



MARKET OPPORTUNITIES FOR THE CRADLE TO CRADLE CERTIFIED^{CM} PRODUCTS PROGRAM



Prepared for USGBC

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INTRODUCTION

Protecting and enhancing indoor environments has always been an important issue for the U.S. Green Building Council (USGBC), and recently USGBC has been sharpening its focus on how green building can advance human health and well-being. The recently approved LEED v4 ratings systems reflect the increased emphasis on these topics and include new credits that reward the use of healthy building materials. Furthermore, the USGBC convened a Summit on Green Building and Human Health in January 2013 in which 100 experts from public, private and NGO sectors conversed about how green buildings can help preserve health as a human right and forged a path for stakeholders to continue to work together to promote health and well-being. At Greenbuild 2013, a Materials and Human Health Summit will bring together architects, designers, and product manufacturers to discuss the available tools for understanding building product ingredients and life cycle impacts and debate the solutions for overcoming challenges in this area.

Recently, the USGBC received a \$3 million grant from Google to catalyze the transformation of the building materials industry and accelerate the creation of healthier indoor environments. The grant focuses on three areas: supporting research on building materials and health, developing new transparency tools and engaging stakeholders from across the industry.

The USGBC is targeting the funds on increasing materials transparency and advancing the understanding of materials' impact on health.

As an initial step, the following market analysis identifies opportunities to increase the number of building products eligible for LEED v4 MRc4: Building Product Disclosure and Optimization—Material Ingredients (see Appendix). The use of Cradle to Cradle Certified^{CM} products in a building provides one of the possible pathways to earn points with MRc4, and this report provides recommendations for types of building products and materials with high potential to be optimized for human health and become Cradle to Cradle Certified. Emphasis is also given to materials and building product types with a high value and frequency of use.

This market analysis provides broad recommendations for selecting types of products and materials to prioritize for the Cradle to Cradle Certified program. However, the analysis is not intended to include all building products with potential to be Cradle to Cradle Certified. Product and material types not included in this report may also have potential to be Cradle to Cradle Certified. Furthermore, individual products or materials that fall into a recommended product category may not be good candidates for certification depending on the product's unique product formulation and manufacturing process.

“Health will be the biggest driver in the green building space in the next 20 years.”

- Rick Fedrizzi
CEO, USGBC

BACKGROUND



The Cradle to Cradle Certified^{CM} products program is a third party, multi-attribute certification administered by the Cradle to Cradle Products Innovation Institute that assesses a product's safety to humans and the environment and design for future life cycles. The program provides guidelines to help businesses implement the Cradle to Cradle[®] framework, which focuses on using safe and healthy materials that can be disassembled and recycled as technical nutrients or composted as biological nutrients.

The Cradle to Cradle Certified program emphasizes using healthy materials in products. All certified products must be free of all hazardous chemicals on the program's banned list. Products that are Cradle to Cradle Certified at or above the Basic level (C2C v2) or the Bronze level (C2C v3) must have a chemical inventory down to the 100 parts per million level conducted by an accredited assessor and have each material evaluated for toxicity to human and environmental health. At the Silver level (C2C v3), products can not contain any chemicals that are known carcinogens, mutagens, or reproductive toxins. Products certified at the Gold or Platinum levels (C2C v2 or v3) do not contain any materials of high risk to human or environmental health (i.e. X-Red Assessed). Because of these stringent requirements for material health, Cradle to Cradle Certified products are recognized in the LEED v4 MRc4 credit (see Appendix).

Unlike single-attribute eco-labels, the Cradle to Cradle Certified program takes a comprehensive approach to evaluating the design of a product and the practices employed in manufacturing the product. The materials and manufacturing practices of each certified product are assessed in five categories: Material Health, Material Reutilization, Renewable Energy Use, Water Stewardship, and Social Responsibility.

The Cradle to Cradle Certified program was developed in 2005 by McDonough Braungart Design Chemistry (MBDC). In 2010, William McDonough and Dr. Michael Braungart founded the non-profit Cradle to Cradle Products Innovation Institute to manage and administer the certification program as an independent third-party organization. MBDC gifted an exclusive license to the Institute for the certification program, certification marks and material assessment methodology.

MBDC is one of four worldwide accredited assessors for the certification program who evaluate products and guide manufacturers through the certification process. MBDC has worked with hundreds of building product manufacturers to inventory, assess, and optimize their products using the Cradle to Cradle Certified methodology. MBDC was selected among the program's four accredited assessors to conduct the market analysis due to the firm's expertise in building materials and experience in the program.

METHODOLOGY

As a result of the analysis, sixty product categories were identified as high potential candidates for the Cradle to Cradle Certified^{CM} Program. To arrive at this conclusion, MBDC first selected twelve product divisions for prioritization for certification. Next, five product categories (or subdivisions) from each of the twelve product divisions were selected. For each of these product categories, currently available Cradle to Cradle Certified products and priority materials that would facilitate certification were identified. Furthermore, approximate costs to certify a typical product in each product category is provided.

