

Leadership in Energy & Environmental Design **LEED v.5**

Presented by

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Decarbonization: Reducing Emissions from Operations, Embodied, Refrigerants, and Transportation



WHAT IS DECARBONIZATION?

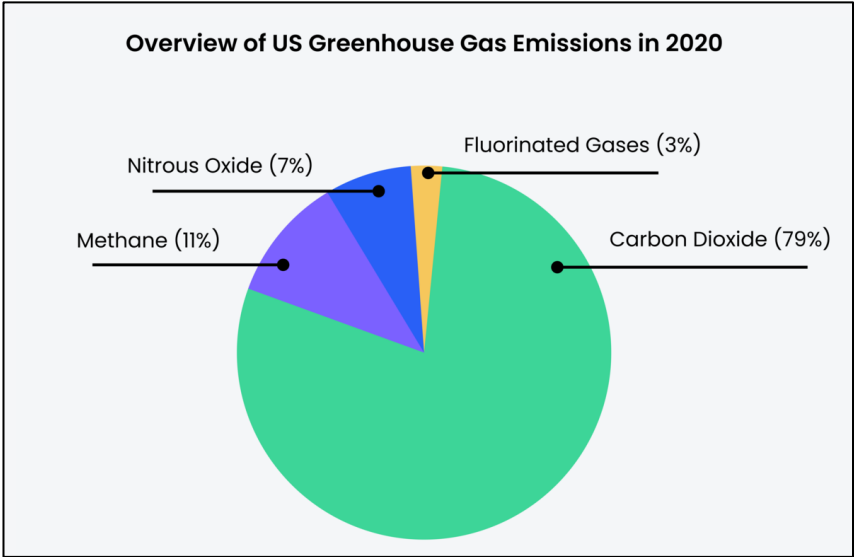
First step entails reducing the greenhouse gas emissions produced by the combustion of fossil fuels.



Greenhouse Gas Emissions: Providing Clear Steps for Achieving Ultra-Low Greenhouse Gas Emissions

WHAT ARE GREENHOUSE GAS EMISSIONS ?

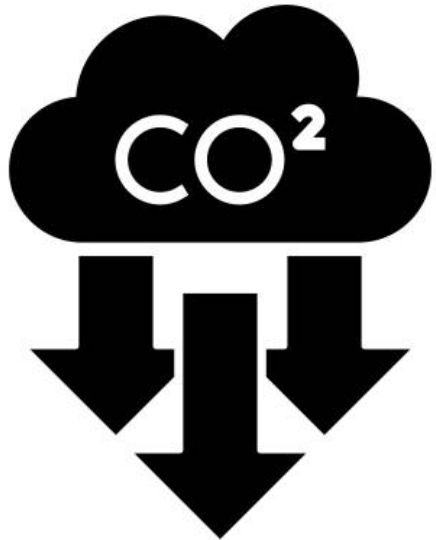
Gases released into the atmosphere that trap heat and cause global temperatures to rise.



SOURCE: www.Neto.com



Carbon Emissions: Addressing all Significant Sources of Carbon Emissions in Buildings



WHAT ARE CARBON EMISSIONS?

The release of carbon compounds, like carbon dioxide (CO_2) and methane (CH_4), into the atmosphere.

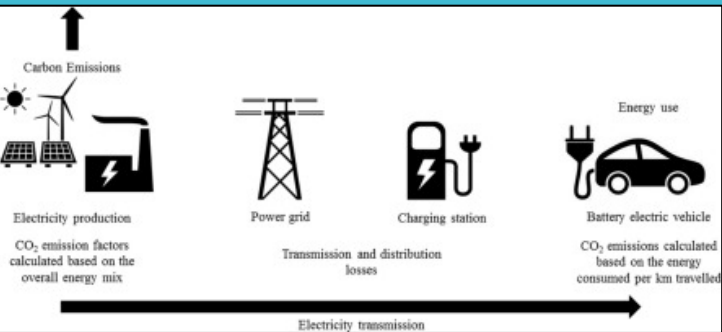


Building Material	Carbon Emission Percentage
Cement	30.3
Ceramic	20.3
Steel	18.7
Lime	7.9
Mortar	6.9
Gravel	2.9
Aluminum	2.3
Prefabricated concrete	2.0
Additives	1.5
Wood	1.1
PVC	1.0
Others	5.0

