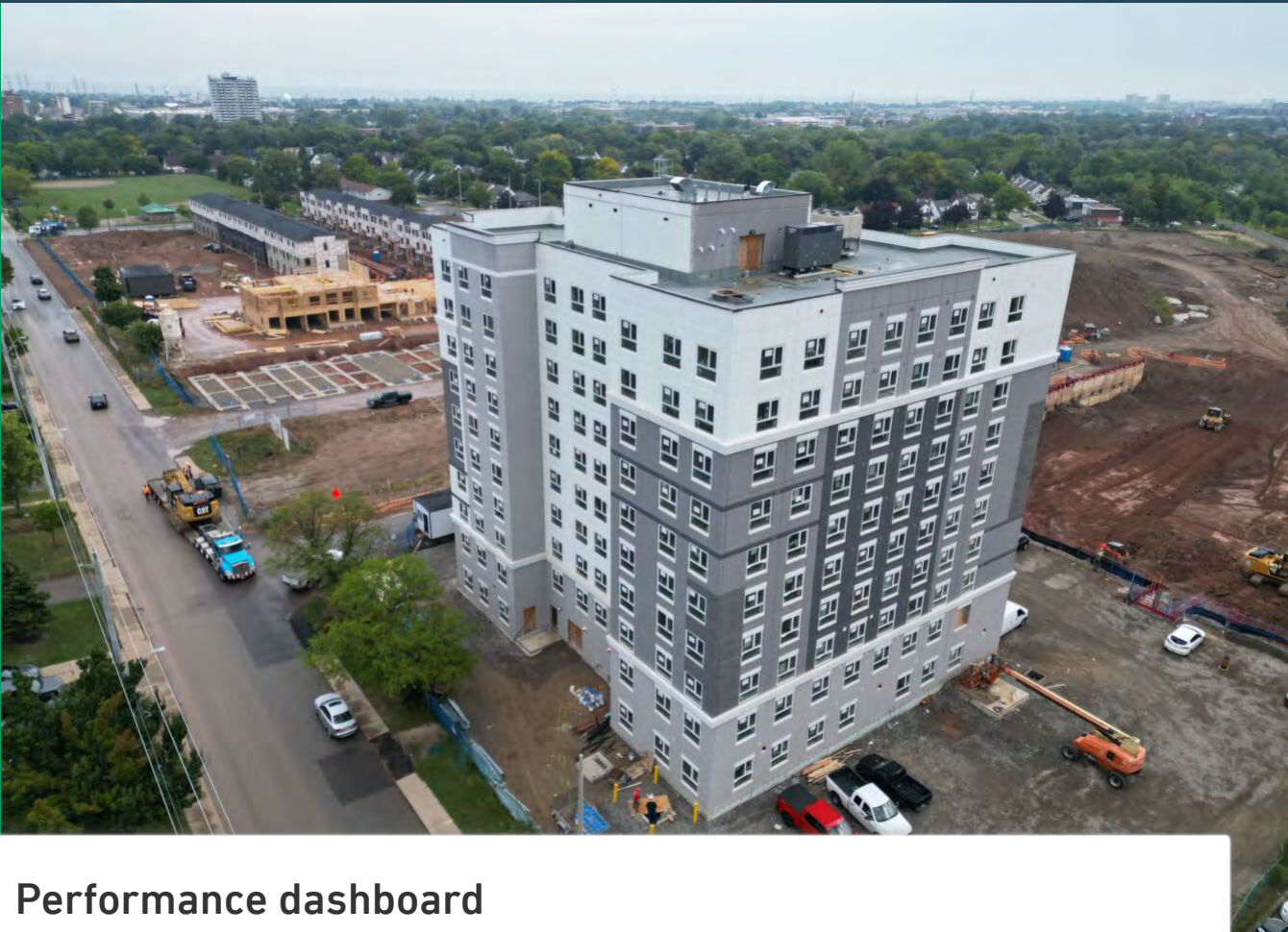




TUFF-FLEX

TUFF-FLEX is a water-based waterproofing wall coating formulated with internally crosslinked acrylic copolymers. The product provides superior weather resistance, with no chalking, leaching, or other surface defects. The product also provides colour stability and has very high resistance to water ponding.



