Cradle to Cradle® Design and the Cradle to Cradle Certified^{CM} Program for Products

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BIZNGO

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MBDC Overview

- MBDC: McDonough Braungart Design Chemistry
  - Product and process design firm founded in 1995
  - Core staff of 15, located in Charlottesville, VA
  - Established network of partners and affiliates
  - Project teams staffed with engineers, basic scientists, chemists, IT experts and business strategists
- Dedicated to revolutionizing the design of products and services worldwide
- Originators of the Cradle to Cradle® philosophy and certification program

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Services

- Product Design and Development Consulting
- Sustainability Communications Consulting
- Chemical and Material Benchmarking for Human and Environmental Health
- Material and Product Optimization
- Consulting for the Cradle to Cradle Certified program

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“Design Chemistry”

- True merger of Chemistry and Design
- Achieving the highest standards of *design*
- Beginning with a scientific understanding of the basic *chemistry* of materials, products and processes
- Developing and implementing solutions to foster *profitable* and *regenerative* systems

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BASF
The Chemical Company
VICTOR
MechoShade Systems
The Architect's Choice™
gdiapers
Hycrete
HermanMiller
CSGROUP
PEPSICO
Allsteel®
Steelcase®
SLOAN
ALCOA
TARTAN®
The ORIGINAL Polyurethane Athletic Surface
YKK ap Quality inspires
DESIGN TEX
UNITED STATES POSTAL SERVICE®
FedEx Express
agion®
Nature's antimicrobial
WARRANTED TO BE A
PENDLETON
PENDLETON WOOLEN MILLS
PORTLAND, OREGON
SINCE 1863
CENTRIA
seventh GENERATION
ACCO BRANDS
IceStone®
DURABLE SURFACES MADE OF RECYCLED GLASS & CONCRETE
HAWORTH®
ACTION SPORTS ENVIRONMENTAL COALITION
A·S·E·C
Shaw™
SOLUTIA 6,6
Ultron®
PolySteel®

Cradle to Cradle Overview

What is Cradle to Cradle Design?

It's a process for creating products that:

- Use only those materials/chemicals that are safe for human and environmental systems
- Are designed to facilitate the recovery of those materials via product reuse, true recycling of product, or safe composting of product
- Maximize the use of renewable energy during manufacture and use
- Respect the local watershed
- Are manufactured in a socially responsible way

