

# GILLIS QUARRIES LTD



Tyndall Stone®  
An IUGS Heritage Stone

**Environmental Product Declaration (EPD) for:**

## **Tyndall Stone®**

Natural Stone Cladding and Masonry Products  
Manufactured by Gillis Quarries Limited, Garson, Manitoba



# General Information

This Environmental Product Declaration (EPD) reports the impacts for 1 metric tonne (dry weight) of Tyndall Stone® natural stone cladding and masonry products, for use in business-to-business (B2B) in accordance with ISO 14025, ISO 21930, and ASTM International's EPD program operator rules.

## Manufacturer

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## Program Operator

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## EPD/LCA Developer

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<b>Product Name</b>	Tyndall Stone® natural stone cladding & masonry products
<b>General Program instructions and Version Number</b>	ASTM Program Operator for Product Category Rules (PCRs) and Environmental Product Declarations (EPDs), General Program Instructions. Version 8.0, revised April 29, 2020.
<b>Declaration Number</b>	EPD 1137
<b>Reference PCR and Version Number</b>	ISO 21930:2017 Sustainability in Building Construction – Environmental Declarations of Building Products serves as the core PCR
<b>EPD Type and Scope (facility/product/average)</b>	Type III EPD - Cradle-to-gate (modules A1 to A3) Facility average
<b>Defined functional or declared unit</b>	1 tonne of Tyndall Stone® natural stone cladding and masonry products
<b>Product's intended Application and Use</b>	This EPD is intended for B2B audiences.
<b>Product RSL (Reference Service Life) *Only applicable where LCA/EPD includes Module B</b>	Not Applicable (B modules not included in scope)
<b>Markets of Applicability</b>	United States and Canada
<b>Date of Issue</b>	March 9, 2026
<b>Period of Validity</b>	Five years – Expires March 10, 2031
<b>Year of reported manufacturer primary data</b>	January 1, 2024 to December 31, 2024
<b>LCA Software and Version Number</b>	SimaPro 9.1
<b>LCI Database and Version Number</b>	USLCI, SmartData
<b>LCIA Methodology and Version Number</b>	TRACI 2.1 v1.04
<b>Overall Data Quality Assessment Score</b>	2.75 – good quality
<b>The sub-category PCR review was conducted by:</b>	Industrial Ecology Consultants, Thomas P. Gloria, Ph.D t.gloria@industrial-ecology.com
<b>This declaration was independently verified in accordance with ISO 14025: 2006. ISO 21930:2017 serves as the core PCR</b>	<input type="checkbox"/> Internal <input checked="" type="checkbox"/> External
<b>This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:</b>	Nawal Shoaib nawal@climateearth.com Climate Earth Inc.
<b>This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:</b>	Thomas P. Gloria, PhD t.gloria@industrial-ecology.com Industrial Ecology Consultants 35 Bracebridge Rd. Newton, MA 02459-1728 1-(617)-553-4929 <a href="http://www.industrial-ecology.com">http://www.industrial-ecology.com</a>
<b>Explanatory material may be obtained from the following contact at Gillis Quarries Ltd.:</b>	Jeffrey Dolovich, P.Eng Vice President, Sales & Marketing 1-(204)-222-2242 gillis@gillisquarries.com



## Product Information

### Tyndall Stone®

Gillis Quarries Ltd. is a fabricator of Tyndall Stone®, a natural, mottled, fossiliferous limestone used to create cut dimension and random ashlar stone masonry products for both exterior and interior applications, including unit masonry, thin veneer, floor and wall tile, and landscaping applications. Tyndall Stone® is defined as a medium density dolomitic limestone, with its deposit being over 450 million years old. Geologically, it is referred to as the Upper Mottled Limestone of the Red River Formation of the Ordovician System. Tyndall Stone® is known for its strength, beauty, and versatility, and meets the following standards:

- ☑ **ASTM C568 - Limestone Dimension Stone**
- ☑ **ASTM C119 - Dimension Stone**

Applicable Specifications	Section #	Associated Product
Exterior Stone Cladding Stone Masonry Stone Masonry Veneer Anchored Stone Masonry Veneer	04 42 00 04 43 00 04 43 13 04 43 13.13	Tyndall Stone® Cut Dimension Limestone
Stone Masonry	04 43 00	Tyndall Stone® Random Ashlar Limestone