Performance dashboard

Features & functionality

- Elastomeric Waterproofing Barrier
- Provides excellent elongation and recovery at low temperatures
- Provides continuous elongation (built into the molecular chain)
- Available in is smooth and textured finishes
- Features long term adhesion and durability
- Vapor permeable
- Dirt resistant – stays clean
- Excellent hiding capacity
- VOC compliant
- Excellent colour stability and unlimited colour selection
- Easy application = spray or roll
- Low sensitivity to substrate moisture content

Visit **W.R. MEADOWS** for more product information:

[TUFF-FLEX](#)

MasterFormat® 09 96 53
TUFF-FLEX [Technical data sheet](#)

For spec help, [contact us](#) or call 800-342-5976.

Environment & materials

- Improved by:**
- Highly resistant to carbon dioxide diffusion
 - Does not contain plasticizers
 - VOC Content: 19 g/L
 - Exceptionally UV light resistant
 - Made in Canada

Certifications, rating systems & disclosures:

- USGBC member
- CAGBC member

[See LCA, interpretation & rating systems](#)



SM Transparency Report (EPD)™

VERIFICATION

LCA

3rd-party reviewed



Transparency Report (EPD)

3rd-party verified



Validity: 06/23/26 – 06/23/31
SM-WRM – 06232026 – 001

This environmental product declaration (EPD) was externally verified by **Lindita Bushi, PhD, Senior Research Associate at Athena**, according to **ISO 21930:2017; NSF PCR for Architectural Coatings; and ISO 14025:2006**.

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Athena Sustainable Materials Institute

SUMMARY

Reference PCR
NSF PCR for Architectural Coatings v2

Regions; system boundaries
North America; Cradle-to-grave

Functional unit: 1 m²

LCIA methodology: TRACI 2.1

LCA software; LCI database
SimaPro Analyst 10.2.0.2; ecoinvent v3.11, US-EI 2.2

Public LCA:
LCA of W. R. MEADOWS SIL-CRETE, TUFF-FLEX, MED-CURE, LIQUI-HARD, LIQUI-HARD ULTRA

In accordance with **ISO 14044** and the reference PCR, this life cycle assessment was conducted by **Sustainable Minds** and reviewed by **Lindita Bushi, PhD, Senior Research Associate at Athena**.

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Contact us

LCA results & interpretation

TUFF-FLEX

- TUFF-FLEX
- EPD additional content

Scope and summary

☐ Cradle to gate

☐ Cradle to gate with options

☒ Cradle to grave

Application

TUFF-FLEX is a water-based waterproofing wall coating formulated with internally crosslinked acrylic copolymers. The product provides superior weather resistance, with no chalking, leaching, or other surface defects. The product also provides color stability and has very high resistance to water ponding.

Functional unit

1 m² of covered and protected substrate for a period of 60 years (the assumed average lifetime of a building).

TUFF-FLEX has a technical life of 20 years, so two repaints are required during the 60-year lifespan of the building. To satisfy the functional unit, a 2-coat application of TUFF-FLEX is required. The results in this report are presented per functional unit.

Density: 13 lb/gal
Coverage: 4 m²/L
Reference flow: 0.78 kg/functional unit

Modeling assumptions

Products are shipped varying distances to distribution centers and then shipped 505 miles by truck and trailer from the manufacturing facility to project sites. After the coating is applied, 10% of the coating is assumed to be unused and incinerated, and packaging waste is landfilled. 19 g/L of VOCs are emitted during drying. At the end of the life of the building, the coating is disposed with the substrate in a landfill.

Manufacturing data

Reporting period: January 2025 – December 2025
Location: Milton, Ontario

What’s causing the greatest impacts

All life cycle stages

The use stage dominates the results for all impact categories. The number of repaints over its lifetime and the maintenance and emissions accounted for contribute the most to the overall impact across all categories. The production stage also has significant contributions, but to a lesser extent. End-of-life activities show small but nonzero contributions, which reflect packaging waste and disposal-related emissions.