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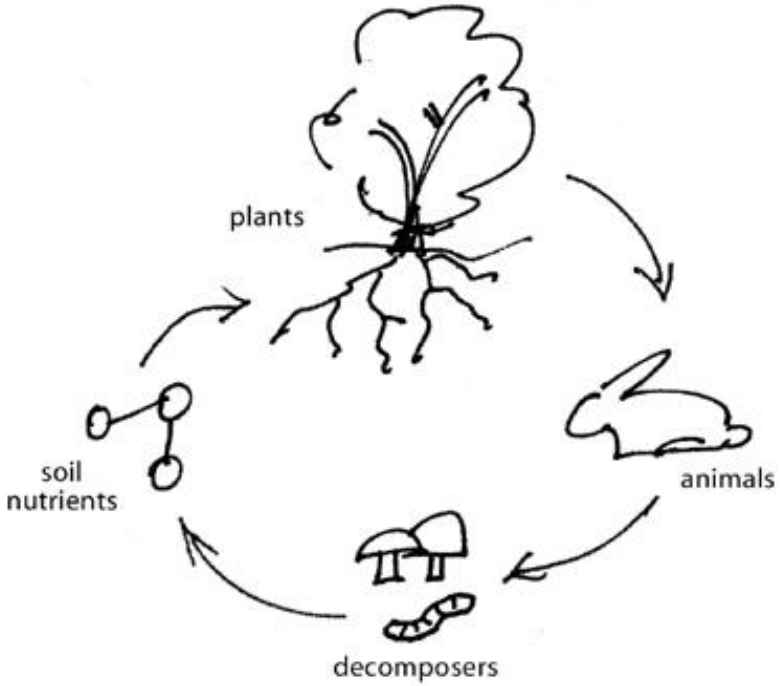
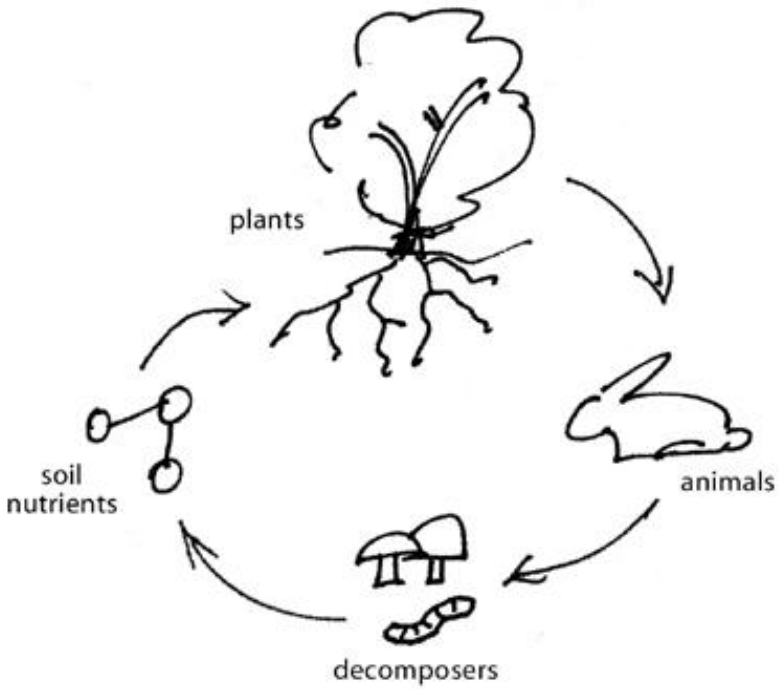
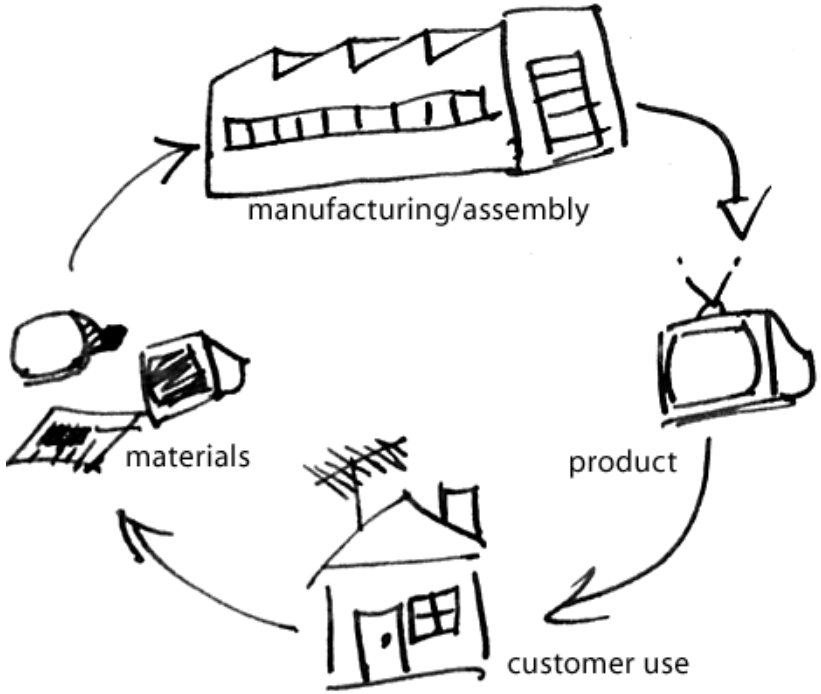
Natural Cycles



