LAURIER

ENVIRONMENTAL DATA SHEET

MONOLITHIC GLASS

Monolithic glass is a single glass manufactured from the float process. It may be clear or tinted in the mass and available in various thickness from 3 mm to 19 mm.

Various coatings may be applied on its surface to confer energetic or aesthetic properties. It may also be thermally treated to make it safer.

VALIDATED ECO-DECLARATION

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PRODUCT SPECIFICATIONS

References
Monolithic float glass

Final manufacturing location
Laurier-Station, QC G0S 1N0
CANADA

Components
Glass, coating.

ATTRIBUTES

Recycled Content
Pre-consumer: 0%
Post-consumer: 0%

Sourcing of raw materials
Data collection from suppliers has been conducted for 100% of product components.

Certified Wood	-
Rapidly renewable materials	-
Biobased materials	-

ENVIRONMENTAL IMPACTS

Life Cycle Assessment	Octobre 2018
Reference service life	-
Product's carbon footprint	Octobre 2018

Environmental Product Declaration
ISO 14025:2006 — November 2018 to November 2023

INGREDIENTS AND EMISSIONS

Declaration of chemical ingredients	1,000 ppm
Type of declaration	HPD® version 2.1 Health Product Declaration®
Emission test	-
COV	-
Formaldehyde	-
Others	-

TECHNICAL PERFORMANCES

Performance tests
ASTM C-1036-16
ASTM C-1048-12e1
ANSI Z97.1-2015
CAN/CGSB 12.3 M91 (R2017)
CAN/CGSB-12.1-2017

MANUFACTURER'S ENVIRONMENTAL MANAGEMENT

Certification ISO 14001	-
Extended Producer Responsibility (Take Back Program)	-
Corporate Sustainability Report (CSR : GRI, ISO 26000, BNQ 21000 or others	-

CERTIFICATIONS AND CONFORMITIES

ASTM INTERNATIONAL

Approved American National Standard ANSI

Founded in 1950, Laurier is a third generation family business. Over the years we developed an expertise in different glass products from value-added sealed units to spandrels, heat treated glass, laminated glass and decorative glass. As a partner of excellence, we help customers and architects to stand out with a unique and innovative image.

153, Laurier blvd, Laurier-Station, QC G0S 1N0 CANADA
www.laurier.net

MasterFormat®: **08 80 50**
Validated Eco-Declaration: **VED18-1018-01**
Original issue date: **03/2013**
Period of validity: **08/2018** to **08/2019**

VERTIMA® VALIDATED ECO-DECLARATION

ENVIRONMENTAL DATA SHEET
MONOLITHIC GLASS

Monolithic glass annealed or tempered

Characteristics

Thickness: 3mm to 19mm

Colors/finish: Clear, ultra-clear, grey, bronze, green, black, blue, blue-green, acid-etch, mirror

Coatings: Cerafrit, Ceraprint, Opacicoat, Tendances

Maximal dimensions: 96" x 144"
May vary according to thickness and product.

ATTRIBUTES

RECYCLED CONTENT

Final product	Weight ratio	Pre-consumer	Post-consumer
Monolithic glass	100%	0%	0%

Validated Eco-Declaration – Recycled Content
Methodology: on-site audit, supply chain evaluation, analysis and validation of the recycled content data according to the weight ratio of each of the components used in the manufacturing the final product.
Vertima's procedure: VERT-032008-01, Second Edition.

SOURCING OF RAW MATERIALS

Weight ratio	Final manufacturing location
100%	Laurier-Station, QC G0S 1N0 CANADA

Validated Eco-Declaration – Sourcing of raw materials
Methodology: on-site audit, supply chain evaluation, analysis and validation of the sourcing of raw materials data according to the weight ratio of each of the components used in manufacturing the final product.
Vertima's procedure: VERT-032008–02, Second Edition.

Component	Weight ratio	Location of suppliers	Extraction location	Transport from suppliers
Glass (suppliers 1,2,3,4,5)	95.2% - 100%	Canada (QC), United States (TN, MI, PA), Europe	N/A	Road / Boat
Coating #1	0.7% - 4.5%	United States (WA)	N/A	Road
Coating #2	0.8% - 4.8%	Italy	N/A	Road
Coating #3	0.3% - 1.9%	United States (MA)	N/A	Road
Coating #4	0.1% - 0.5%	United States (RI)	N/A	Road

*Optional

The source of extraction and location of raw materials could not be documented.