Production

Polymers and film-forming agents are the dominant contributors to environmental impacts in the production stage. The polymers serve as the primary functional components of the curing compound, generating the majority of the global warming potential and fossil fuel depletion results because of their petrochemical origins and energy-intensive synthesis. The blending and mixing processes used to incorporate these polymers contribute to smog formation and ozone depletion potential impacts. Because TUFF-FLEX is produced domestically and distributed regionally, transportation impacts are minimized.

Design & construction

Transportation to the installation site via truck is the primary contributor in the construction stage. Transportation to the site accounts for 6% of total ozone depletion potential results and less than 1% for all other impact categories.

Use & maintenance

Use-stage impacts are the largest contributor across all impact categories. They account for over half of total life cycle burdens across all impact categories, driven by the additional coatings required over the service life of the building. At each reapplication, the production of new coatings is accounted for in this stage.

End of life

Overall, the end-of-life stage plays a limited role, with most impacts confined to waste treatment processes. At the end of life, TUFF-FLEX remains adhered to concrete surfaces and is not designed for removal before demolition. The dominant impacts in this stage is from the landfilling of the residual product coated on concrete debris. These contributions appear in global warming, acidification, and ecotoxicity categories but remain below 2% of the total life cycle impacts. Packaging materials also contribute minor burdens during disposal, particularly in the fossil fuel depletion and respiratory effects categories.

How we're making it greener

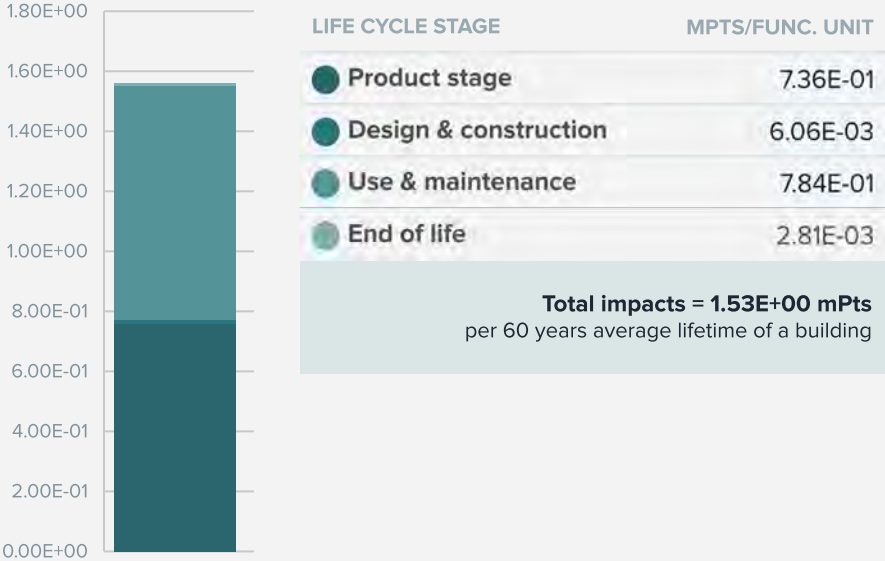
- W. R. MEADOWS utilizes OEE (Overall Equipment Effectiveness) to optimize manufacturing processes and reduce energy consumption.
- OEE identifies inefficiencies and wasted energy: By monitoring equipment performance, it uncovers downtime, slow speeds, and quality defects.
- Energy-saving improvements through OEE: Meadows has achieved streamlined processes, better scheduling, reduced machine wear, and lower energy costs.
- Reduction in scrap and waste: OEE insights help identify performance issues, reducing defects, delays, and material waste while enhancing product quality.
- Supports sustainability and environmental goals: By lowering energy use and cutting carbon footprints, OEE fosters more sustainable manufacturing practices.