Biology 101

Emulating Natural Cycles

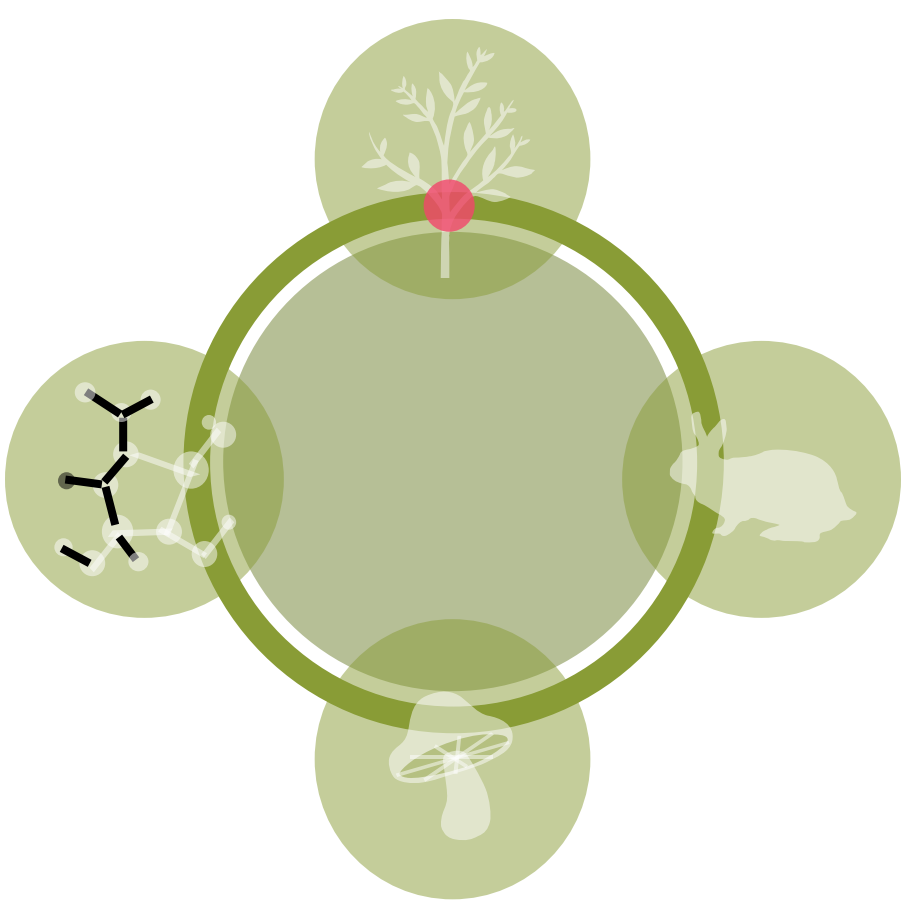




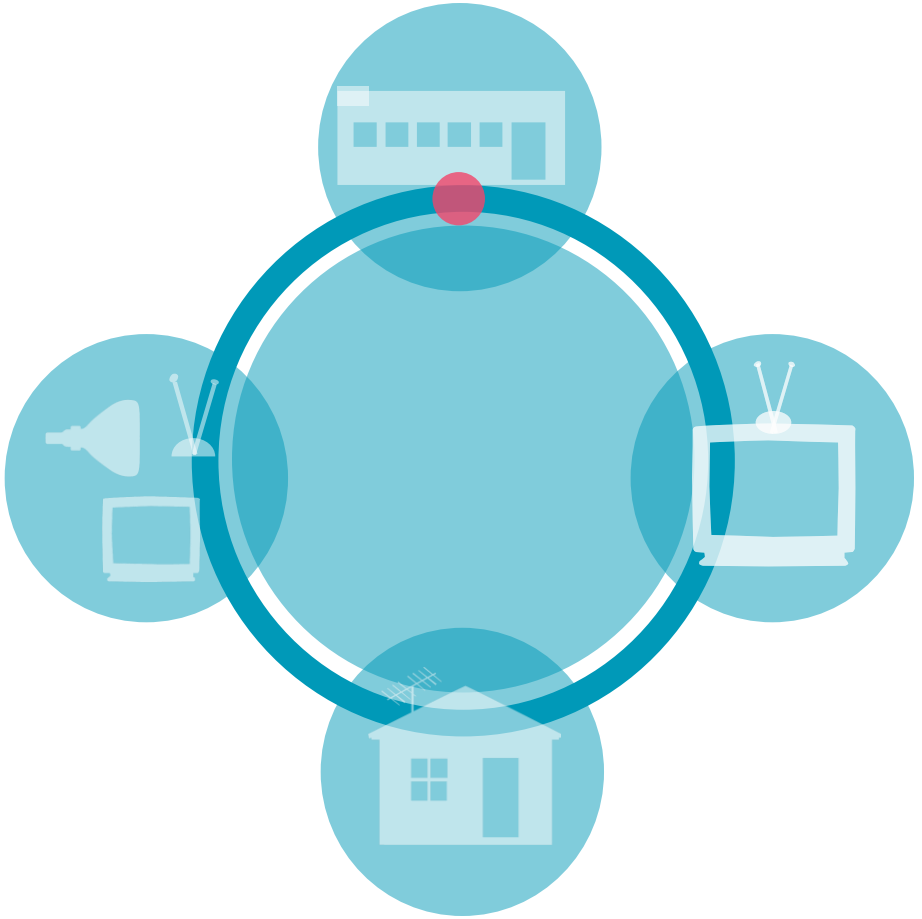
Biological Nutrients

Technical Nutrients

Two Metabolisms



Biological Metabolism

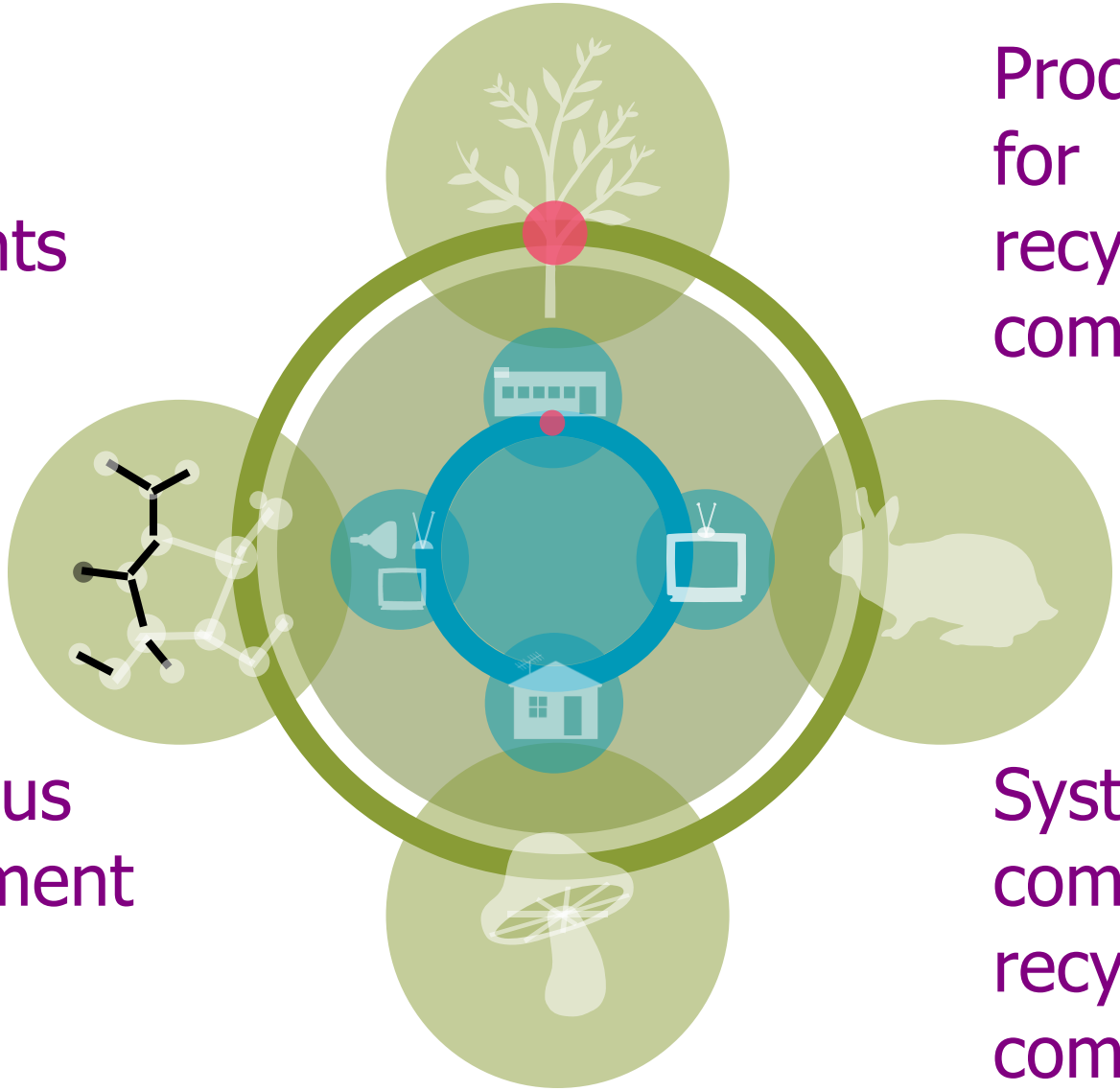


Technical Metabolism

Nested, Interdependent Metabolisms

Safe, healthy ingredients

Product design for recyclability / compostability



Continuous improvement

Systems for complete recycling / composting

Cradle to Cradle Certified^{CM} Program for Products

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Cradle to Cradle Products Innovation Institute

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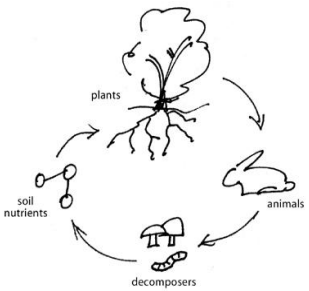
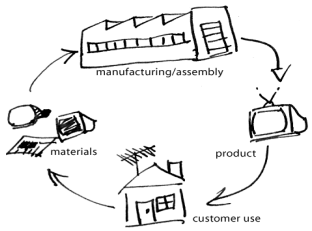
Cradle to Cradle Products Innovation Institute™





- Institute's primary role is to manage the product certification program and issue certificates
- Institute licensed to issue certificates under V.2.1.1 since August 2010
- Institute issued first certifications in January 2012
- Assessment Providers submit certification materials directly to C2CPII on V3

