 5% moisture content.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-c4, D)

This EPD does not cover the End-of-Life phase.

LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

No allocation used in this EPD.

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	Not applicable

This EPD is product and factory specific and does not contain average calculations.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. Ecoinvent and One Click LCA databases were used as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	0	0	51.8	51.8	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
GWP – fossil	kg CO_2e	0	0	51.7	51.7	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
GWP – biogenic	kg CO_2e	0	0	0	0	0	MND	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
GWP – LULUC	kg CO_2e	0	0	0.038	0.038	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
Ozone depletion pot.	kg CFC_{-11}e	0	0	6.57E-6	6.57E-6	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
Acidification potential	mol H^+e	0	0	0.13	0.13	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
EP-freshwater[2)]	kg Pe	0	0	7.81E-4	7.81E-4	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
EP-marine	kg Ne	0	0	0.0335	0.0335	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
EP-terrestrial	mol Ne	0	0	0.362	0.362	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
POCP ("smog")[3)]	kg NMVOCe	0	0	0.116	0.116	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
ADP-minerals & metals[4)]	kg Sbe	0	0	5.97E-5	5.97E-5	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
ADP-fossil resources	MJ	0	0	116	116	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
Water use[5)]	m^3e depr.	0	0	129	129	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	1.85	3.34	905	910	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
Renew. PER as material	MJ	0	0	314	314	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
Total use of renew. PER	MJ	1.85	3.34	1220	1220	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
Non-re. PER as energy	MJ	126	297	1650	2070	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
Non-re. PER as material	MJ	0	0	20.8	20.8	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
Total use of non-re. PER	MJ	126	297	1670	2090	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
Secondary materials	kg	0.155	0.0823	0.956	1.19	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
Renew. secondary fuels	MJ	1.66E-3	8.31E-4	8.3	8.3	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0

Non-ren. secondary fuels	MJ	0	0	0	0	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
Use of net fresh water	m^3	-6.38E-3	0.0384	1.2	1.24	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	0	0	0	0	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
Non-hazardous waste	kg	291	6.46	24.7	322	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
Radioactive waste	kg	0	0.00198	0.0176	0.0204	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
Materials for recycling	kg	0	0	0	0	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
Materials for energy rec	kg	0	0	0	0	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0
Exported energy	MJ	0	0	0	0	0	0	MND	MND	MND	MND	MND	MND	MND	0	0	0	0	0

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been calculated in accordance with ISO 14025 but has not been verified by an independent, third-party verifier. The results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, followed the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online

This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

NON THIRD-PARTY COMPLIANCE STATEMENT

I confirm that the company-specific data has been examined as regards to plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, relevant operational methods and processes and the geographical area of the EPD to carry out this EPD calculation.

Craig Szabo, Opta Minerals