Material composition by wt%

MATERIAL	%WT.
Polymers	30-40%
Fillers	25-35%
Barium sulfide	5-10%
Water	5-10%
Titanium dioxide	5-10%
Thickener	<5%
Agent	<5%
Zinc	<1%
Preservative	<1%
Cellulose	<1%
Colorant	<1%
Packaging, plastic	1-5%

See how we make it greener

Impacts by life cycle stage [mPts/func unit]



LCA results

LIFE CYCLE STAGE	PRODUCTION	CONSTRUCTION	USE	END OF LIFE
Information modules: Included (X) Excluded (MND)*	(X) 1-1 Raw materials manufacturing	(X) 2-1 Transportation to distribution center	(X) 3-1 Coating application	(X) 4-1 Transportation to disposal site
	(X) 1-2 Transportation of raw materials to plants	(X) 2-2 Transportation to point of sale/ Installation	(X) 3-2 Emission from drying	(X) 4-2 End-of-life management
	(X) 1-3 Coating manufacturing	(X) 2-3 Transportation to application site	(X) 3-3 Necessary maintenance and repair	

SM Single Score [Learn about SM Single Score results](#)

Impacts per functional unit	7.36E-01 mPts	6.06E-03 mPts	7.85E-01 mPts	2.81E-03 mPts
Product stage contributing >40% to total impacts in each life cycle stage	Polymer and film-forming agent upstream manufacturing processes.	Transportation of the product to the installation site.	Coating reapplications over the life of the building.	Transport to waste facilities, landfilling of coating product with concrete, and disposal of packaging waste.

IPCC & TRACI v2.1 results per functional unit

Life Cycle Stage		Production	Construction	Use	End of Life
Ecological damage					
Impact category	Unit				
Global warming	kg CO ₂ eq	4.33E+00	1.01E-01	5.02E+00	4.36E-02
Ozone depletion	kg CFC-11 eq	8.86E-08	1.50E-08	1.34E-07	7.05E-10
Acidification	kg SO ₂ eq	1.76E-02	2.57E-04	1.96E-02	2.30E-04

Impact category	Unit				
Eutrophication	kg N eq [?]	2.38E-03	3.25E-05	2.67E-03	1.44E-05

Human health damage

Impact category	Unit					
Smog	kg O ₃ eq	?	2.32E-01	6.29E-03	2.67E-01	7.14E-03
Respiratory effects	kg PM _{2.5} eq	?	2.72E-03	1.88E-05	3.10E-03	2.95E-05

Additional environmental information

Impact category	Unit					
Carcinogenics	CTU _h	?	49.82%	0.02%	50.16%	0.00%
Non carcinogenics	CTU _h	?	49.26%	0.18%	50.47%	0.08%
Ecotoxicity	CTU _e	?	48.85%	0.46%	50.65%	0.04%
Fossil fuel depletion	MJ surplus	?	8.88E+00	1.89E-01	1.05E+01	8.00E-02

References

LCA Background Report

LCA of W. R. MEADOWS Concrete curing products, 2026. Developed using the [IPCC Fifth Assessment Report \(AR5\) 100-year time](#), [TRACI v2.1](#), [CML](#), and [Cumulative Energy Demand \(LHV\)](#) impact assessment methodologies, [SimaPro Analyst 10.2.0.2 software](#), and [ecoinvent v3.11](#) and US-EI 2.2 databases.

ISO 14025:2006 Environmental labels and declarations — Type III environmental declarations — Principles and procedures

ISO 21930:2017, Sustainability in buildings and civil engineering works -- Core rules for environmental product declarations of construction products and services

NSF Product Category Rule for Environmental Product Declarations: Architectural Coatings: NAICS 325510, version 2 extended through June 30, 2026.

