



Environmental Product Declaration
IN ACCORDANCE WITH ISO 14025 AND ISO 21930:2017

Program Operator: Smart EPD®
www.smartepd.com



SmartEPD-2026-118-0766-01

Chryso®Optima 1311

Date of Issue

Feb 19, 2026

Expiration date

Feb 19, 2031

Last updated

Feb 19, 2026



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General Information

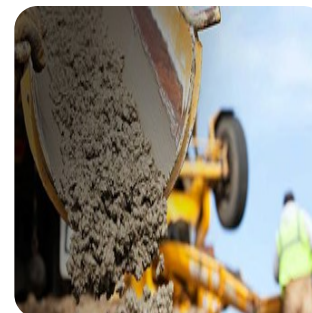
Chryso Saint-Gobain

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Product Name:	Chryso®Optima 1311
Declared Unit:	1 tonne
Declaration Number:	SmartEPD-2026-118-0766-01
Date of Issue:	February 19, 2026
Expiration:	February 19, 2031
Last updated:	February 19, 2026
EPD Scope:	Cradle to gate A1 - A3
Market(s) of Applicability:	North America

General Organization Information

Chryso, part of Saint-Gobain Construction Chemicals, is a global leader in sustainable construction solutions. With a team of 3,000 experts worldwide, we develop cutting-edge admixtures, additives, and AI-driven technologies to tackle the toughest challenges in the concrete and cement industry. From scientists to commercial teams, we deliver tailored solutions and foster long-lasting relationships that catalyze innovation and success. Our solutions not only enhance our customers' competitive edge but also significantly reduce their carbon footprint and improve material performance, helping to build a better future, for both people and the planet.

Limitations, Liability and Ownership

Environmental declarations from different programs (ISO 14025) may not be comparable. Comparison of the environmental performance of products using EPD information shall be based on the product's use and impacts at the building level, and therefore EPDs may not be used for comparability purposes when not considering the whole building life cycle. EPD comparability is only possible when all stages of a life cycle have been considered. However, variations and deviations are possible. Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared. The EPD owner has sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

The selection of a cradle-to-gate system boundary is consistent with prevailing practice within the cement and concrete admixture EPD landscape and aligns with the applicable PCR requirements. Concrete admixtures are intermediate products that are incorporated into concrete and do not have a distinct

use phase or end-of-life scenario independent of the final concrete product. Once integrated into concrete, the admixture's use-phase performance and end-of-life impacts are inseparably linked to those of the concrete itself and the overall building system. As a result, assigning independent use-phase or end-of-life scenarios to the admixture would require speculative assumptions and could introduce significant uncertainty. Therefore, downstream life cycle stages are appropriately excluded and are intended to be assessed at the concrete or building level, where they can be more accurately and consistently modeled. This approach ensures methodological robustness, avoids double counting, and supports appropriate use of the EPD within whole-building life cycle assessment frameworks.

Reference Standards

Standard(s):	ISO 14025 and ISO 21930:2017
Core PCR:	Smart EPD® Part A Product Category Rules for Building and Construction Products and Services, 1000, v1.2
	Date of issue: March 14, 2025
	Valid until: March 14, 2030
Sub-category PCR review panel:	 Contact Smart EPD for more information.
General Program Instructions:	 Smart EPD General Program Instructions v.2.0, March 2025

Verification Information

LCA Author/Creator:	 Saint-Gobain North American ESG Sustainability Group
	 sustainability@saint-gobain.com
EPD Program Operator:	 Smart EPD
	 info@smartepd.com
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	 585 Grove St., Ste. 145, Herndon, VA 20170, USA
Verification:	Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071:
	 Sarah Curpen  curpen1996@gmail.com
	Independent external verification of EPD, according to ISO 14025 and reference PCR(s):
	 Sarah Curpen  curpen1996@gmail.com

External

External

Product Information

Declared Unit:	1 tonne
Mass:	1068.01 kg
Product Specificity:	 Product Average  Product Specific
Variation in GWP Result (Facilities):	-5.0% to +5.6%

Product Description

CHRYSO®Optima 1311 is a High-Performance Admixture that provides powerful water reduction along with great pumpability and extended slump retention. CHRYSO®Optima 1311 allows designing high-level performance concrete to meet the most challenging jobsites' requirements.