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Certification Stats

- Launched in October of 2005
- Over 125 Manufacturers Participating Representing More Than 10 Countries
- ~425 Certified Products
- Have External Advisory Board
- Managed By The Cradle to Cradle Products Innovation Institute
- Version 3.0 Implemented January 2013

Certification Overview (V3.0)

- Five-tiered program
- Applicable to all industry sectors
- Applicable to materials, sub-assemblies and finished products
- Part of EPA's Environmentally Preferable Purchasing program
- Part of USGBC LEED Innovation in Design (Commercial) and LEED for Homes programs
- Included in LEED v4
- Eligible to sell on eBay's World of Good

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Multi-attribute

- Material Health
- Material Reutilization
- Renewable Energy and Carbon Management
- Water Stewardship
- Social Fairness

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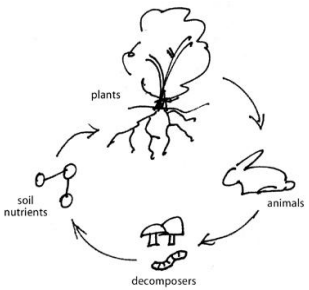
Certification Process

1. Application
2. Site Visit
3. Data Collection
4. Assessment
5. Submit Packet to C2CPII
6. Biennial Renewal

Certification Marks

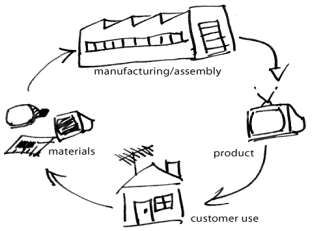
Marks licensed by C2CPII from MBDC

Transitioning



Current certification holders are granted 2 years to bring products up to compliance with Version 3.0 requirements, and will maintain their current certification status during that time.

New certifications are required to comply with Version 3.0.



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Certification Criteria

1.0 Materials

2.0 Material Reutilization/DfE

3.0 Energy & Carbon Management

4.0 Water

5.0 Social Fairness

- Combination of product metrics & company metrics
- Intention: spur innovation & ongoing optimization

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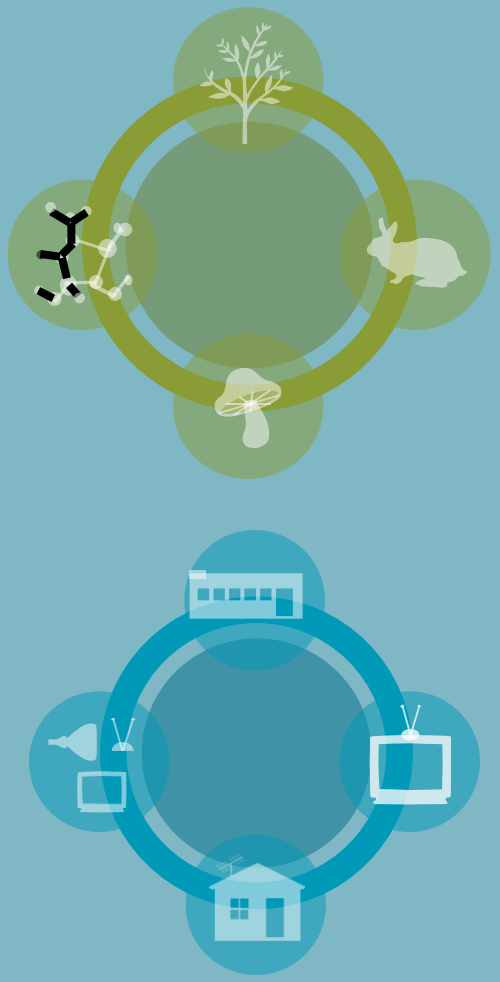
Material Health

The intent of the Material Health section is give manufacturers the tools to build products that are safe and healthy for humans and the environment from production to use to reuse.