Download TUFF-FLEX PDF SM Transparency Report [EPD]

SM Transparency Reports (TR) are ISO 14025 Type III environmental declarations (EPD) that enable purchasers and users to compare the potential environmental performance of products on a life cycle basis. Environmental declarations from different programs (ISO 14025) may not be comparable. Comparison of the environmental performance using EPD information shall consider all relevant information modules over the full life cycle of the products within the building. This PCR allows EPD comparability only when the same functional requirements between products are ensured and the requirements of ISO 21930:2017 §5.5 are met. It should be noted that different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared. LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks. These six impact categories are globally deemed mature enough to be included in Type III environmental declarations. Other categories are being developed and defined and LCA should continue making advances in their development. However, the EPD users shall not use additional measures for comparative purposes. Comparison of the environmental performance of structural and architectural wood products using EPD information shall be based on the product's use and impacts at the construction works level, and therefore EPDs may not be used for comparability purposes when not considering the construction works energy use phase as instructed under this PCR. Full conformance with the PCR for structural and architectural wood products allows EPD comparability only when all stages of a life cycle have been considered, when they comply with all referenced standards, use the same sub-category Part B PCR, and use equivalent scenarios with respect to construction works. 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.

Rating systems

The intent is to reward project teams for selecting products from manufacturers who have verified life-cycle environmental performance.

LEED BD+C: New Construction | v4.1 - LEED v4.1

Building product disclosure and optimization

Environmental product declarations

Industry-wide (generic) EPD	1 product
Product-specific Type III EPD	1.5 products

LEED BD+C: New Construction | v.5 - LEED v5

MR Credit 4: Building Materials Resources Credit (BPSP)

Product-specific Type III EPD	Multi-attribute score: 1
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Green Globes for New Construction and Sustainable Interiors Materials and resources

NC 3.5.1.2 Path B: Prescriptive Path for Building Core and Shell
--

BREEAM New Construction 2018

Mat 02 - Environmental impacts from construction products

Environmental Product Declarations (EPD)

Industry-average EPD	.5 points
Multi-product specific EPD	.75 points
Product-specific EPD	1 point



SM Transparency Report (EPD)[™]

VERIFICATION

LCA

3rd-party reviewed	
Transparency Report (EPD)	
3rd-party verified	

Validity: 06/23/26 – 06/23/31
SM-WRM – 06232026 – 001

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Athena Sustainable Materials Institute

SUMMARY

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NSF PCR for Architectural Coatings v2

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North America; Cradle-to-grave

Functional unit: 1 m²

LCIA methodology: TRACI 2.1

LCA software; LCI database

SimaPro Analyst 10.2.0.2; ecoinvent v3.11, US-EI 2.2

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Contact us

EPD additional content

TUFF-FLEX

TUFF-FLEX

EPD additional content

Data

Background This product-specific plant-specific declaration was created by collecting production data from the W. R. MEADOWS Milton, Ontario, Canada plant location. All unit processes were modeled using primary data. Secondary data sources include those available in the ecoinvent v3.11 and US-EI 2.2 databases.

Allocation The W. R. MEADOWS facility produces multiple types of products each year. To allocate electricity and natural gas consumption accurately to each product, total annual energy consumption was distributed based on the proportion of each product's annual production (by mass) relative to the total plant production. This approach assigns manufacturing activities proportionally to each product type.

All associated manufacturing resources and waste flows were allocated using the same approach. There are no co-products produced during their manufacturing processes. The model used in the LCA ensures that the sum of the allocated inputs and outputs of a unit process shall be equal to the inputs and outputs of the unit process before allocation. This means that no double counting or omissions of inputs or outputs through allocation is occurring.

Cut-off criteria for the inclusion of mass and energy flows are 1% of renewable primary resource (energy) usage, 1% nonrenewable primary resource (energy) usage, 1% of the total mass input of that unit process, and 1% of environmental impacts. The total of neglected input flows per module does not exceed 5% of energy usage, mass, and environmental impacts.

The only exceptions to these criteria are substances with hazardous and toxic properties, which must be listed even when the given process unit is under the cut-off criterion of 1% of the total mass. No known flows are deliberately excluded from this declaration, and no substances considered to be hazardous or toxic according to the Resource Conservation and Recovery Act (RCRA), Subtitle C are present in the products. Therefore, these criteria have been met. Biogenic carbon is included in reported results.