Tyndall Stone® Physical Properties	
Weight	(Dry) - 2,435 kg/m <sup>3</sup>
Specific Gravity	2.44
Compressive Strength (ASTM C170)	(average) - dry - 62.8 M Pa (average) - wet - 64.8 M Pa
Transverse Strength	1,340 p.s.i.
Shear Strength	1,056 p.s.i.
Modulus of Rupture (ASTM C99)	(average) - dry - 9.9 M Pa (average) - wet - 5.2 M Pa
Water Absorption (ASTM C97)	(average) 3.49% Ratio of absorption %: 1 hour - 1.335 2 hours - 2.499 Under pressure - 4.653 Pore Space - 11.36%
Modulus of Elasticity	41.37 G Pa
Coefficient of Thermal Expansion	Per °C - 5.4 x 10 <sup>-6</sup> mm per mm
Thermal Resistance	102m <sup>2</sup> C/W (90 mm thick stone - stone only - no allowance made for film effect)
Light Reflectance	Split Face - 70% Cut Stone - 82%
Sound Rating	N.B.C.C. class II: Sound Reduction Factor - 90 mm thick stone - 42dB

# Life Cycle Assessment (LCA): Cradle-to-Gate

## System Boundary

This study captures the mandatory cradle-to-gate life cycle product stage (modules A1-A3):

- A1** - Extraction and processing of raw materials including fuels used in extraction and transport within the process.
- A2** - Transportation of raw materials from extraction site to manufacturing site, including recovered materials from source to be recycled and empty backhauls and transportation to interim distribution centers or terminals.
- A3** - Manufacturing of the product, including energy and materials required and emissions and wastes produced.

Product Stage			Construction Stage		Use Stage							End of Life Stage			
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Raw Material Supply	Transport	Manufacturing	Transport	Construction/ Installation Process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction/ Demolition	Transport	Waste Processing	Disposal
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

X: Included      MND: Module Not Declared

## Excluded Stages

Excluded from the study are the Construction, Use, and End of Life Stages (modules A4-C4), and the following: production, manufacture, and construction of manufacturing capital goods and infrastructure; production and manufacture of production equipment, delivery vehicles, and laboratory equipment; personnel-related activities (travel, furniture, office supplies); fuel used to transport personnel around the quarry, and energy and water use related to management and sales activities.

Included Stages		
A1	A2	A3
Raw Material Supply	Transport	Manufacturing
<ul style="list-style-type: none"> <li>• Saw Blades</li> <li>• Stone</li> <li>• Diesel</li> </ul>	<ul style="list-style-type: none"> <li>• Truck</li> <li>• Loader</li> <li>• Diesel</li> </ul>	<ul style="list-style-type: none"> <li>• Saw Blades</li> <li>• Diesel</li> <li>• Natural Gas</li> <li>• Packaging</li> </ul>



# Life Cycle Assessment: Cradle-to-Gate (Continued)

## Secondary Data Sources for Cradle-to-Gate Consumables

Consumables	Source
Bronze	Ecoinvent 3.10 (2023): "bronze production RoW"
Diesel	USLCI process (2020): "Diesel, combusted in industrial equipment - Northern America"
Electricity	N/A
Gasoline	USLCI process (2020): USLCI process (2020): "Gasoline, combusted in equipment - Northern America"
Graphite	Ecoinvent 3.10 (2023): "graphite production RoW"
Lubricating oil	US-EI 2.2 (2021): "Lubricating oil, at plant/US"
Natural gas	Natural gas, combusted in industrial boiler/m3 NREL/US U
Polyester strapping	Ecoinvent 3.10 (2023): "Polyester resin, unsaturated {RoW}"
Rubber belts	Ecoinvent 3.10 (2023): Synthetic rubber, at plant/US- US-EI U
Steel	Ecoinvent 3.10 (2023): "Steel, low-alloyed, at plant/US- US-EI U" and "Hot rolling, steel/US- US-EI U"
Tires	Ecoinvent 3.10 (2023): Synthetic rubber, at plant/US- US-EI U
Truck transport	USLCI process (2020): "Transport, combination truck, short-haul, diesel powered, West/tkm/RNA"
Tyvek paper	US-EI 2.2 (2021): "polyethylene, HDPE, granulate, at plant/kg/RER"
Wear plates	Ecoinvent 3.10 (2023): Steel, low-alloyed, at plant/US- US-EI U

## Data gaps, Assumptions, and Limitations

Energy data collected for this plant included the entire plant. Some of the energy, both chemical and electrical, reported may not be used directly in the production of the above mentioned products.