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Period of validity:
04/2018 to **04/2019**

ATTRIBUTES (CONTINUED)

SOURCING OF RAW MATERIALS (CONTINUED)

RAW MATERIALS EXTRACTION ZONES

Final manufacturing location
Monolithic glass
Laurier
Laurier-Station QC
CANADA
G0S 1N0

Extraction zones of raw materials used in manufacturing

Data collection from suppliers has been conducted for 100% of Monolithic glass components.

Sources of supply locations are all listed on page 2, however none of the extraction locations could be identified based on product composition.

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ENVIRONMENTAL DATA SHEET
MONOLITHIC GLASS

ENVIRONMENTAL IMPACTS

ENVIRONMENTAL PRODUCT DECLARATION (EPD)

☑ Product-specific EPD, ISO 14025:2006, Type III

The monolithic glass was the objet of a DEP which was prepared by Vertima. CSA Group is the program operator. The life cycle assessment, verified by a third party Athena Sustainable Materials Institute and on which is based this EPD, has been done by Vertima.

Reference PCR	UL Environment (2021). PCR Guidance for Building-Related Products and Services – Part B: Processed Glass EPD Requirements.

Declared Unit	Scope of the LCA	Reference service life	Period of validity
1 m² of Monolithic Glass	Cradle-to-gate	N/A	November 2018 to November 2023

Table of environmental impacts for 1 m² of monolithic glass

Impact categories	Unit	Results per functional unit
Acidification potential	kg SO_2 eq.	2.51E-01
Eutrophication potential	Kg N eq.	3.08E-02
Global warming potential	kg CO_2 eq.	2.67E+01
Stratospheric ozone layer depletion potential	kg CFC-11 eq.	1.87E-07
Photochemical ozone creation potential	kg O_3 eq.	6.76E+00
Abiotic resource depletion potential - fossil fuels	MJ surplus	4.88E+01
Abiotic resource depletion potential - minerals (per ReCiPe)	kg Fe eq.	5.10E-01
Total consumption primary energy	**Unit**	**Results per functional unit**
Total use of renewable primary energy resources	MJ, LHV	7.63E+01
Total use of non-renewable primary energy resources	MJ, LHV	5.80E+02

Source: EPD report

Type III Environmental Product Declaration developed in accordance with ISO 14025:2006

Validated Eco-Declaration – Environmental Product Declaration (EPD)
Methodology: validation of documents and methodology surrounding the product LCA report and EPD.
Vertima's procedure: VERT-032010-03, Second Edition.

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ENVIRONMENTAL DATA SHEET
MONOLITHIC GLASS

DECLARATION OF CHEMICAL INGREDIENTS

Type of declaration: Health Product Declaration® (HPD®) version 2.1
Period of validity: August 2018 to August 2021
HPD name: MONOLITHIC GLASS
Summary of product contents and results from screening individual chemical substances against HPD Priority Lists[1] and the GreenScreen for Safer Chemicals®[,2].
HPDC repository URL: http://www.hpd-collaborative.org/hpd-public-repository/

The Health Product Declaration® and logo is owned by the Health Product Declaration® Collaborative and is used with permission.

Declaration: ■ Prepared by Vertima inc., third party approved by HPDC
Ingredients inventory threshold: 1,000 ppm
Full disclosure of intentional ingredients: Yes
Full disclosure of known hazards: Yes

Hazard(s) associated with the product ingredients:

This HPD Standard describes a declaration of product content and direct health hazards associated with exposure to its individual contents. The Declaration is not an assessment of risks associated with actual use of the product. It does not address the potential health impacts of substances used or created during manufacture that do not appear in the final product as residuals, nor substances created during combustion or other degradation processes.

Highest concern GreenScreen® Benchmark: List Translator Likely Benchmark 1[3]

- ■ PBT (Persistent, Bioaccumulative, Toxic)
- ■ Cancer
- ■ Gene mutation
- ☐ Development
- ☐ Reproductive
- ■ Endocrine
- ■ Respiratory
- ☐ Neurotoxicity
- ■ Mammal
- ☐ Land toxicity
- ■ Aquatic toxicity
- ■ Skin or eye
- ■ Physical hazard
- ☐ Global warming
- ☐ Ozone depletion
- ■ Multiple
- ☐ Unknown

[1]Refer to Annex D of HPD® Open Standard Version 2.1, May 2017: http://www.hpd-collaborative.org
[2]GreenScreen for Safer Chemicals® method: http://www.greenscreenchemicals.org/
[3]GreenScreen (GS) Benchmark scores of chemical ingredients: Benchmark 1 (Avoid, chemical of high concern), Benchmark 2 (Use but search for safer substitutes), Benchmark 3 (Use but still opportunity for improvement), Benchmark 4 (Prefer, safer chemical).