Major system boundary exclusions

- Personnel impacts
- Research and development activities
- Business travel
- Secondary packaging (pallets)
- Point of sale infrastructure
- Coating applicator
- Construction of major capital equipment
- Maintenance and operation of support equipment
- Human labor and employee transport
- Manufacturing facility domestic water use (not directly associated with production)

Major assumptions and limitations

- It is not recommended to mix or dilute with any other products or liquids, including colorants; only colorants that were added during the manufacturing stage were included in the scope of this study, and colorants added at the point of sale were excluded
- Generic data sets used for material inputs, transport, and waste processing are considered good quality, but actual impacts from material suppliers, transport carriers, and local waste processing may vary
- The impact assessment methodology categories do not represent all possible environmental impact categories

Scenarios and additional technical information

Installation scenario TUFF-FLEX products are left to dry for one hour or until the surface feels tacky but does not pick up when touched. During drying, the solvent-based products emit VOCs is 19g/L.

Data quality assessment

Precision: The precision of the data is considered high. Product engineers provided detailed bills of materials, and facility managers provided utility information for the manufacturing facilities. The raw material transportation distances were calculated based on the raw material manufacturers' addresses, extracted from the relevant SDSs. Proxy datasets were utilized in the LCA model when secondary data were not available.

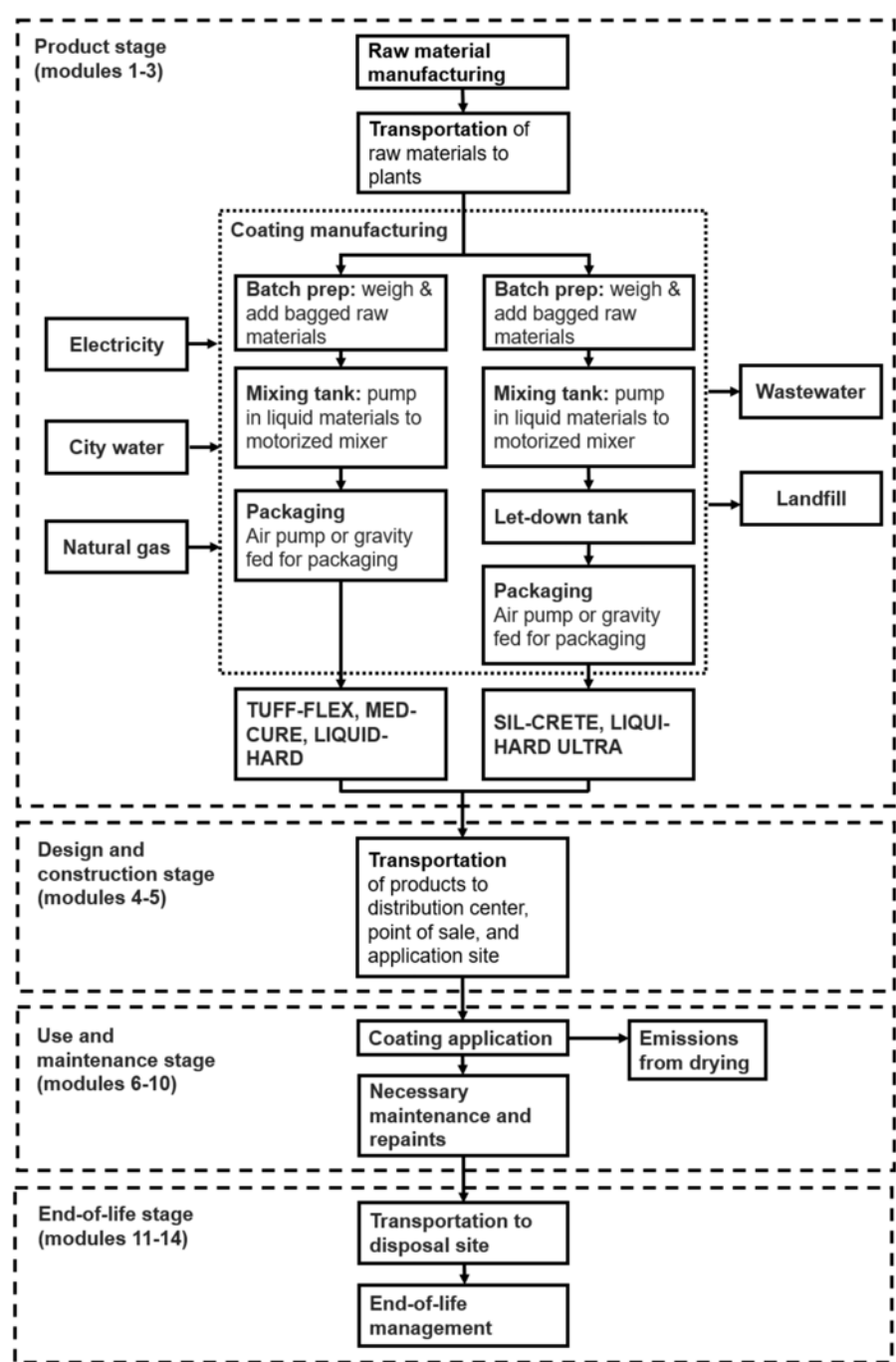
Completeness: The data included is considered complete. The LCA model included all known material and energy flows. As pointed out in that section, no known flows above 1% were excluded and the sum of all excluded flows totals less than 5%, whether evaluated by mass, energy, or potential environmental impact.