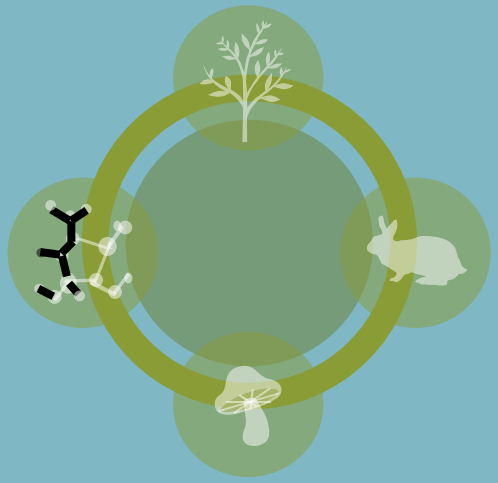


Material Health

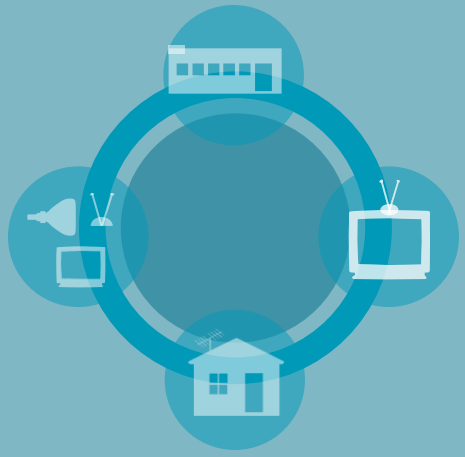
LEVEL	ACHIEVEMENT
BASIC	• The product is 100% characterized by its generic materials (e.g. Aluminum, Polyethylene, Steel, etc.) and/or product categories and names (e.g. coatings) • The appropriate metabolism (i.e. Technical or Biological) has been identified for the product and its components • The product does not contain any Banned List substances based on supplier declarations
BRONZE	• The product is at least 75% assessed (by weight) using A, B, C, X ratings. If a product contains EMCs, they will be considered assessed and will contribute to the overall percentage of the product that is assessed. For products that are entirely BN in nature (e.g. cosmetics, personal care, soaps, detergents, etc.) they must be at least 100% assessed. • A phase out/optimization strategy has been developed for those materials with an X rating
SILVER	• The product is at least 95% assessed (by weight) using A, B, C, X ratings. If a product contains EMCs, they will be considered assessed and will contribute to the overall percentage of the product that is assessed. For products that are entirely BN in nature (e.g. cosmetics, personal care, soaps, detergents, etc.) they are 100% assessed. • The product contains no substances known or suspected to cause cancer, birth defects, genetic damage, or reproductive harm (CMRs) after the A, B, C, X assessment has been carried out.
GOLD	• The product is 100% assessed using A, B, C, X ratings. All EMCs are considered to be assessed as non-X. • The products contains no X assessed materials (optimization strategy is not required) • Product meets C2C emissions standards
PLATINUM	• All process chemicals are assessed and none are assessed X

Material Reutilization

Material Reutilization is intended to create incentive for industry to eliminate the concept of "waste" by designing products with materials that may be perpetually recycled to retain their value.



The Program challenges companies to take more responsibility for creating the infrastructure and systems necessary for recovering and recycling materials as the nutrients necessary to fuel our global economies.



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Nutrient (Re)utilization Score

Combination of product's recyclability/compostability and recycled/renewable content

$$\frac{(\%\text{ of the product considered Recyclable or Compostable}) * 2 \; + \; (\%\text{ Recycled or Renewable content}) * 1}{3}$$

Example:

Product X components are 80% recyclable and 40% recycled content

$$\frac{[(80) * 2] \; + \; [(40) * 1]}{3} = 67$$

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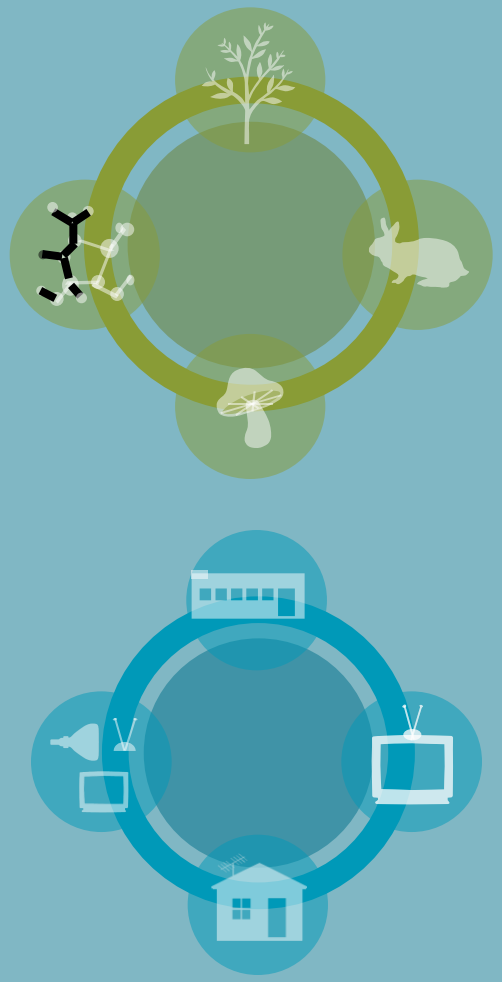
Material Reutilization