PRODUCT DIVISIONS

Twelve (12) product divisions (identified by Construction Specifications Institute (CSI) MasterFormat^{®1} numbers and titles) were selected based on the following considerations:

- Lack of available Cradle to Cradle Certified products in the division
- High potential for material health optimization, with priority given to divisions containing products that utilize materials with little to no toxicity
- High potential for quickly increasing number of certified products, with priority given to divisions containing products with simpler material compositions

Listed below are the twelve CSI MasterFormat Divisions selected for the market analysis:

- 03 Concrete
- 04 Masonry
- 05 Metals
- 06 Wood, Plastics, & Composites
- 07 Thermal and Moisture Protection
- 08 Openings
- 09 Finishes
- 10 Specialties
- 12 Furnishings
- 22 Plumbing
- 26 Electrical
- 32 Exterior Improvements

PRODUCT CATEGORIES (SUBDIVISIONS)

Within each of the twelve product divisions, five product categories were selected based on the following considerations:

- Inclusion of products in a wide range of applications
- High sales volumes or prevalence in commercial buildings

¹ MasterFormat[®] Numbers & Titles, April 2012: <http://www.csinet.org/numbersandtitles>

- High unit cost²
- High potential for optimization for material health (i.e. nontoxic base materials)
- High potential for disassembly and recycling or composting at end of use

PRIORITY PRODUCT CATEGORIES

Since architects and specifiers typically need alternates for each building product specified, this report prioritized product categories in which there are less than three options of Cradle to Cradle Certified^{CM} products available for consideration. The sixty product categories included in the analysis are prioritized for certification into three tiers based on the number of Cradle to Cradle Certified products. The top priority is given to product categories with zero certified products. The next priority is given to products with one or two certified products. The lowest priority is given to the categories that already have three or more certified products available.

PRIORITY MATERIALS

For each of the sixty product categories, materials were identified as a priority for assessment, optimization and certification. Priority materials are commonly used ingredients in more complex building products that have exhibited toxicity to humans and/or the environment. If these priority materials (or 'gateway materials') were optimized for safety to human and environmental health (and Cradle to Cradle Certified), they would facilitate certification for a wide range of more complex building products.

The priority materials identified in this market analysis are prioritized into three tiers based on:

- Degree of toxicity to human and environmental health
- Prevalence of the material in the priority product categories
- Availability of safe and healthy options in that material category

CERTIFICATION COSTS

A range of certification costs for each product category is provided to help manufacturers understand the potential investment required to certify their products. The certification costs are estimated by the projected complexity of a typical product in that category and based on the number of unique chemicals that are anticipated to be in the product down to the 100 parts per million level. The certification cost applies to a material palette, and product families (or groups of similar products) comprised of the same materials and manufactured using similar processes can be included in the certification for the same fee.

² RSMeans Cost Data, Building Construction Cost Data 2012, <http://rsmeans.reedconstructiondata.com>

However, actual certification costs can be outside of the range provided here and will vary based on the number of unique chemicals found in each specific product and the complexity of individual manufacturers' supply chains and processes. For instance, the number of chemicals expected to be found in the pigments, paints, coatings, finishes, and adhesives used in the products are taken into account and added to the cost of certification. Accordingly, two products that have similar base materials may have different certification costs based on the specific formulations used by the manufacturer and the number of color and finish options included in the product. Thus, products that have simpler chemical formulations than the average product in its category may have lower certification costs than the range listed in the report. Conversely, products with more complex formulations than the average product in its category may have higher certification costs than the range listed in the report.

Furthermore, certification costs can be mitigated if component materials in the product are already Cradle to Cradle Certified^{CM}. For example, the cost to certify a piece of furniture that uses a Cradle to Cradle Certified textile will be reduced, and the textile will not be included in calculating the cost of the certification. This is one reason why priority materials that are common to many building products are singled out in this market analysis. Increasing the number of Cradle to Cradle Certified materials will help reduce the certification cost for any building products that use these component materials.

Certification costs included in this report were approximated using MBDC's pricing model for certification fees. However, each accredited assessor for the Cradle to Cradle Certified program will have different pricing models. Actual costs will vary depending on the accredited assessor providing the pricing.