Meets or exceeds the requirements of ASTM C-494 Type A and F

Further information can be found at: <https://www.chrysoinc.com/products/optima-1311/>

Product Specifications

Product Classification Codes:

UNSPSC - 12162305

EC3 - ManufacturingInputs -> ConcreteAdmixtures

Material Composition

Material/Component Category	Origin	% Mass
Water	Confidential	Confidential
Polycarboxolate	Confidential	Confidential
Additives	Confidential	Confidential

Hazardous Materials
No regulated hazardous or dangerous substances are included in this product

EPD Data Specifity

Primary Data Year:

2024-2025

Manufacturing Specificity:

✗ Industry Average

✓ Manufacturer Average

✗ Facility Specific

Averaging:
The averaging was performed based on their respective annual production mass over the 2024 -2025 calendar year. Each product's environmental impact contribution was weighted according to its share of the total production volume. The resulting data provides a representative average that reflects the typical environmental performance of the product group.

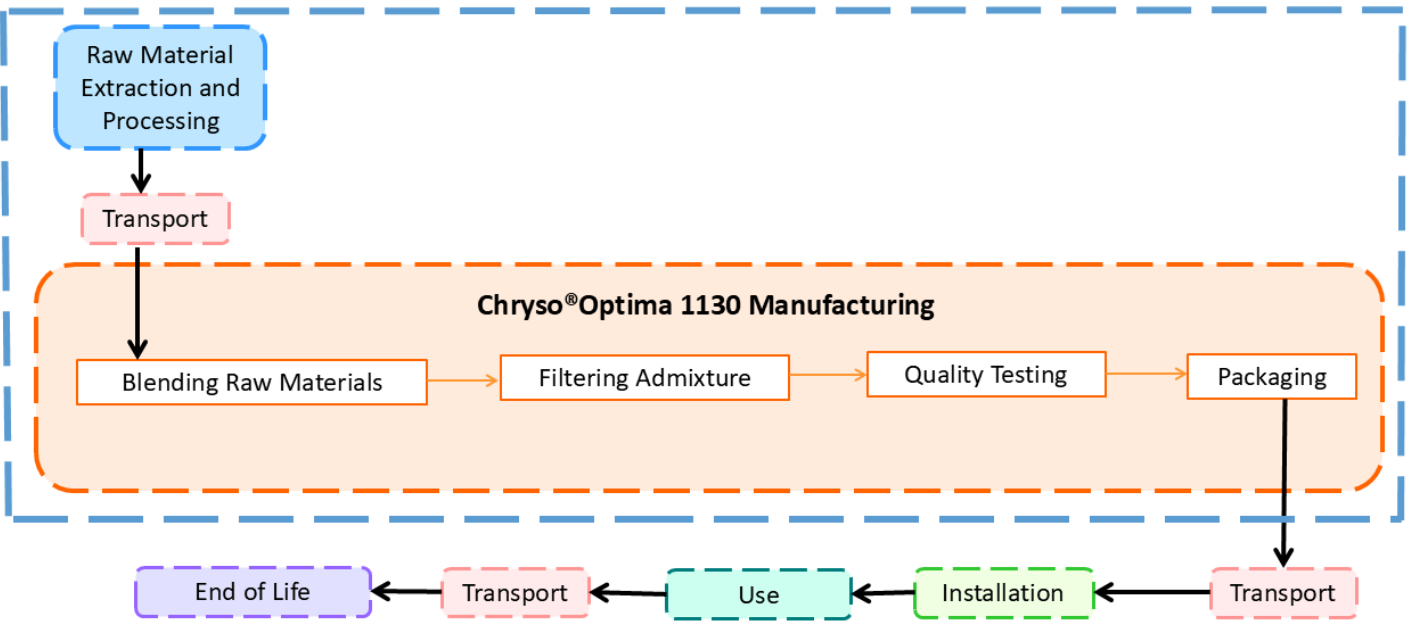
System Boundary

Production	A1	Raw material supply	✓
	A2	Transport	✓
	A3	Manufacturing	✓
Construction	A4	Transport to site	ND
	A5	Assembly / Install	ND
Use	B1	Use	ND
	B2	Maintenance	ND
	B3	Repair	ND
	B4	Replacement	ND
	B5	Refurbishment	ND
	B6	Operational Energy Use	ND
	B7	Operational Water Use	ND
End of Life	C1	Deconstruction	ND
	C2	Transport	ND
	C3	Waste Processing	ND
	C4	Disposal	ND
Benefits & Loads Beyond System Boundary	D	Recycling, Reuse Recovery Potential	ND