TABLE OF INGREDIENTS

Component	Role	Weight ratio	CAS[1]	GreenScreen®,[2]	Other applicable score (for more details refer to the HPD®)
Glass	Main component	95.2% - 100%	7631-86-9, 1305-68-8, 1344-28-1	LT-P1	LT-UNK and BM-2 scores also present
Coating #1	Coating	0.7% - 4.5%	8007-18-9, 28186-85-6, 1345-16-0, 1333-86-4, 13463-67-7	LT-1	LT-P1, LT-UNK, MB-2, BM-3 and NoGS scores also present
Coating #2	Coating	0.8% - 4.8%	13463-67-7	LT-1	LT-P1, LT-UNK, MB-2 and BM-4 scores also present
Coating #3	Coating	0.3% - 1.9%	Undisclosed	LT-1	LT-P1, LT-UNK and MB-2 scores also present
Coating #4	Coating	0.1% - 0.5%	1345-16-0, 68186-85-6, 13463-67-7, 8007-18-9	LT-1	LT-P1 and LT-UNK scores also present

[1]Only the CAS numbers with the score of highest concern are listed. The complete list of substances can be found in the HPD®.
[2]GS List Translator (LT) scores of chemical ingredients: LT-1, likely GS Benchmark 1; LT-P1, possible GS Benchmark 1; LT-U or LT-UNK, present on GS Specified Lists but there is insufficient information to classify the hazards as LT-1 or LT-P1 (does not mean the chemical is safe).

Validated Eco-Declaration – Declaration of chemical ingredients
Methodology: validation of the documentation confirming the methodology and reporting of chemical ingredients.
Vertima's procedure: VERT-032009–01, Second Edition.

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Validated Eco-Declaration :
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ENVIRONMENTAL DATA SHEET
MONOLITHIC GLASS

TECHNICAL PERFORMANCES

PERFORMANCE TESTS

Non-exhaustive list. Refer to the technical documentation of Monolithic glass for more details.

- ASTM C1036-16 - Standard Specification for flat glass
- ASTM-C1048-12e1 - Standard Specification for Heat-Strenghtened and Fully tempered Glass
- ANSI Z97.1-2015 - American Nationl Standard for Safety Glazing Materials Used in Buildings
- CAN/CGSB 12.3 M91 (R2017) - Canadian Standard - Flat, Clear Float Glass
- CAN/CGSB-12.1-2017 - Canadian Standard - Safety glazing
- DIN EN 14179-1:2016 - Heat Soaked Thermally Toughened Soda Lime Silicate Safety Glass

The following table provides an example of the type of performance data that Laurier can provide during a project.

		VISIBLE LIGHT			SOLAR ENERGY		U Factor (imp)	
GLASS TYPE	**Solar heat gain coefficient (CGCS)**	**Transmission**	**Interior Reflexion**	**Exterior Reflextion**	**Trans.**	**Irradiate**	**Summer**	**Winter**
Clear	0.84	88.3%	7.6%	7.7%	7.0%	6.9%	0.93	1.03
Ultra-Clear	0.90	91.1%	8.3%	8.2%	89.0%	8.0%	0.93	1.03
Artic Blue	0.54	54.0%	5.7%	5.7%	34.5%	5.0%	0.92	1.02
Solar Blue	0.61	56.1%	5.9%	5.9%	46.5%	5.4%	0.93	1.03
Blue-green	0.63	73.5%	7.0%	7.0%	48.1%	5.5%	0.92	1.02
Bronze	0.63	53.8%	5.5%	5.3%	48.2%	5.1%	0.93	1.03
Grey	0.60	45.2%	4.0%	6.0%	43.0%	4.9%	0.93	1.03
Green	0.62	77.0%	6.6%	6.6%	47.0%	5.4%	0.93	1.03
Super Grey	0.36	9.0%	4.4%	4.6%	8.2%	87.6%	0.53	0.67
Eclipse Advantage clear	0.61	66.0%	22.0%	27.0%	56.0%	17.0%	0.53	0.67
Eclipse Advantage grey	0.41	32.0%	9.0%	26.0%	29.0%	8.0%	0.53	0.67
Eclipse Advantage bronze	0.46	40.0%	11.0%	26.0%	35.0%	9.0%	0.53	0.67
Eclipse Advangage blue-green	0.45	56.0%	17.0%	27.0%	35.0%	10.0%	0.53	0.67
Eclipse Advantage EverGreen	0.37	49.0%	14.0%	26.0%	23.0%	8.0%	0.53	0.67
Eclipse Advantage Artic Blue	0.52	41.0%	11.0%	26.0 %	24.0%	8.0%	0.53	0.67

Other technical data may be supplied upon request.