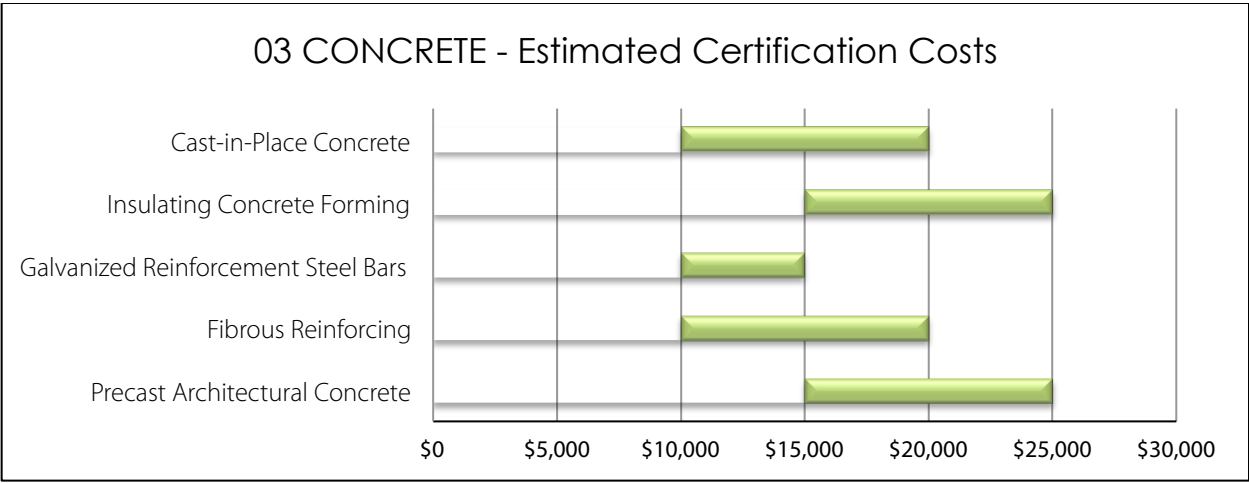
MARKET ANALYSIS

03 - CONCRETE



Photo Credit: Allied Concrete

Product Categories		Cradle to Cradle Certified Products	Priority Materials for Certification
03 11 19	Insulating Concrete Forming	○ None	○ Flame retardant foam ○ Cement and additives
03 21 13	Galvanized Reinforcement Steel Bars	○ None	○ Galvanized steel
03 24 00	Fibrous Reinforcing	○ None	○ Steel alloys ○ Cement and additives
03 30 00	Cast-in-Place Concrete	○ Allied Concrete 3000/3500/4000 PSI Concrete	○ Cement and additives (e.g. accelerators, retarders, anti-foam)
03 45 00	Precast Architectural Concrete	○ None	○ Cement plus additives



*Actual certification costs will vary based on the number of materials in each unique product, the complexity of individual manufacturer's supply chain and processes, and the accredited assessor providing the certification services.

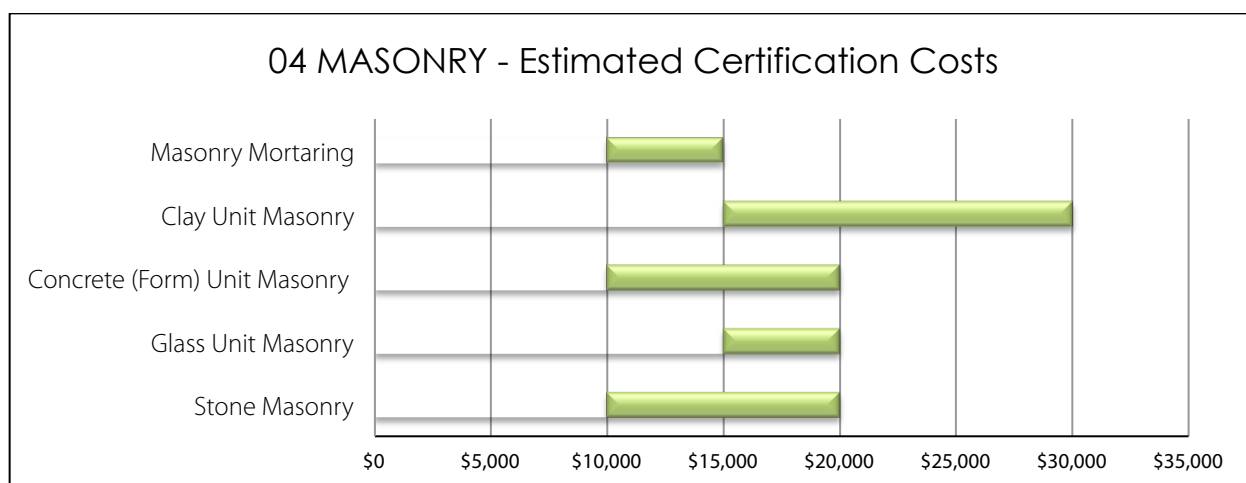
04 - MASONRY



Photo Credit: Allied Concrete

Product Categories	Cradle to Cradle Certified Products		Priority Materials for Certification
04 05 13 Masonry Mortaring	○ None		<ul style="list-style-type: none"> ○ Cement and additives including pigments ○ Hydrated lime (Calcium hydroxide)
04 21 00 Clay Unit Masonry	○ Daax Baksteen Zeddam BV,	Basic Level	<ul style="list-style-type: none"> ○ Clay and pigments/additives

Product Categories	Cradle to Cradle Certified Products	Priority Materials for Certification
	<ul style="list-style-type: none"> Handmade Bricks ○ Daax Baksteen Basic Level Zeddam BV, Waterstruck Bricks ○ Boral Bricks Inc., Silver Level Bricks ○ Crh Clay Solutions, Basic Level Bisschoprod Facing Bricks ○ Daax Baksteen Basic Level Zeddam BV, Extruded Bricks ○ Daax Baksteen Silver Level Zeddam BV, Click Brick 	
04 22 10 Concrete Unit 04 28 00 Masonry, Concrete Form Masonry Units	○ Allied Concrete, Silver Level Concrete Masonry Units	○ Concrete and additives
04 23 00 Glass Unit Masonry	○ None	○ Glass
04 43 00 Stone Masonry	○ Las Vegas Rock, Silver Level Meta-Quartzite Stone Products	○ Granite ○ Limestone and/or Sandstone