Note:

ND = Module not declared

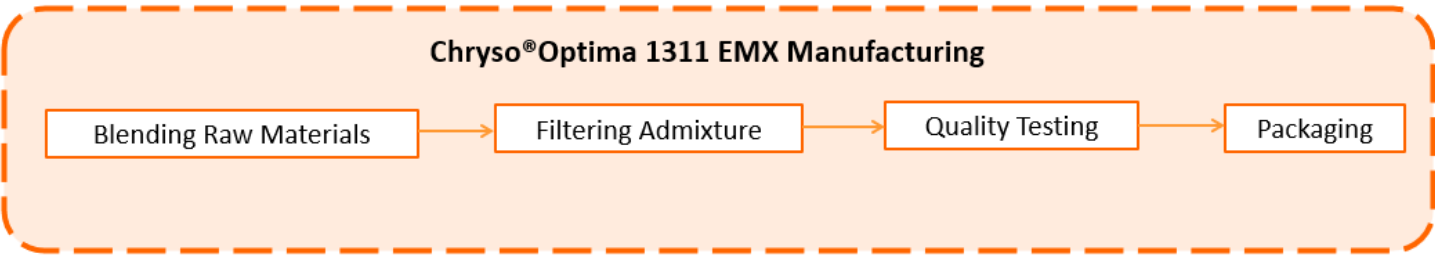
Product Composition Diagram



Plants

- Denver Denver, CO, USA
- North Bergen 2133 85th St, North Bergen, NJ 07047, USA
- Vancouver Plant 476 Industrial Ave, Vancouver, BC, Canada

Product Flow Diagram



Software And Database

- LCA Software:
- Sphera LCA for Experts (formerly GaBi) v. 10.9
- LCI Foreground Database(s):
- GaBi Professional Database v. 2025.1 | US LCI v. 1.2024-06.0 | Ecoinvent v. 3.10
- LCI Background Database(s):
- GaBi Professional Database v. 2025.1

A foreground LCI database is the database used to model the primary, site-specific data collected for this EPD. A background LCI database is the database used to model generic or non-specific data.

Data Quality

This life cycle assessment was conducted in accordance with ISO 14040/44 and EN 15804. Data quality was evaluated based on precision, completeness, consistency, representativeness, and reproducibility, recognizing that LCA results depend on the quality of both primary and secondary data.

Primary Data

Primary data were collected directly from CertainTeed manufacturing facilities and represent site-specific operations for the defined reference period. All primary data are quantified and based on measured or calculated values obtained from automated tracking systems, production records, and utility meters. These data include energy and water consumption, production volumes, and operational inputs and outputs relevant to Modules A1–A3. Primary data are reported annually and are representative of normal operating conditions. Allocation of energy and material flows was performed using production-based methods validated by facility experts. Although statistical uncertainty was not quantified, the primary data are considered to have high precision and low uncertainty due to direct measurement and internal verification.

Secondary Data

Secondary data were used for upstream and downstream processes, including raw material extraction and processing, transportation, and energy production. Datasets were primarily sourced from the Sphera LCA FE database, with supplementary data from USLCI and ecoinvent v3.9 where necessary. Proxy datasets were used only when no suitable data were available. Secondary datasets are representative of North American conditions, average technologies, and recent timeframes, with most data less than ten years old. Any deviations from data quality requirements are documented and justified. As typical in LCA studies, secondary data are associated with higher uncertainty than site-specific primary data and were considered accordingly during result interpretation.