Consistency: The consistency of the model is considered high. The bills of materials provided by the product engineers were developed for multiple internal departments use and are maintained regularly.

The LCA practitioner also cross-referenced the installation documents and other relevant information to ensure consistency. Furthermore, modeling assumptions were consistent across the model, with preference given towards SimaPro data, where available.

Flow diagram

- LCIA results, resource use, output and waste flows, and carbon emissions & removals per functional unit (1m2) of TUFF-FLEX

[illegible]

Total use of non-renewable primary resources with energy content	MJ, NCV	7.25E+01	2.90E-01	1.02E+01	3.41E-01	6.80E-01	3.86E-01	9.90E-02	0	9.65E+01	5.11E-01	8.53E-02
Secondary materials	kg	0	0	0	0	0	0	0	0	0	0	0
Renewable secondary fuels	MJ, NCV	0	0	0	0	0	0	0	0	0	0	0
Non-renewable secondary fuels	MJ, NCV	0	0	0	0	0	0	0	0	0	0	0
Recovered energy	MJ, NCV	0	0	0	0	0	0	0	0	0	0	0
Use of net freshwater resources	m3	4.02E+00	1.21E-03	8.21E-01	1.42E-03	2.80E-03	2.43E-03	9.28E-03	0	0	1.19E-04	5.80E-04
Abiotic depletion (fossil fuels)	MJ, LHV	6.57E+01	2.72E-01	9.17E+00	3.19E-01	6.36E-01	3.62E-01	9.00E-02	0	8.74E+01	4.79E-01	8.00E-02
Output flows and waste category indicators												
Hazardous waste disposed	kg	2.73E+02	0	1.20E+01	0	0	3.57E-02	7.85E-01	0	2.99E+02	2.03E-02	1.38E-02
Non-hazardous waste disposed	kg	3.20E+00	0	1.21E+00	0	0	3.92E-04	5.75E-01	0	6.77E+00	4.17E-04	8.16E-05
High-level radioactive waste, conditioned, to final repository	kg	6.76E-06	4.71E-09	1.64E-06	5.53E-09	1.10E-08	4.69E-09	1.10E-08	0	1.01E-05	6.19E-09	1.39E-09
Intermediate- and low-level radioactive waste, conditioned, to final repository	kg	1.54E-05	1.05E-08	3.83E-06	1.23E-08	2.46E-08	1.48E-08	2.94E-08	0	2.32E-05	1.33E-08	3.16E-09
Components for re-use	kg	0	0	0	0	0	0	0	0	0	0	0
Materials for recycling	kg	0	0	0	0	0	0	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0	0	0	0
Exported energy	MJ	0	0	0	0	0	0	0	0	0	0	0
Carbon emissions and removals												
Biogenic Carbon Removal from Product	kg CO2	0	0	0	0	0	0	0	0	0	0	0
Biogenic Carbon Emission from Product	kg CO2	0	0	0	0	0	0	0	0	0	0	0
Biogenic Carbon Removal from Packaging	kg CO2	-2.76E-03	0	0	0	0	0	-5.52E-03	0	0	0	0
Biogenic Carbon Emission from Packaging	kg CO2	0	0	2.76E-03	0	0	0	5.52E-03	0	0	0	0
Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes	kg CO2	0	0	0	0	0	0	0	0	0	0	0
Calcination Carbon Emissions	kg CO2	0	0	0	0	0	0	0	0	0	0	0
Carbonation Carbon Removals	kg CO2	0	0	0	0	0	0	0	0	0	0	0
Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes	kg CO2	0	0	0	0	0	0	0	0	0	0	0