# Environmental Impact:

# 243.13 kg CO2 eq. / 1 Metric Tonne

## Cradle-to-Gate Impact Results for 1 Metric Tonne of Tyndall Stone® Natural Stone Cladding and Masonry Products

Impact Category	Unit	A1	A2	A3	Total
<b>Global warming potential (GWP)</b>	kg CO2 eq.	10.45	0.82	231.86	<b>243.13</b>
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC-11 eq.	2.06E-06	3.42E-11	1.17E-07	2.18E-06
Eutrophication potential (EP)	kg N eq.	0.03	5.79E-04	0.16	0.19
Acidification potential of soil and water sources (AP)	kg SO2 eq.	0.04	0.01	0.47	0.52
Formation potential of tropospheric ozone (POCP)	kg O3 eq.	0.36	0.25	13.21	13.81
Abiotic depletion potential for non-fossil mineral resources (ADPelements)*	kg Sb eq.	1.42E-04	x	7.19E-07	1.42E-04
Abiotic depletion potential for fossil resources (ADPfossil)	MJ	231.58	11.60	2916.39	3159.57
Renewable primary energy resources as fuel energy, (RPRE <sup>2</sup> )*	MJ	139.51	x	906.11	1045.61
Renewable primary resources as material, (RPRM <sup>3</sup> )*	MJ	x	x	x	x
Non-renewable primary resources as energy (fuel), (NRPRE <sup>3</sup> )*	MJ	248.80	11.60	2945.41	3205.82
Non-renewable primary resources as material, (NRPRM <sup>3</sup> )*	MJ	x	x	x	x
Consumption of fresh water, (FW <sup>3</sup> )	m <sup>3</sup>	0.23	x	0.14	0.37
Secondary Materials, (SM <sup>3</sup> )*	Kg	x	x	x	x
Renewable secondary fuels, (RSF <sup>3</sup> )*	MJ	x	x	x	x
Non-renewable secondary fuels (NRSF <sup>3</sup> )*	MJ	x	x	x	x
Recovered energy, (RE <sup>3</sup> )*	MJ	x	x	x	x
Hazardous waste disposed, (HW <sup>3</sup> )*	Kg	x	x	x	x
Non-hazardous waste disposed, (NHWD <sup>3</sup> )*	Kg	x	x	x	x
High-level radioactive waste, (HLRW <sup>3</sup> )*	m <sup>3</sup>	7.45E-09	x	1.74E-08	2.48E-08
Intermediate and low-level radioactive waste, (ILLRW <sup>3</sup> )*	m <sup>3</sup>	4.31E-08	x	1.29E-07	1.72E-07
Components for reuse, (CRU <sup>3</sup> )*	kg	x	x	x	x
Materials for recycling, (MR <sup>3</sup> )*	kg	x	x	1.57	1.57
Materials for energy recovery, (MER <sup>3</sup> )*	kg	x	x	0.29	0.29
Recovered energy exported from the product system, (EE <sup>3</sup> )*	MJ	x	x	x	x
Calcination	kg CO2 eq.	x	x	x	x
Biogenic CO2 emissions	kg CO2 eq.	x	x	x	x

\*Emerging LCA impact categories and inventory items are still under development and can have high levels of uncertainty that preclude international acceptance pending further development. Use caution when interpreting data in these categories. The following optional indicators are not reported and also have high levels of uncertainty: Land use related impacts, toxicological aspects, and emissions from land use change \*\*Only EPDs prepared from cradle-to-grave life-cycle results and based on the same function, quantified by the same functional unit, and taking account of replacement based on the product reference service life (RSL) relative to an assumed building service life, can be used to assist purchasers and users in making informed comparisons between products.

Notes:

1. These products contain no materials that are considered hazardous as defined by the PCR
2. Calculated per ACLCA ISO 21930 Guidance.
3. GWP 100; 100-year time horizon GWP factors are provided by the IPCC 2013 Fifth Assessment Report (AR5). CO2 from biogenic secondary fuels used in kiln are climate-neutral (CO2 sink = CO2 emissions), ISO 21930, 7.2.7.

## References

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