LEVEL	ACHIEVEMENT
BASIC	• Each generic material in the product is clearly defined as an intended part of a biological or technical cycle (this is covered by the material health requirement at BASIC; see material health guidance)
BRONZE	• Material Reutilization Score is between 35 and 50
SILVER	• Material Reutilization Score is between 51 and 65
GOLD	• Material Reutilization Score is between 66 and 99 • Company has completed “nutrient management” strategy for the product including scope, timeline, and budget
PLATINUM	• Material Reutilization Score equal to 100 • Product is actively being recovered and cycled in either a technical and/or biological metabolism

Renewable Energy & Carbon Management

Cradle to Cradle® design envisions a future in which industry and commerce positively impact energy supply, ecosystem balance, community, and ultimately strive to keep carbon in soil and vegetation. This is a future powered by renewable energy and built on circular material flows: use renewable energy and eliminate the concept of waste.

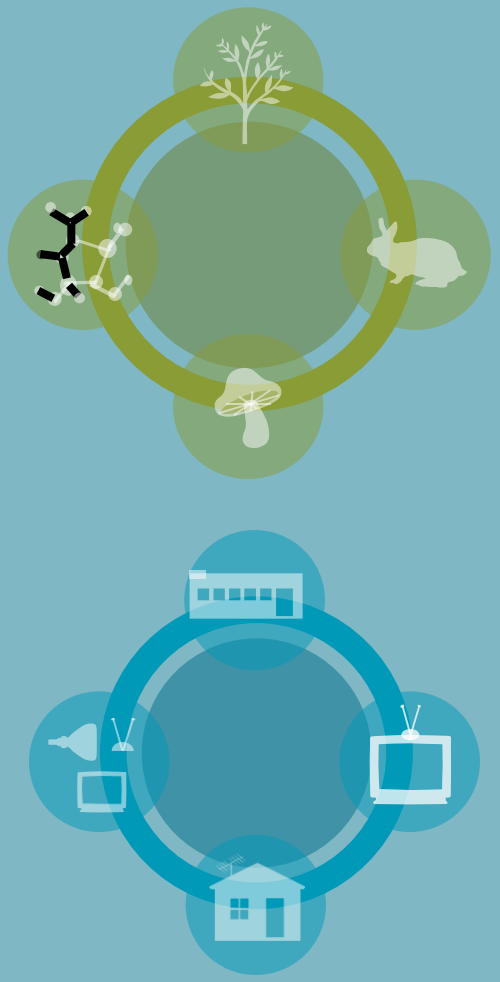


Renewable Energy & Carbon Management

LEVEL	ACHIEVEMENT
BASIC	• Energy use and carbon emissions relevant to the product are characterized (product allocated scope 1 emissions and purchased electricity)
BRONZE	• A renewable energy use and carbon management strategy is developed
SILVER	• 5% of purchased electricity and scope 1 emissions as estimated at the Basic level are covered by on-site renewable energy production, RECs, and/or offsets
GOLD	• 50% of purchased electricity and scope 1 emissions as estimated at the Basic level are covered by on-site renewable energy production, RECs, and/or offsets
PLATINUM	• >100% of purchased electricity and scope 1 emissions as estimated at the Basic level are covered by on-site renewable energy production, RECs, and/or offsets. • The embodied energy associated with the product from Cradle to Gate is characterized and quantified, and a strategy to optimize is developed. At re-application, progress on the optimization plan is demonstrated. • ≥ 5% of the embodied energy associated with the product from Cradle to Gate is covered by offsets or otherwise addressed (e.g., through projects with suppliers, product re-design, savings during the use phase, etc.).

Water Stewardship

The goal of the Water Stewardship category is to create awareness and drive towards the treatment of water as a valuable resource by encouraging effective management and use strategies. These goals are addressed within the Program by encouraging an understanding of, and responsibility for, water withdrawals, consumption, and releases within the local ecology, and awarding innovation in the areas of conservation, quality, and social equity.