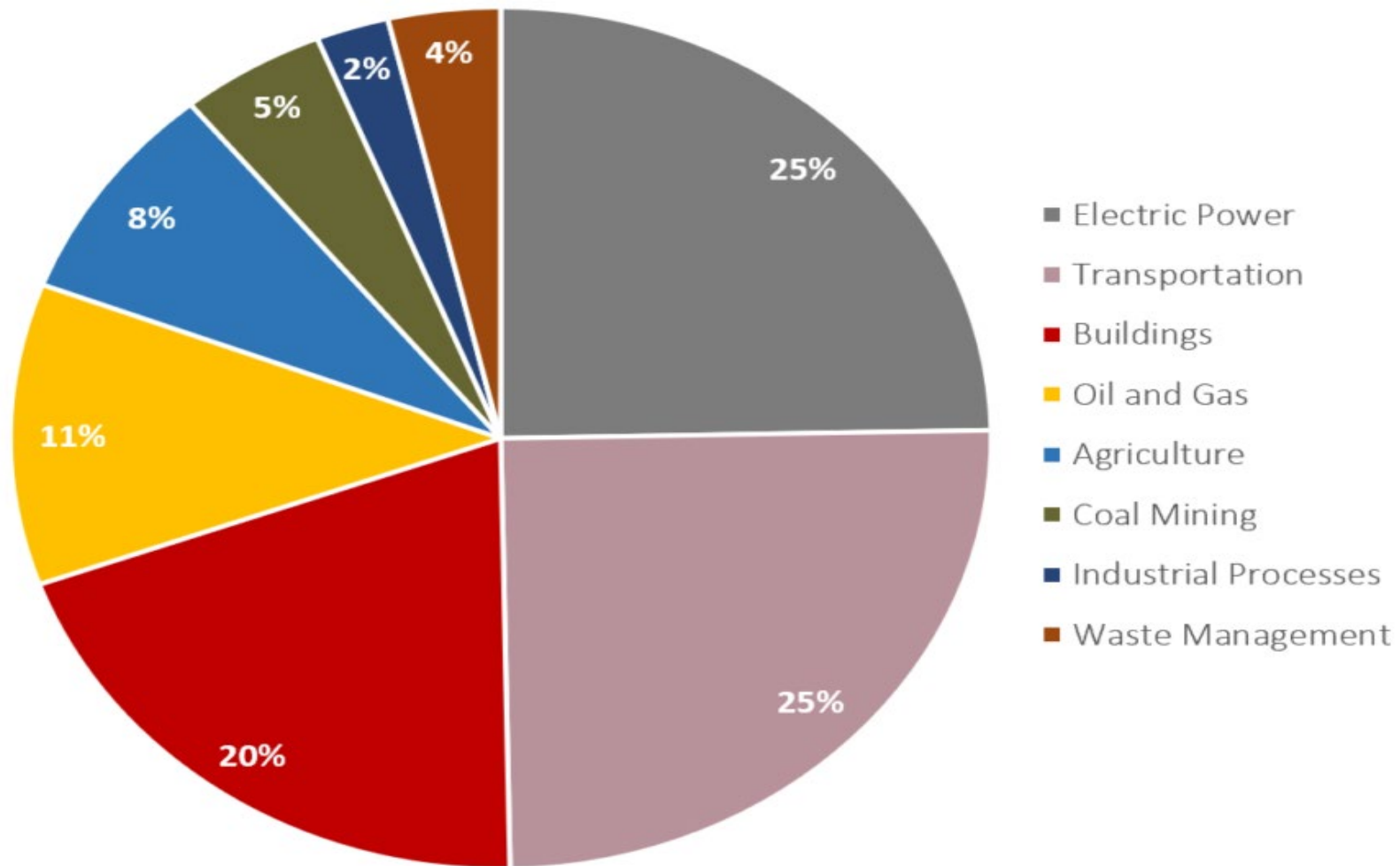


WHAT IS EMBODIED CARBON?