Data Sources

Material/Process Category	Module	Material/Process Name	Inventory Dataset Name	Dataset Geographic Region	Reporting Period/Year Dataset Represents	Reference	Amount (if relevant)	Unit
Polymer	A1	Polymer	Polyacrylate primary dispersion	RER	2024	Sphera Managed LCA Content Databases (MLC)	Confidential	Confidential
Monomer	A1	Monomer	market for ethylene oxide	RER	2018-2023	ecoinvent 3.10	Confidential	Confidential
Energy for production step	A1	Energy for production step	market for heat, from steam, in	RER	2018-2023	ecoinvent 3.10	Confidential	Confidential

Material/Process Category	Module	Material/Process Name	Inventory Dataset Name	Dataset Geographic Region	Reporting Period/Year Dataset Represents	Reference	Amount (if relevant)	Unit
			chemical industry					

Life Cycle Module Description

This LCA study is characterized as a “cradle to gate, examining the Chryso®Optima 1311 product lines from raw material extraction through to Manufacturing including packaging. For this life cycle assessment, the Saint-Gobain North America (SGNA) ESG department, with assistance from personnel at the manufacturing locations, collected specific data on energy and material inputs, wastes, water usage, emissions, and transportation impacts for the calendar year 2024-2025.

Raw Materials (Module A1)

A thorough analysis of the material inputs was completed for the inventory of this study.

Transportation of raw materials (Module A2)

Raw materials are transported to the manufacturing sites by standard freight truck, train, or ocean freighters. Unless otherwise noted, transport vehicles are fueled with diesel fuel. The raw material transportation distance were modeled based on the actual data provided by experts from the plant.

Manufacturing (Module A3)

Concrete chemical admixtures are produced by blending raw materials such as surfactants, polymers, and various chemicals in precise proportions to achieve desired effects like improved workability, altered setting time, or enhanced strength. The process often involves specialized equipment like high-shear mixers, agitated reactors, or batch mixers to ensure uniform consistency. After formulation, the admixture is filtered, tested for quality, and packaged for distribution, with potential additional steps like neutralization or stabilization depending on the product type. Heating and cooling are commonly applied to optimize processing conditions and maintain product stability. The selection of equipment depends on the physical properties of the raw materials, whether liquid or powder, and the specific requirements of the final admixture. Throughout the process, strict quality control is essential to ensure the admixture delivers the intended performance.

Packaging (Module A3)

Packaging of the final product after production is included in the life cycle assessment. The majority of final product is delivered to customers in bulk tankers and stored in bulk tanks ranging in size from 500 – 2000 gals at the customer site, therefore very little packaging is used to sell these admixtures.

LCA Discussion

Allocation Procedure

Allocation was applied at the product level within each manufacturing facility. In the absence of sub-metering by individual product line, shared resource flows including electricity, fuels, water, and associated process emissions were allocated based on each product’s share of the total annual production mass at the facility. Mass-based allocation was selected as the most appropriate and practicable approach given data availability, as production mass is directly measured, consistently recorded, and reasonably correlated with resource use across products. This approach is consistent with ISO 14044 and EN 15804 guidance where more specific allocation parameters are not available. No allocation was performed across facilities, as each facility was modeled independently using site-specific data. No co-products or by-products are generated during the manufacturing process; all waste streams are treated as residual waste and are not allocated as co-products.

Cut-off Procedure

Processes whose total contribution to the final result, with respect to their mass and in relation to all considered impact categories, is less than 1% can be neglected. The sum of the neglected processes may not exceed 5% by mass of the considered impact categories. For that a documented assumption is admissible. For Hazardous Substances – as defined by the U.S. Occupational Health and Safety Act the following requirements apply:

- The Life Cycle Inventory (LCI) of hazardous substances will be included, if the inventory is available
- If the LCI for a hazardous substance is not available, the substance will appear as an input in the LCI of the product, if its mass represents more than 0.1% of the product composition.
- If the LCI of a hazardous substance is approximated by modeling another substance, documentation will be provided.