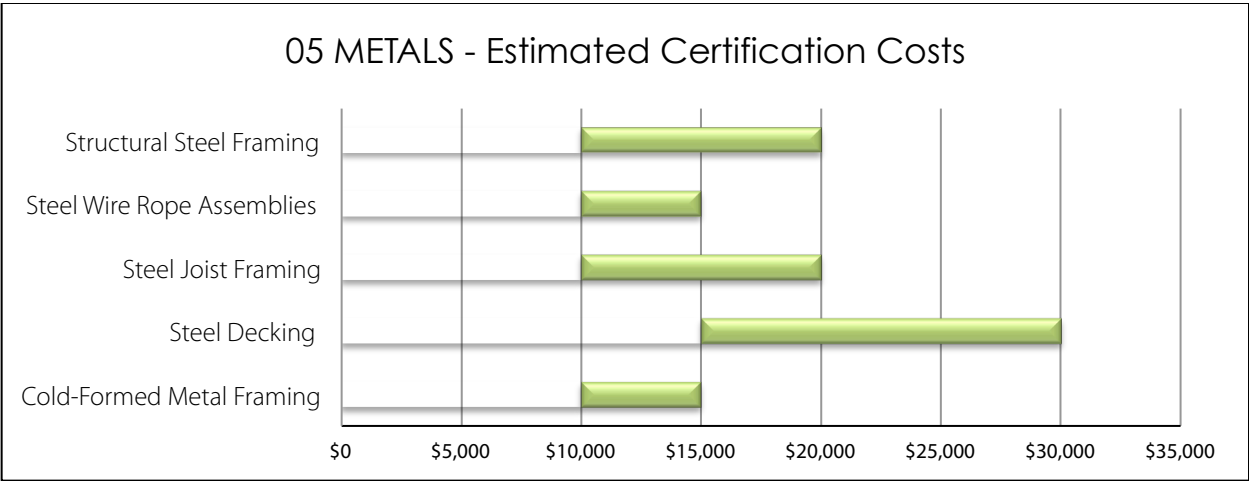
*Actual certification costs will vary based on the number of materials in each unique product, the complexity of individual manufacturer's supply chain and processes, and the accredited assessor providing the certification services.

05 – METALS



Photo Credit: ConXTech

Product Categories		Cradle to Cradle Certified Products		Priority Materials for Certification
05 12 00	Structural Steel Framing	○ ConXtech, ConXL & ConXR	Silver Level	○ Primer (Corrosion Protection)
05 15 16	Steel Wire Rope Assemblies	○ None		○ Steel
05 21 00	Steel Joist Framing	○ None		○ Primer (Corrosion Protection)
05 31 00	Steel Decking	○ HH Robertson Taproot/Q Floor	Silver Level	○ Paint Primer (protection during job site delivery)
05 40 00	Cold-Formed Metal Framing	○ None		○ Steel



*Actual certification costs will vary based on the number of materials in each unique product, the complexity of individual manufacturer's supply chain and processes, and the accredited assessor providing the certification services.

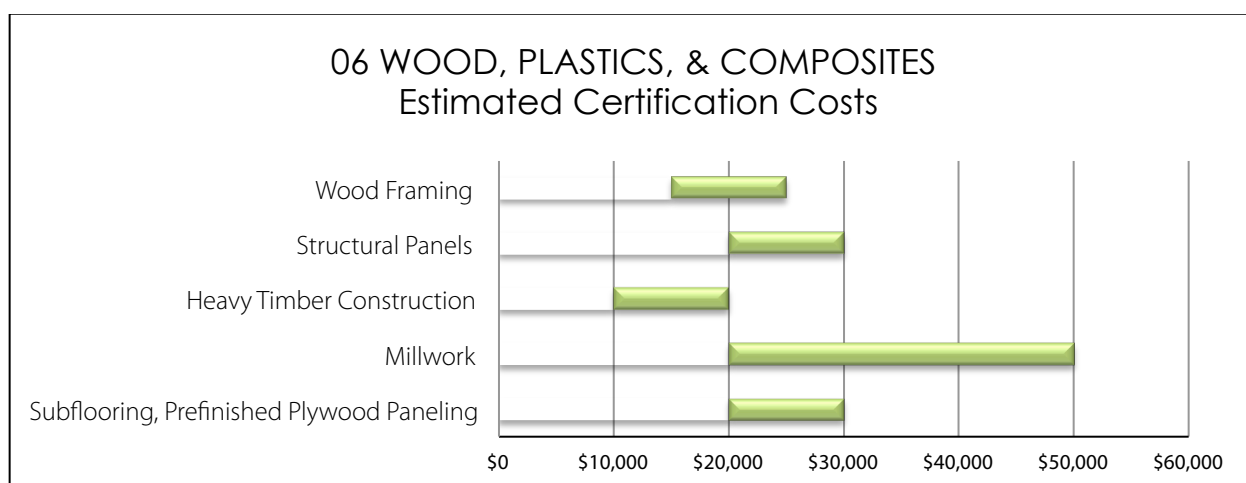
06 - WOOD, PLASTICS & COMPOSITES



Photo Credit: Accsys Technologies

Product Categories	Cradle to Cradle Certified Products	Priority Materials for Certification
06 11 00 Wood Framing	<ul style="list-style-type: none"> Thoma Holz GmbH, Thoma Holz100m Gold Level 	<ul style="list-style-type: none"> Low emitting and no added formaldehyde resin systems Responsibly Sourced Wood (no old growth)
06 12 00 Structural Panels	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Low emitting and no added formaldehyde