Consumption of Energy Used During Extraction, Refining, Processing, Transportation and Fabrication



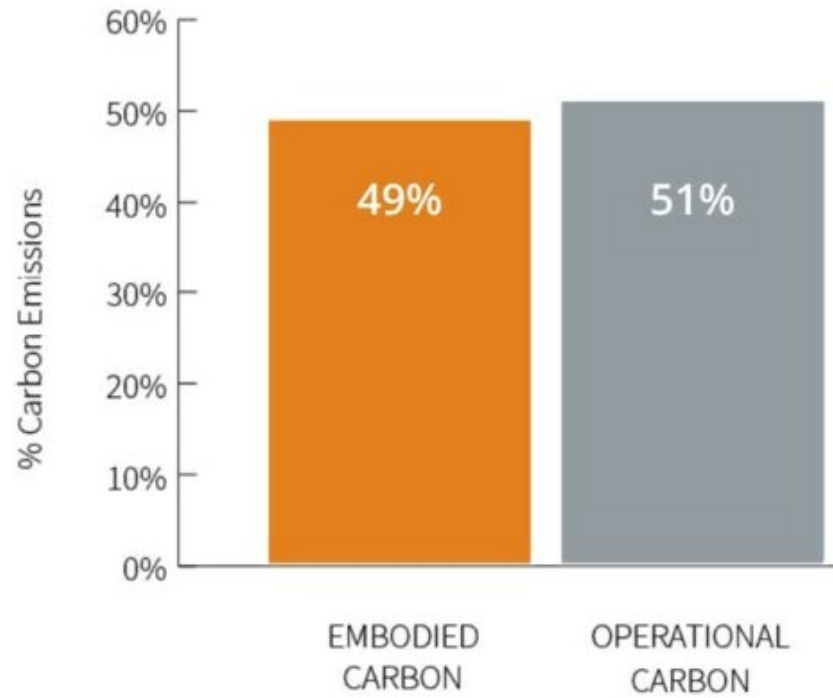
2020 Carbon Emissions by Sector: 126 MMT CO₂e





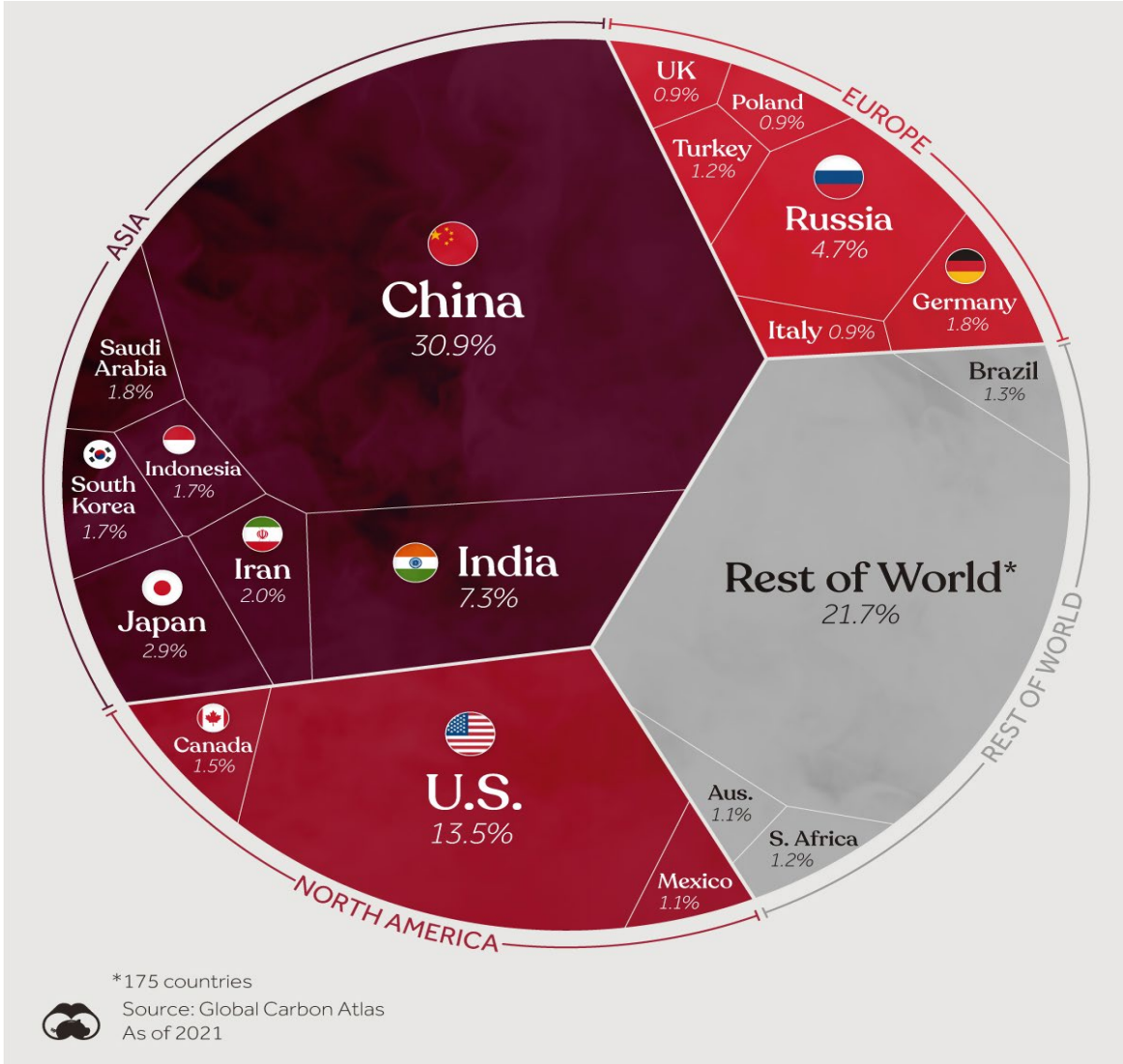
Total Carbon Emissions of Global New Construction from 2020-2050