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LCA

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Contact us

How we make it greener

TUFF-FLEX

[Collapse all](#)

– RAW MATERIALS ACQUISITION

W. R. MEADOWS sources many materials domestically. Sourcing materials locally is more sustainable and results in a smaller carbon footprint for several reasons. It reduces transportation emissions by avoiding long-distance and overseas shipping, cutting fuel use and greenhouse gas output.

Supporting domestic industries strengthens local economies and promotes sustainable practices, reducing reliance on global supply chains. Local sourcing ensures efficient logistics, as materials are transported over shorter distances, saving energy in storage and transit. Finally, it eliminates dependence on energy-intensive transport modes like cargo ships and planes, which consume large amounts of fossil fuels. Domestic sourcing supports the environment and creates more resilient, eco-friendly supply chains.



– TRANSPORTATION

W. R. MEADOWS manufactures in Canada. Sourcing materials domestically can be more sustainable and result in a lower carbon footprint for several reasons:

- **Reduced transportation emissions:** Local sourcing eliminates the need for long-distance shipping, especially overseas transport, significantly reducing fuel consumption and greenhouse gas emissions.
- **Support for local economies:** Buying domestically strengthens local industries, encourages more sustainable practices, and reduces dependence on global supply chains.
- **Efficient logistics:** With materials sourced nearby, transportation and delivery are quicker and more efficient, requiring less energy for storage and transit.
- **Improved quality control:** Local suppliers are often easier to monitor, ensuring higher standards for sustainability practices in production.
- **Lower reliance on energy-intensive transport modes:** Overseas sourcing often depends on cargo ships and planes, which consume vast amounts of fossil fuels compared to domestic transportation.

In short, domestic sourcing benefits the environment and helps create more resilient and eco-conscious supply chains!



– MANUFACTURING

W. R. MEADOWS utilizes Continuous Improvement in its daily standard work for all manufacturing activities.

Front-line supervisors are the champions of OEE (Overall Equipment Effectiveness), which plays a crucial role in reducing energy consumption in manufacturing. It highlights any inefficiencies and directs our efforts to minimize unnecessary energy use. By closely monitoring equipment performance, OEE identifies periods of downtime, slow speeds, and quality defects, which can all lead to wasted energy. Moreover, OEE-driven improvements have led Meadows to more streamlined processes, better scheduling, and reduced machine wear, all of which contribute to lower energy costs and a more sustainable operation. This proactive approach not only decreases energy consumption but also helps manufacturers meet environmental goals and reduce their carbon footprint.

Further, OEE has helped Meadows to identify and reduce scrap by providing insights into equipment performance, highlighting areas where defects or inefficiencies occur during production. With improved equipment efficiency and fewer production delays, OEE ensures that processes run optimally, resulting in fewer errors and reduced waste. Ultimately, this leads to a higher-quality product with less material being wasted during the manufacturing process.



– USE & END OF LIFE

We understand the importance of end-of-life disposal. However, these products are meant to remain permanently adhered to their substrates, making them challenging to remove. As a result, they are typically landfilled during deconstruction or demolition.