Product Categories	Cradle to Cradle Certified Products	Priority Materials for Certification
		<ul style="list-style-type: none"> resin systems Responsibly Sourced Wood (no old growth)
06 13 00 Heavy Timber Construction	<ul style="list-style-type: none"> Thoma Holz GmbH, Thoma Holz100m, Gold Level Accsys Technologies PLC, Accoya® Wood (Radiata Pine & Alder) Gold Level 	<ul style="list-style-type: none"> Responsibly Sourced Wood (no old growth) Wood Coatings
06 22 00 Millwork	<ul style="list-style-type: none"> Boral Composites, Inc., Boral TruExterior Trim 	<ul style="list-style-type: none"> Paint Wood & Composite Coatings Primer Responsibly Sourced Wood (no old growth)
06 16 23 Subflooring 06 25 16 Prefinished Plywood Paneling	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Low emitting and no added formaldehyde resin systems Responsibly Sourced Wood (no old growth) Wood Coatings



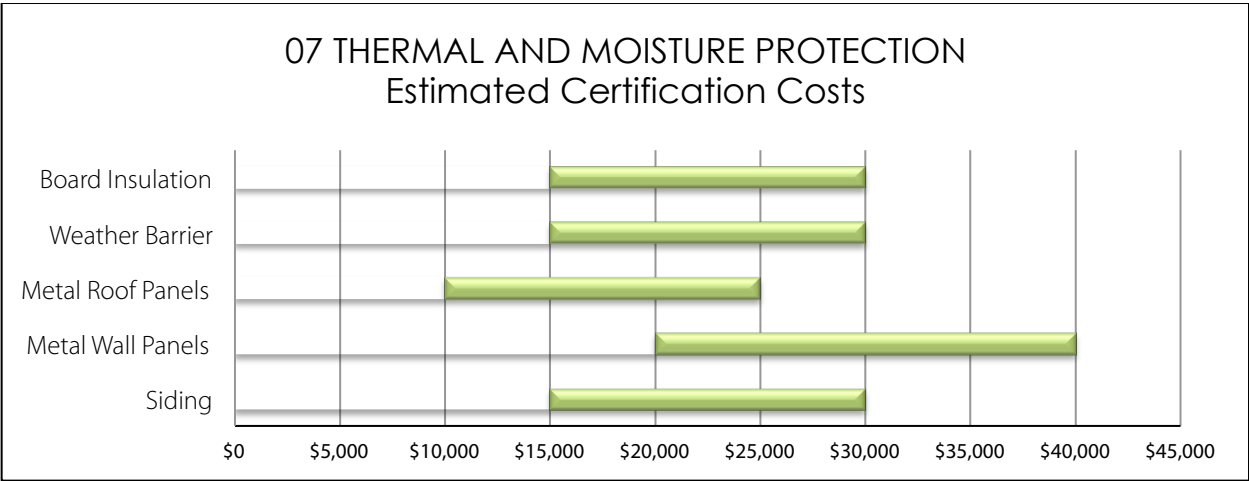
*Actual certification costs will vary based on the number of materials in each unique product, the complexity of individual manufacturer's supply chain and processes, and the accredited assessor providing the certification services.

07 - THERMAL AND MOISTURE PROTECTION



Photo Credit: Rheinzink

Product Categories	Cradle to Cradle Certified Products	Priority Materials for Certification
07 21 13 Board Insulation	<ul style="list-style-type: none"> ○ Dow, Styrofoam XPS Insulation Silver Level ○ Dow, Thermax Exterior Insulation Silver Level ○ Dow, Styrofoam SIS Structural Insulation Sheathing Basic Level 	<ul style="list-style-type: none"> ○ Flame-Retardant Foam ○ Blowing Agents
07 25 00 Weather Barrier	<ul style="list-style-type: none"> ○ Dow, Styrofoam SIS Structural Insulation Sheathing Basic Level 	<ul style="list-style-type: none"> ○ Elastomers
07 41 13 Metal Roof Panels	<ul style="list-style-type: none"> ○ RHEINZINK, PrePatina Titanium Zinc Roof and Façade Basic Level 	<ul style="list-style-type: none"> ○ Coatings ○ Steel Alloys
07 42 13 Metal Wall Panels	<ul style="list-style-type: none"> ○ RHEINZINK, PrePatina Titanium Zinc Roof and Façade Basic Level ○ CENTRIA EcoScreen Silver Level ○ CENTRIA Dimension Series 59/60 Silver Level 	<ul style="list-style-type: none"> ○ Flame-Retardant Foam ○ Coatings
07 46 00 Siding	<ul style="list-style-type: none"> ○ Highland Craftsmen, Barkhouse Shingle Siding Gold Level 	<ul style="list-style-type: none"> ○ Coatings



*Actual certification costs will vary based on the number of materials in each unique product, the complexity of individual manufacturer's supply chain and processes, and the accredited assessor providing the certification services.

08 - OPENINGS



Photo Credit: Schott

Priority Categories	Cradle to Cradle Certified Products		Priority Materials for Certification
08 12 16 Aluminum Doors and Frames	○ None		○ Coatings ○ Aluminum Alloys
08 44 00 Curtain Wall and Glazed Assemblies	○ Alcoa, Kawneer 1600 Wall System 1&2	Silver Level	○ Coatings ○ Aluminum Alloys ○ Glass ○ Sealants/Elastomers
	○ AGC Glass Europe, Planibel and Stoprey	Silver Level	

Priority Categories	Cradle to Cradle Certified Products	Priority Materials for Certification
	Float & Coated Glass ○ PPG Industries, Solarban and Solarcool Coated & Uncoated Glass Silver Level	
08 51 13 Aluminum Windows	○ Schott, PYRAN Platinum Fire-Rated Glass-Ceramic Silver Level	○ Coatings ○ Aluminum Alloys ○ Glass
08 52 00 Wood Windows	○ Schott, PYRAN Platinum Fire-Rated Glass-Ceramic Silver Level	○ Coatings/Paints ○ Glass
08 71 00 Door Hardware	○ None	○ Lead-free Brass Alloys



*Actual certification costs will vary based on the number of materials in each unique product, the complexity of individual manufacturer's supply chain and processes, and the accredited assessor providing the certification services.