Business as Usual Projection



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UN Environment Global Status Report 2017; EIA International Energy Outlook 2017

All the World's Carbon Emissions





Our vision:

By 2030, all new buildings, infrastructure and renovations will have at least 40% less **embodied carbon** with significant **upfront carbon** reduction, and all new buildings must be net zero **operational carbon**.

By 2050, new buildings, infrastructure and renovations will have net zero **embodied carbon**, and all buildings, including existing buildings, must be net zero **operational carbon**.



LEED **V5**

The U.S. Green Building Council (USGBC) is expected to fully release the next standard in the Leadership in Energy and Environmental Design (LEED) Certification process, LEED v5, in early 2025. Council (USGBC) expects

LEED v5 Materials & Resources

- **MR Prerequisite: Planning for Zero Waste Operations**
- **MR Prerequisite: Assess Embodied Carbon**
- MR Credit: Building and Materials Reuse
- **MR Credit: Reduce Embodied Carbon**
- **MR Credit: Low-Emitting Materials**
- **MR Credit: Optimized Building Products**
- MR Credit: Construction and Demolition Waste Diversion



REDUCE EMBODIED CARBON

“To track and reduce embodied carbon of major structural, enclosure, and landscape materials from construction processes on new construction and renovation projects.”

LEED v5 Requirement - Options:

- Whole Building Life-Cycle Assessment
- Procurement EPD Analysis: Project-Average Approach
- Procurement EPD Analysis by Material Category



Reduce embodied carbon of major structure, enclosure, and hardscape materials:

- Asphalt
- Concrete
- Cement
- Concrete Masonry Units (CMU)
- Glass
- Board and Foam Insulation
- Steel
 - Hollow Structural Sections
 - Hot Rolled Sections
 - Cold Formed and Galvanized

Note: Cradle-to-Gate minimum requirement



LOW-EMITTING MATERIALS

“To reduce concentrations of chemical contaminants that can damage air quality and the environment, and to protect the health, productivity, and comfort of installers and building occupants.”

LEED v5 Requirement:

- Insulation must have qualifying third-party certification that demonstrates testing according to the California Department of Public Health (CDPH) Standard Method v1.2-2017. For example, a product has Greenguard Certification.
- Adhesives and Sealants must meet SCAQMD Rule 1168.



**The American
Institute
of Architects**

MATERIALS PLEDGE

- Human Health
- Social Health and Equity
- Ecosystem Health
- Climate Health
- Circular Economy

NOTE: Optimized Building Materials Category of LEED v5 is based on these values.

OPTIMIZED BUILDING MATERIALS

“To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically, and socially preferable impacts.”