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TECHNICAL PERFORMANCES (CONTINUED)

WARRANTY

Laurier warrants, its opacifying products (Cerafrit, Ceraprint, Tendances, Opacicoat) for a period of 5 years against flaking.

For more information on Laurier's warranties, contact our customer service department.

Source : www.laurier.net

MANUFACTURER'S ENVIRONMENTAL MANAGEMENT PROGRAM

MANUFACTURER'S COMMITMENT

The safety of our workforce and environment protection are top priority for Laurier.

We make sure our workers work in a safe and healthy work environment and have access to the necessary protective equipment. Work procedures are set up to ensure that work is performed safely.

We strive to reduce our environmental footprint by offering a selection of energy-efficient and environmentally friendly products, through sound resource management and a waste recycling program:

- We use the heat of our tempering furnaces to heat the inside of the plant.
- We have a closed circuit water filtration and recycling system that reduces our water consumption.
- Rather than sending our glass waste to the landfill, it is picked up by an external supplier for use as raw material in the manufacturing of their products.
- We use lead-free inks in the coatings of our products.

Source : www.laurier.net

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ENVIRONMENTAL DATA SHEET
MONOLITHIC GLASS

PRODUCT CONTRIBUTION SUMMARY

LEED® v4 requirements for Building Design + Construction (BD+C)
New Construction, Core and Shell, School, Retail, Data Centers, Warehouse and Distribution Centers, Hospitality and Healthcare.

LEED® v4 requirements for Interior Design + Construction (ID+C)
Commercial Interiors, Retail and Hospitality.

MATERIALS AND RESOURCES		PRODUCT CONTRIBUTIONS	
MR	**Building Product Disclosure and Optimization – Environmental Product Declaration (EPD)** Option 1: Environmental Product Declaration (1 point) Monolithic glass contributes to this credit due to the availability of a product-specific EPD (Type III) and is valued as 1 whole product out of the 20 needed for the purposes of credit achievement calculation.	**Contribute**	**ENVIRONMENTAL IMPACTS** Product-specific EPD (Type III) compliant with ISO 14025:2006
MR	**Building Product Disclosure and Optimization — Material Ingredients** Option 1: Material ingredients reporting (1 point) Monolithic glass contributes to this credit due to the availability of Health Product Declarations® and is valued as 1 whole product out of the 20 needed for the purposes of credit achievement calculation.	**Contribute**	**INGREDIENTS AND EMISSIONS** HPD® version 2.1 Health Product Declaration®

INDOOR ENVIRONMENTAL QUALITY		PRODUCT CONTRIBUTIONS	
EQ	**Low-Emitting Materials** Option 1: Product category calculation (1-3 points) For the product category, walls, thermal and acoustical insulation, 100% of all products must meet the requirements.	-	**INGREDIENTS AND EMISSIONS** Glass is excluded from the scope of this credit. Moreover, glass is an inherently non-emitting source.
EQ	**Daylight** Design to maximize daylight (1-3 points) Consider how best to allocate interior space to ensure that daylight is available in all regularly occupied spaces. Enclosure design and furniture selection will affect daylight penetration. Possible design strategies include the following: Use transparent partitions or interior glazing to provide daylight to enclosed spaces. Unlike the BD+C rating system, ID+C rating system includes any permanent interior obstructions as well as moveable furniture and partitions.	**Contribute**	**TECHNICAL PERFORMANCES** Within an assembly, monolithic glass may contribute to this credit if design choices are coherent with the credit.

PILOT CREDIT		PRODUCT CONTRIBUTIONS	
PC	**Pilot Credit 55 - Bird Collision Deterrence (1 point)** Reduce bird injury and mortality from in-flight collisions with buildings.	**Contribute**	Within an assembly, monolithic glass with bird-safe design may contribute to this pilot credit.

It is important to note that the points identified above are linked with each of the credits where the product contributes as part of a LEED® v4 certification process. The product itself is only one element among others to reach the target score.

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