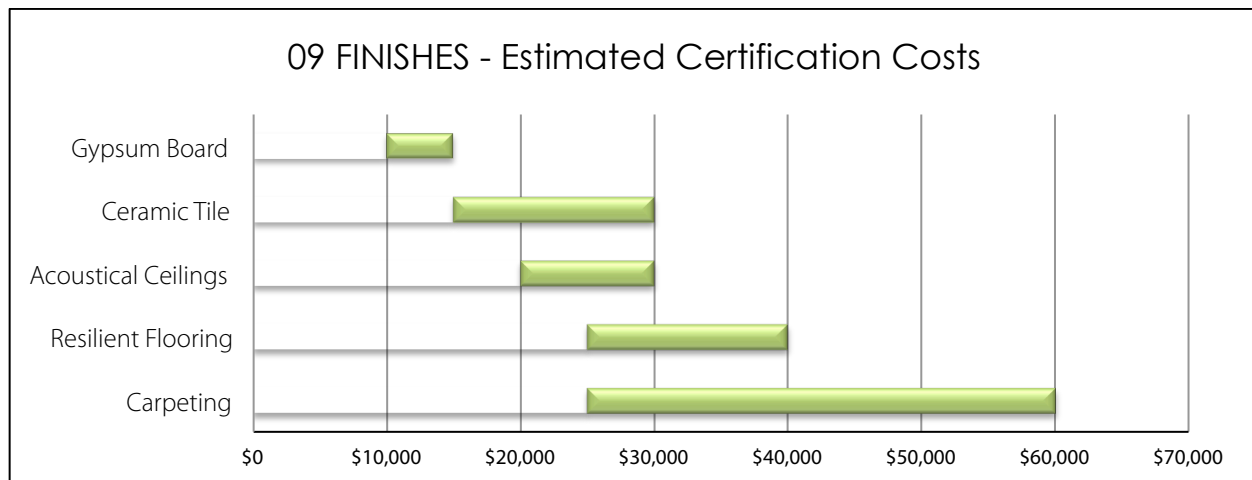
09 - FINISHES



Photo Credit: Shaw Industries

Priority Categories	Cradle to Cradle Certified Products		Priority Materials for Certification
09 29 00 Gypsum Board	○ None		○ Fly ash ○ Gypsum Raw Material
09 30 13 Ceramic Tiling	○ Koninklijke Mosa BV, Floor Tiles	Silver Level	○ Pigments
	○ Tagawa Sangyo Co. Ltd., Limix	Silver Level	
09 51 00 Acoustical Ceilings	○ Armstrong, Tierra Acoustical Ceiling Tile	Silver Level	○ Binders ○ Flame Retardants
	○ Armstrong, Perla OP 0.95	Basic Level	
	○ Armstrong, Bioacoustic Infill Panel	Silver Level	
	○ Armstrong, Alpina	Silver Level	
	○ Troldekt, Nature	Silver Level	
09 65 00 Resilient Flooring	○ Rosa Gres, Proyecta, Silver	Silver Level	○ Pigments ○ Top Coatings

Priority Categories	Cradle to Cradle Certified Products	Priority Materials for Certification
	<ul style="list-style-type: none"> ○ Tarkett, Silencio sf Linoleum Basic Level ○ Forbo, Linoleum / Marmoleum Silver Level 	
09 68 00 Carpeting	<ul style="list-style-type: none"> ○ Desso, Broadloom Business & Consumer Carpets Bronze Level (C2C v3) ○ Shaw, Anso and Unbranded Type 6 Nylon Carpet Silver Level ○ Shaw, EcoWorx Broadloom Silver Level ○ Bentley, Piece-Dyed Broadloom, Silver Silver Level 	<ul style="list-style-type: none"> ○ Topical Treatments (stain and soil) ○ Pigments



*Actual certification costs will vary based on the number of materials in each unique product, the complexity of individual manufacturer's supply chain and processes, and the accredited assessor providing the certification services.