LEED v5 Requirement:

- Choose nonstructural building products that meet multiple optimization criteria
- Consider five impact area: climate health, human health, ecosystem health, social health and circular economy

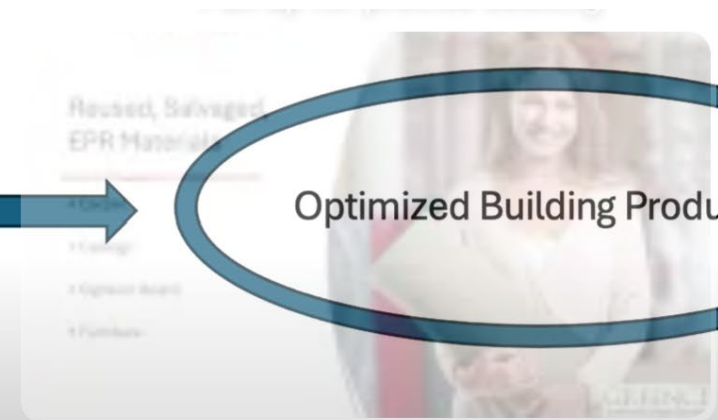


LEED v4.1 Categories Removed

Material Ingredients

Environmental Product Declarations

Sourcing of Raw Materials



Optimized Building Products

Multi-attribute Certifications

A	B	C	D	E	F
Eligible Product Documentation	Climate Health	Human Health	Ecosystem Health	Social Health & Equity	Circular Economy