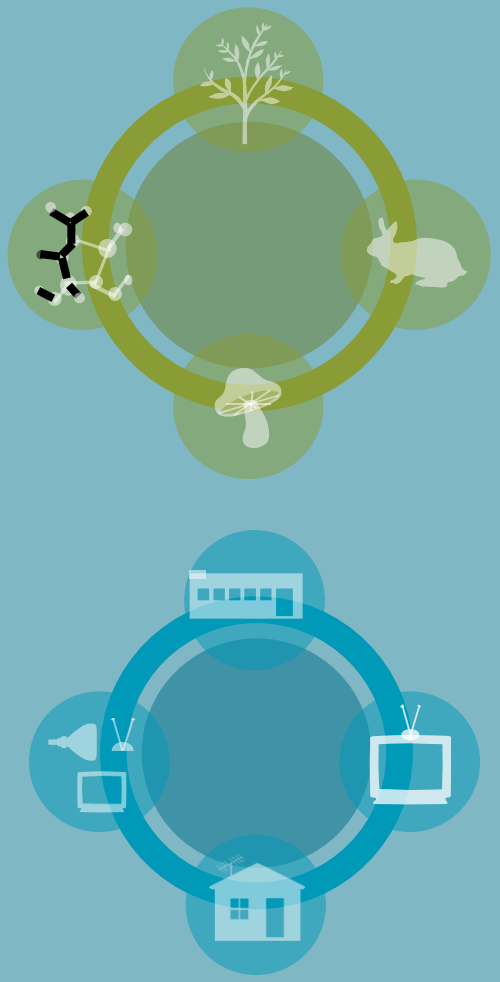


Water Stewardship

LEVEL	ACHIEVEMENT
BASIC	• All applicable effluent quality regulatory compliance thresholds are met • Local and business specific water related issues are characterized (for example, the manufacturer will determine if water scarcity is an issue and/or if sensitive ecosystems are at risk due to direct operations). • A statement of water stewardship intentions describing what action is being taken for mitigating identified problems and concerns is provided. At re-application, progress is demonstrated against any action plans
BRONZE	• A facility-wide water audit is competed
SILVER	• Product relevant effluent chemistry is characterized. OR • Supply chain-relevant water issues for at least 20% of Tier 1 suppliers are characterized and a positive impact strategy is developed (required for facilities with no product-relevant effluent).
GOLD	• Product relevant effluent chemistry is optimized (Effluents identified as problematic are kept flowing in systems of nutrient recovery; effluents leaving facility do not contain chemicals assessed as problematic) OR • Demonstrated progress against the strategy developed for the Silver level requirements (required for facilities with no product relevant effluent)
PLATINUM	• All water leaving the manufacturing facility meets drinking water quality standards

Social Fairness

The intent of the Social Fairness category is to ensure that progress is made towards sustained business operations that protect the value chain and contribute to all stakeholder interests including employees, customers, community members, and the environment. It is important for business ethics to go beyond the confines of the corporate office and permeate the supply chain, engaging responsible manufacturing, enforcing fair treatment of workers, and reinvesting in natural capital.



Social Fairness

LEVEL	ACHIEVEMENT
BASIC	• A streamlined self-audit is conducted to assess protection of fundamental human rights. • Management procedures aiming to address any identified issues are provided. Demonstration of progress against the management plan is required for renewal.
BRONZE	• A full social responsibility self-audit is complete and a positive impact strategy is developed (based on UN Global Compact Tool or B-Corp)
SILVER	COMPLETE ONE OF THE FOLLOWING • Material specific and/or issue-related audit or certification relevant to the product is complete (FSC Certified, Fair-trade, etc.; relevant to 25%+ of product) ***OR*** • Supply chain relevant social issues are fully investigated and a positive impact strategy is developed. ***OR*** • The company is actively conducting an innovative social project that positively impacts employee's lives, the local community, global community, social aspects of the product's supply chain or recycling/reuse.
GOLD	• Complete two of the three Silver-Level requirements above
PLATINUM	• Complete all of the Silver-Level requirements above • A facility level audit is completed by a third party against an internationally recognized social responsibility program (SA8000, B-Corp, etc.)

SUMMARY

BASIC:

- Provisional certification – maximum of 2 years
- Beginning to understand the product from a Cradle to Cradle perspective (understand emissions/energy footprint, water flows, etc.)
- Product's materials are fully characterized, but not assessed (i.e. generic material types are known but not all ingredients are known)
- Identifying appropriate metabolism for product and it's components

SUMMARY

BRONZE:

- Officially "in the game" from a Cradle to Cradle perspective
- The majority of the product has been assessed
- Optimization plans are in development for any X assessed materials
- Creating strategy for renewable energy/carbon offsets
- Gaining a better understanding of water and energy flows
- Performing a self-audit for social fairness

SUMMARY

SILVER:

- Product at least 95% assessed by weight with no highly problematic substances identified (X substances may still be present but none considered CMR)
- Optimization of problematic substances underway
- Introduced renewable energy and carbon offsets
- Expanding water stewardship and social fairness review to supply chain

SUMMARY

GOLD:

- Product is fully assessed and does not contain any X assessed substances
- At least 50% renewable energy and offsets for scope 1 emissions
- Continuing to expand scope of water and social issues to supply chain and local community where product is manufactured

SUMMARY

PLATINUM:

- Cradle to Cradle "holy grail"
- Waste = Food
- Energy positive
- Supply chain fully engaged

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QUESTIONS?