This EPD is in compliance with the cut-off criteria. No known flows were deliberately excluded. Capital items for the production processes (machines, buildings, etc.) were not taken into consideration

Renewable Electricity

Energy Attribute Certificates (EACs) such as ✗ No
Renewable Energy Certificates (RECs) or Power
Purchase Agreements (PPAs) are included in the
baseline reported results:

Results

Environmental Impact Assessment Results

IPCC AR6 GWP 100, TRACI 2.2, CML 2016 v4.8

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

Impact Category	Method	Indicator	A1	A2	A3	A1 - A3
GWP-total (excl biogenic), IPCC AR6	IPCC AR6 GWP 100	ND	1.01e+3	1.03e+2	1.11e+2	1.22e+3
GWP-total (incl biogenic), IPCC AR6	IPCC AR6 GWP 100	ND	9.99e+2	1.03e+2	1.12e+2	1.21e+3
GWP-total (excl biogenic), TRACI 2.2	TRACI 2.2	ND	9.84e+2	1.02e+2	1.09e+2	1.20e+3
GWP-total (incl biogenic), TRACI 2.2	TRACI 2.2	ND	9.78e+2	1.02e+2	1.09e+2	1.19e+3
ODP	TRACI 2.2	ND	2.06e-5	3.82e-9	3.14e-10	2.06e-5
AP	TRACI 2.2	ND	2.68e+0	2.09e+0	8.20e-2	4.85e+0
EP-freshwater	TRACI 2.2	ND	1.51e+0	0	6.83e-4	1.51e+0
EP-marine	TRACI 2.2	ND	4.35e+1	1.67e+0	5.71e-2	4.52e+1
POCP	TRACI 2.2	ND	3.77e+1	6.13e+1	1.82e+0	1.01e+2
ADP-fossil	CML 2016 v4.8	ND	2.49e+4	2.34e-7	1.51e+3	2.64e+4

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

GWP = Global Warming Potential, 100 years (may also be denoted as GWP-total, GWP-fossil (fossil fuels), GWP-biogenic (biogenic sources), GWP-luluc (land use and land use change)), ODP = Ozone Depletion Potential, AP = Acidification Potential, EP = Eutrophication Potential, SFP = Smog Formation Potential, POCP = Photochemical oxidant creation potential, ADP-Fossil = Abiotic depletion potential for fossil resources, ADP-Minerals&Metals = Abiotic depletion potential for non-fossil resources, WDP = Water deprivation potential, PM = Particular Matter Emissions, IRP = Ionizing radiation, human health, ETP-fw = Eco-toxicity (freshwater), HTP-c = Human toxicity (cancer), HTP-nc = Human toxicity (non-cancer), SQP = Soil quality index.

Global Warming Potential or Climate Change is an indicator aimed at including in a single value the added effect of all the substances contributing to the greenhouse effect.

Global Warming Potential (GWP-Total) includes biogenic carbon, fossil carbon, land use and land use change. To calculate GWP-Total within the above table, the equation below is used:

$$\text{GWP-total} = \text{GWP-biogenic} + \text{GWP-fossil} + \text{GWP-luluc}$$

- GWP-total or GWPttotal (including biogenic) is the sum of GWP-biogenic, GWP-fossil and GWP-luluc
- GWP-biogenic only includes biogenic carbon which is carbon that is stored in bio-sourced materials, like plants, trees, and soil. This excludes fossil.
- GWP-fossil or GWPttotal (excluding biogenic) only includes fossil carbon which is the carbon dioxide emitted when fossil fuels like coal, oil, or natural gas are combusted. This excludes biogenic.
- GWP-luluc only includes the greenhouse gas emissions that arise in connection with changes in the specified carbon stock as a result of land use and land use change, such as deforestation.

Depending on the required or optional standards, GWP can be reported with different methods and indicators including United States Environmental Tool for Reduction and Assessment of Chemicals and Other Environmental Impacts (TRACI 2.1, etc.), Intergovernmental Panel on Climate Change (IPCC) Assessment Report (AR 5, AR 6, etc.), Environmental Footprint (EF 3.0, 3.1), and/or EN 15804. GWP can be reported on a time frame such as GWP 100 for 100-year time horizon.

Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted. Any comparison of EPDs shall be subject to the requirements of ISO 21930 or EN 15804. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries, are based on different product category rules or are missing relevant environmental impacts. Such comparison can be inaccurate, and could lead to erroneous selection of materials or products which are higher-impact, at least in some impact categories.

Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted. Any comparison of EPDs shall be subject to the requirements of ISO 21930 or EN 15804. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries, are based on different product category rules or are missing relevant environmental impacts. Such comparison can be inaccurate, and could lead to erroneous selection of materials or products which are higher-impact, at least in some impact categories.

Resource Use Indicator

Indicator	Unit	A1	A2	A3	A1 - A3
RPRE	MJ	1.25e+3	0	1.44e+2	1.39e+3
RPRM	MJ	0	0	0	0
RPRT	MJ	1.25e+3	0	1.44e+2	1.39e+3
NRPRE	MJ	2.77e+4	1.30e+3	1.56e+3	3.06e+4
NRPRM	MJ	0	0	0	0
NRPRT	MJ	2.77e+4	1.30e+3	1.56e+3	3.06e+4
FW	m3	5.11e+3	0	1.42e+1	5.12e+3
SM	kg	0	0	0	0
RSF	MJ, LHV	0	0	0	0
NRSF	MJ, LHV	0	0	0	0
RE	MJ, LHV	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

Waste and Output Flow Indicators

Indicator	Unit	A1	A2	A3	A1 - A3
HWD	kg	2.87e-3	1.44e+0	1.44e+0	2.88e+0
NHWD	kg	1.99e+0	6.72e+2	1.55e+3	2.22e+3
HLRW	kg	9.56e-5	0	2.44e-5	1.20e-4
ILLRW	kg	3.28e+4	0	2.05e-2	3.28e+4
CRU	kg	0	0	0	0
MFR	kg	0	0	0	0
MER	kg	0	0	0	0
EE	MJ, LHV	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

Carbon Emissions and Removals

Indicator	Unit	A1	A2	A3	A1 - A3
BCRP	kg CO2	0	0	0	0
BCEP	kg CO2	0	0	0	0
BCRK	kg CO2	0	0	0	0
BCEK	kg CO2	0	0	0	0

Note:

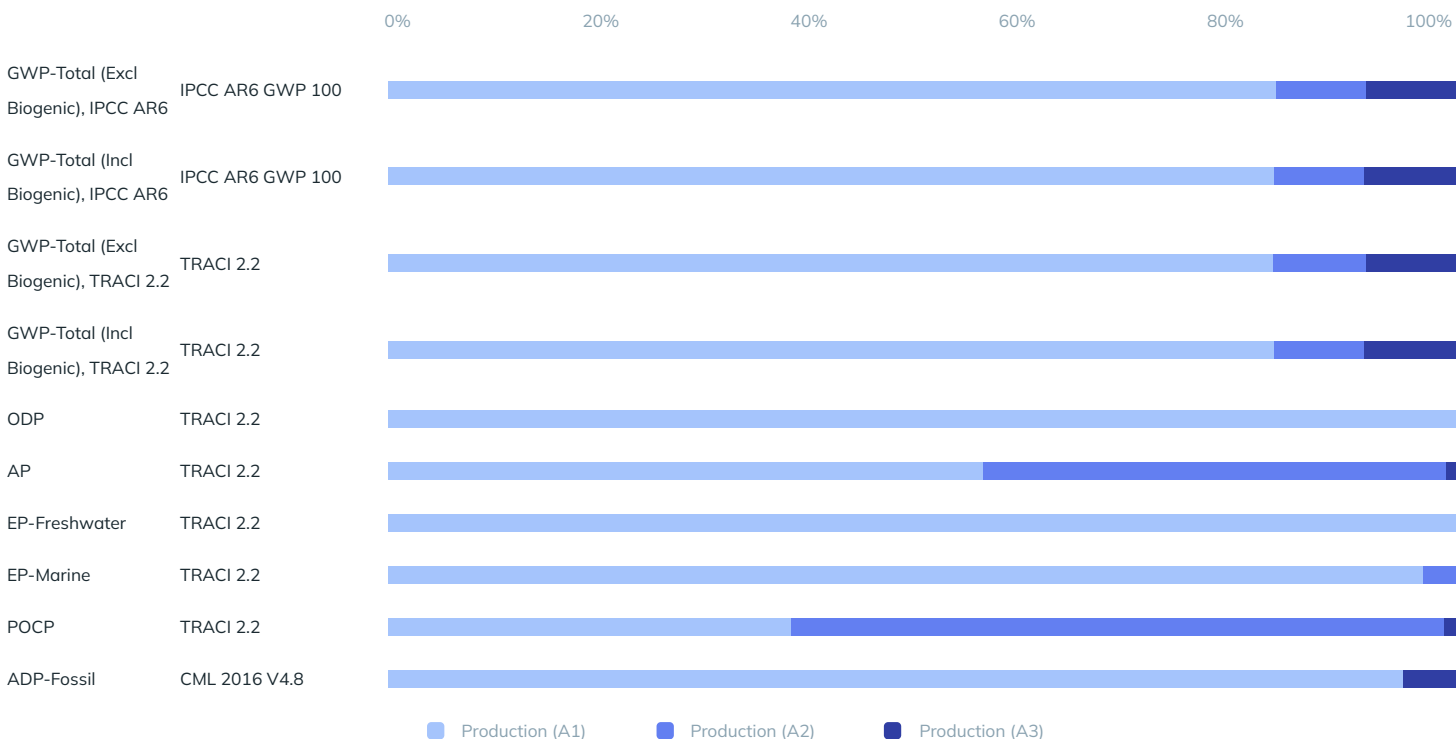
Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