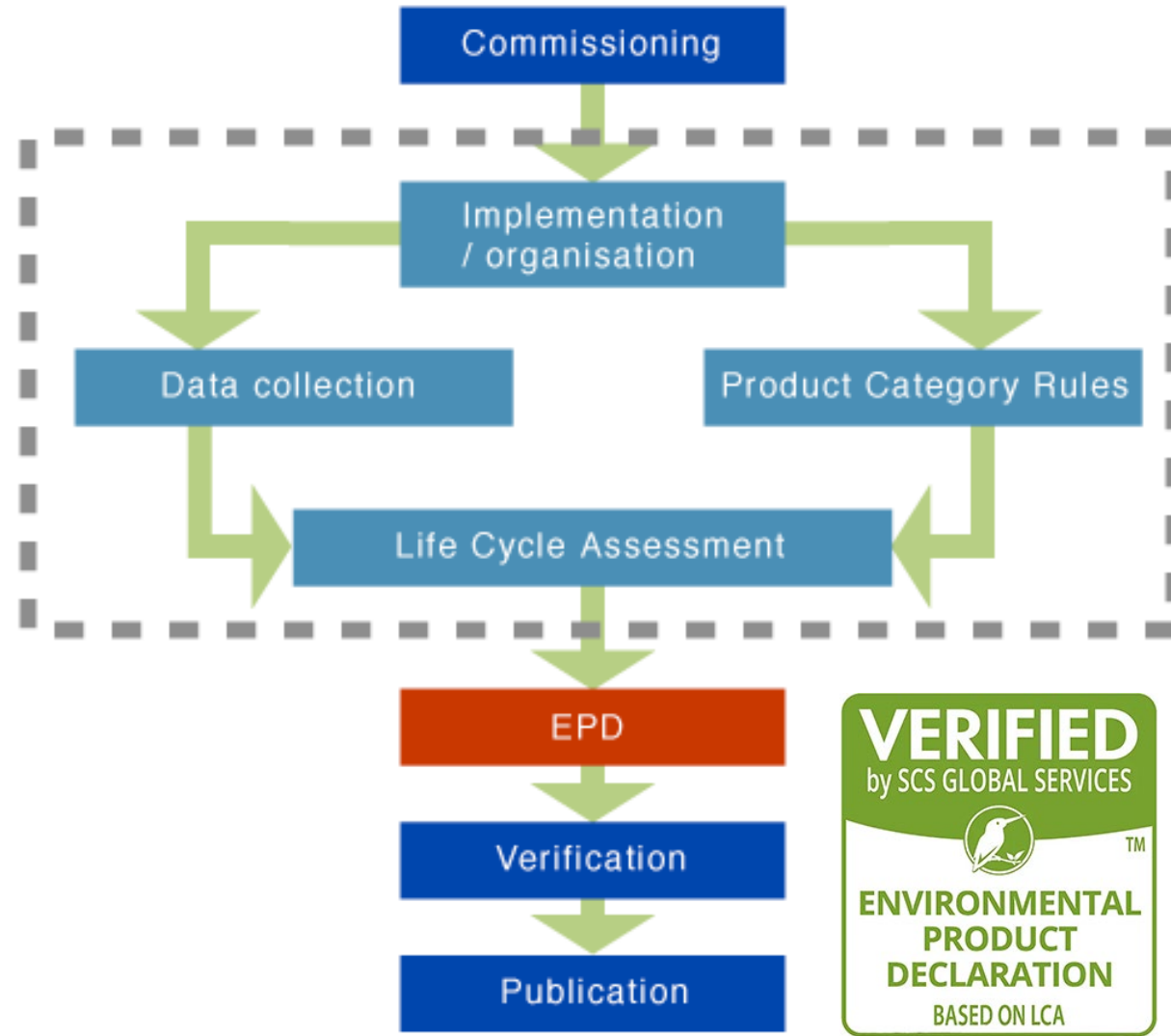
Multi-attribute Certifications

Cradle to Cradle: Bronze	0.5	0.5	0.5	0.5	
Cradle to Cradle: Silver	0.5	1	1	0.5	0.5
Cradle to Cradle: Gold or Pt.	1	1	1	1	1
BIFMA e3 / level		0.5	0.5		
Living Product Challenge	1	1			
Living Product Challenge w/ MHI	1	2	1		
FSC Certified			1.5	1	
SFI Chain of Custody			1	0.5	
Reused materials			1		1

Single Attributes

Industrywide EPD	0.5				
Product-Specific Type III EPD	1				
Optimized EPD, Tier 1 (15% better)	1.5				
Optimized EPD, Tier 2 (30% better)	2				
HPD: pre-checked for LEED		0.5			
HPD: third party verified		1			
Optimized HPD with verification		2			
Declare		0.5			
Declare: third party verified		1			
Global Green TAG PhD		0.5			
Product Lens		1			
Green Seal Certified		1.5			
GreenCircle Closed-Loop certified					2
TRUE Zero Waste manufacturer					1
FPR: carpet, gyp.board, furniture, ceilings					1
Recycled content					%
Biobased - nonwood					%

At minimum Building Product Manufacturers should meet three of these Single Attributes.





Health Product Declaration Open Standard

Version 2.3

July 20, 2023

Product Name by Product Manufacturer

HPD UNIQUE IDENTIFIER:
CLASSIFICATION:
PRODUCT TYPE:
PRODUCT DESCRIPTION:



Health Product
Declaration® v2.3

created via:

Section 1: Summary

Basic Method/Product Threshold

CONTENT INVENTORY

Inventory Reporting Format

- Nested Materials Method
- Basic Method

Threshold Disclosed Per

- Material
- Product

Threshold Level

- 100 ppm
- 1,000 ppm
- Per GHS SDS
- Other

Residuals/Impurities

- Completed
- Partially Completed
- Not Completed

Explanation(s) provided:

- Yes
- No

For all contents above the threshold, the manufacturer has:

Characterized

Provided weight and role

- Yes
- No

Screened

Provided screening results using HPDC-approved methods.

- Yes
- No

Identified

Provided name and CAS RN or other identifier

- Yes
- No

CONTENT IN DESCENDING ORDER OF QUANTITY

Summary of product contents and results from screening individual chemical substances against HPD Priority Hazard Lists and the GreenScreen for Safer Chemicals®. The HPD does not assess whether using or handling this product will expose individuals to its chemical substances or any health risk. Refer to Section 2 for further details.

PRODUCT | MATERIAL OR SUBSTANCE | RESIDUAL OR IMPURITY
GREENSCREEN SCORE | HAZARD TYPE

Number of Greenscreen BM-4/BM-3 contents:

Contents highest concern GreenScreen
Benchmark or List translator Score:

Nanomaterial:

INVENTORY AND SCREENING NOTES:

CIRCULAR ECONOMY



**MADE WITH
RECYCLED
MATERIALS**



Weight %		
<u>Pre-Consumer</u> (50%)	<u>Post-Consumer</u> (100%)	<u>Total</u>
2.8	45.1	47.9
3.3	39.5	42.8
1.5	31.8	33.3
1.7	24.9	26.6
2.4	22.6	25.0
2.9	17.3	20.2
5.1	15.3	20.4
2.2	40.4	42.6
2.5	34.4	36.9



HOW DO WE GET THERE AS AN ASSOCIATION?

Data collection

Third Party Verification

Publication



Different film suppliers
Different structures
Different chemical make-up
Proprietary structures

RIMA *International*
Reflective Insulation Manufacturers Association International

QUESTIONS AND ANSWERS

Thank you