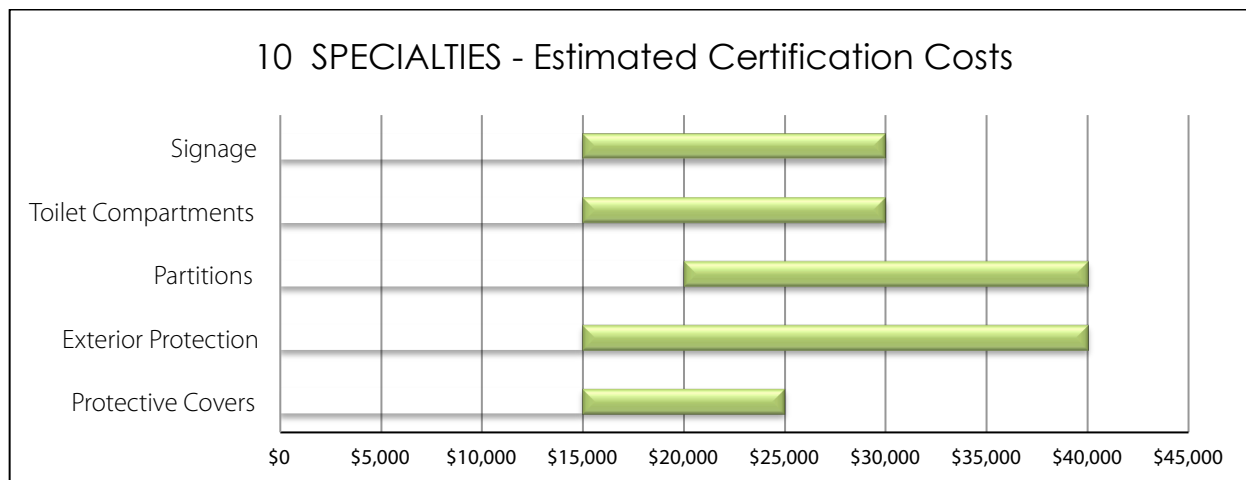
10 - SPECIALTIES



Photo Credit: Construction Specialties

Product Categories	Cradle to Cradle Certified Products	Priority Materials for Certification
10 14 00 Signage	<ul style="list-style-type: none"> ○ DanSign A/S, PlanSign <p>Basic Level</p>	<ul style="list-style-type: none"> ○ Aluminum Alloys ○ Steel Alloys ○ Paints & Pigments ○ Adhesives ○ Non-halogenated flame retardant polymers ○ Formaldehyde-free wood core
10 21 13 Toilet Compartments	<ul style="list-style-type: none"> ○ None 	<ul style="list-style-type: none"> ○ Steel Alloys ○ Non-halogenated polymers ○ Formaldehyde-free wood core ○ Powdercoats ○ Wood & Metal Coatings ○ Natural Stone ○ Vitreous China ○ Paints & Pigments
10 22 00 Partitions	<ul style="list-style-type: none"> ○ Herman Miller, My Studio <p>Silver Level</p>	<ul style="list-style-type: none"> ○ Data Cabling (Ethernet) ○ Non-halogenated

Product Categories	Cradle to Cradle Certified Products	Priority Materials for Certification
	<ul style="list-style-type: none"> ○ Interwand, Intersmart Wall System Basic Level ○ Steelcase, Privacy Wall Silver Level 	<ul style="list-style-type: none"> ○ flame retardant polymers ○ Formaldehyde-free wood core ○ Steel Alloy ○ Glass ○ Responsibly-sourced wood ○ Paints
10 71 00 Exterior Protection	<ul style="list-style-type: none"> ○ Construction Specialties, Sunshades (including Suspended, Shadowline, Cantilevered, Vertical & Horizontal, & Perform) Silver Level ○ YKK AP America, ThermaShade Silver Level ○ Alcoa, Kawneer 1600 SunShade, Silver Silver Level 	<ul style="list-style-type: none"> ○ Aluminum Coatings ○ Aluminum Alloys
10 73 00 Protective Covers	<ul style="list-style-type: none"> ○ None 	<ul style="list-style-type: none"> ○ Paints ○ Metal Finishes



*Actual certification costs will vary based on the number of materials in each unique product, the complexity of individual manufacturer's supply chain and processes, and the accredited assessor providing the certification services.