BCRP = Biogenic Carbon Removal from Product, BCEP = Biogenic Carbon Emission from Product, BCRK = Biogenic Carbon Removal from Packaging, BCEK = Biogenic Carbon Emission from Packaging, BCEW = Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE = Calcination Carbon Emissions, CCR = Carbonation Carbon Removals, CWNCR = Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes, GWP-luc = Carbon Emissions from Land-use Change.

Interpretation

Based on the results from the life cycle assessment model, the life cycle impacts are strongly driven by the manufacturing and raw material phase. The impacts of the raw materials are primarily attributed to the polycarboxylate in the product recipe. The manufacturing of Chryso® Optima 1311 Admixtures also drive the Global Warming Potential. Electricity consumption is a significant contributor to the manufacturing impacts.



Additional Environmental Information

This information can prepare Chryso for future sustainable supply chain requirements and can form the basis of marketing literature focused on environmental benefits. This LCA will also assist Chryso with evaluating any environmental claims made by competitors. Chryso should use the LCA study for evaluating alternate raw materials, source locations, and recycled content as part of a sustainable product development process, in order to take a leadership position in sustainable product development. Chryso should also use this LCA as a basis to meet future requirements for customer sustainable purchasing programs and government requirements. Chryso should investigate opportunities to reduce energy consumption in the areas of raw material transportation and specially manufacturing, as these are areas of the process directly under Chryso's control. Reduction in these areas will also provide cost savings and potential competitive advantages to Chryso. Additionally, sub-metering of energy and water use in the manufacturing stage would be helpful for better allocation of the energy and water used within the facility, as well as to measure and benchmark for efficiency opportunity analysis.

Further Information

References

- Smart EPD® Part A Product Category Rules for Building and Construction Products and Services, Version 1.01. January 2024. SmartEPD.
- General Program Instructions for Smart EPD, Version 2.0. November 2024. SmartEPD.
- EN 15804 EN 15804 + A2:2019, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction

products.

- ISO 21930:2017– Sustainability in building construction – Environmental declaration of building products
- ISO 14025:2006, Environmental labels and declarations – Type III environmental declarations – Principles and procedures
- ISO 14040:2006, Environmental management – Life cycle assessment – Principles and framework
- ISO 14020:2022: Environmental statements and programs for products — Principles and general requirements
- ISO 14044:2006, Environmental management – Life cycle assessment – Requirements and guidelines
- ISO 14026:2006, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.
- Sphera LCA FE Databases. <https://sphera.com/product-sustainability-software/>
- US LCI Database. <https://www.nrel.gov/lci/>
- Ecoinvent v3.9 Database. <http://ecoinvent.org/>
- Chryso Website. <https://www.chrysoinc.com/>