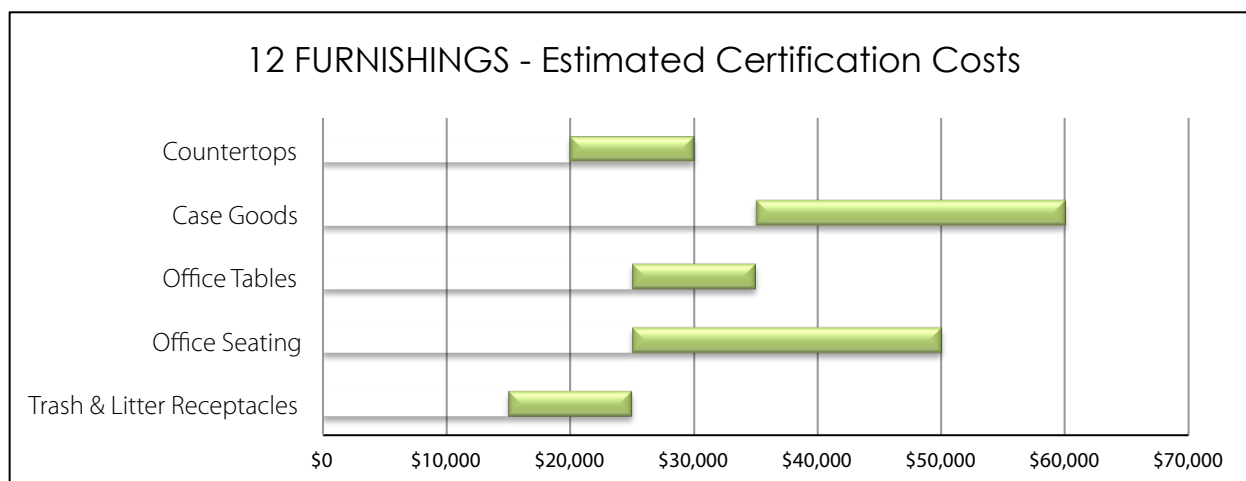
12 - FURNISHINGS



Photo Credit: Herman Miller

Product Categories	Cradle to Cradle Certified Products	Priority Materials for Certification
12 36 00 Countertops	<ul style="list-style-type: none"> ○ Icestone, Icestone Durable Surface, Gold Level ○ Cosentino, ECO Solid Surface Silver Level ○ Glass2 International, Glass2 Solid Surface Silver Level 	<ul style="list-style-type: none"> ○ Pigments ○ Sealants
12 51 16 Case Goods	<ul style="list-style-type: none"> ○ Herman Miller, Canvas Office Landscape Silver Level ○ Steelcase, c:scape, Montage, Tour, and Answer Silver Level ○ Steelcase, Garland, Elective Elements 6, and Walden Silver Level 	<ul style="list-style-type: none"> ○ Formaldehyde-free Wood Core
12 51 23 Office Tables	<ul style="list-style-type: none"> ○ Koninklijke Ahrend NV, A500 Tables Silver Level ○ Herman Miller, Everywhere Silver Level 	<ul style="list-style-type: none"> ○ Formaldehyde-free Wood Core ○ Optimized Edge Banding
12 52 23 Office Seating	<ul style="list-style-type: none"> ○ Ahrend, A2020 Desk Chair Silver Level 	<ul style="list-style-type: none"> ○ Foam (Flame Retardants & Blowing Agents)

Product Categories	Cradle to Cradle Certified Products	Priority Materials for Certification
	<ul style="list-style-type: none"> ○ Geiger International, Foray Chair Silver Level ○ Herman Miller, Sayl, Setu, Mirra, Caper, Celle, Aeron, and Embody Chairs Silver Level ○ Keilhauer, Simple 9323 Task Chair Silver Level ○ Koninklijke Ahrend NV, A230 & A250 Desk Chairs Silver Level ○ Steelcase, Leap, Amia, Siento, Move, and Think Chairs Silver Level ○ Stoll Giroflex AG, Giroflex G 656 Office Chair Silver Level 	<ul style="list-style-type: none"> ○ Adhesives
12 93 23 Trash & Litter Receptacles	<ul style="list-style-type: none"> ○ None 	<ul style="list-style-type: none"> ○ Optimized Polymers ○ Pigments



*Actual certification costs will vary based on the number of materials in each unique product, the complexity of individual manufacturer's supply chain and processes, and the accredited assessor providing the certification services.

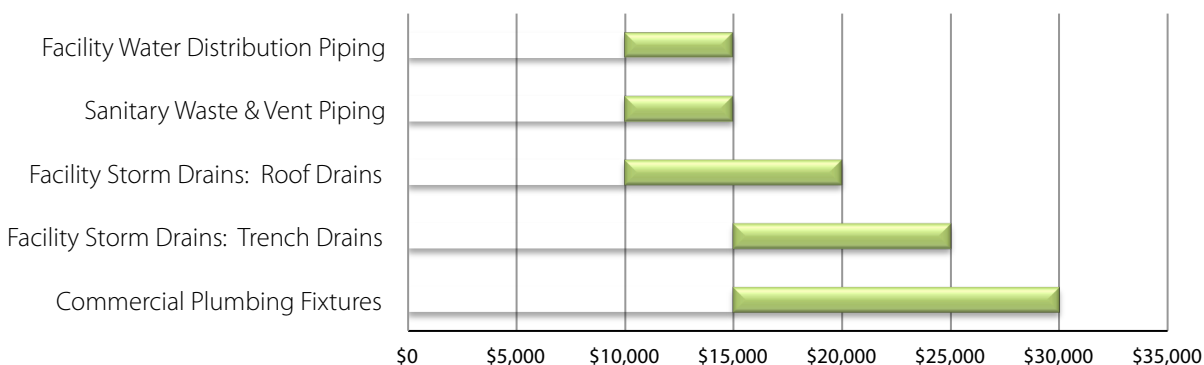
22 - PLUMBING



Photo Credit : Rheinzink

Product Categories		Cradle to Cradle Certified Products		Priority Materials for Certification
22 11 13	Facility Water Distribution Piping	○ None		○ Alternative polymers to PVC (e.g. PP pipes, PEX pipes)
22 13 16	Sanitary Waste & Vent Piping	○ Steinzeug-Keramo GmbH, Vitrified Clay Pipe Systems	Silver Level	○ Cast Iron
22 14 26.13	Facility Storm Drains: Roof Drains	○ Rheinzink, prePATINA Gutter and Downspouts	Basic Level	○ Aluminum and other metal alloys ○ Coatings and finishes for metals ○ Alternative polymers to PVC
22 14 26.19	Facility Storm Drains: Trench Drains	○ None		○ Concrete, cement and additives ○ Steel alloys ○ Lead free bronze
22 42 00	Commercial Plumbing Fixtures	○ None		○ Vitreous china ○ Lead free brass ○ Hexavalent chrome free plating

22 PLUMBING - Estimated Certification Costs



*Actual certification costs will vary based on the number of materials in each unique product, the complexity of individual manufacturer's supply chain and processes, and the accredited assessor providing the certification services.

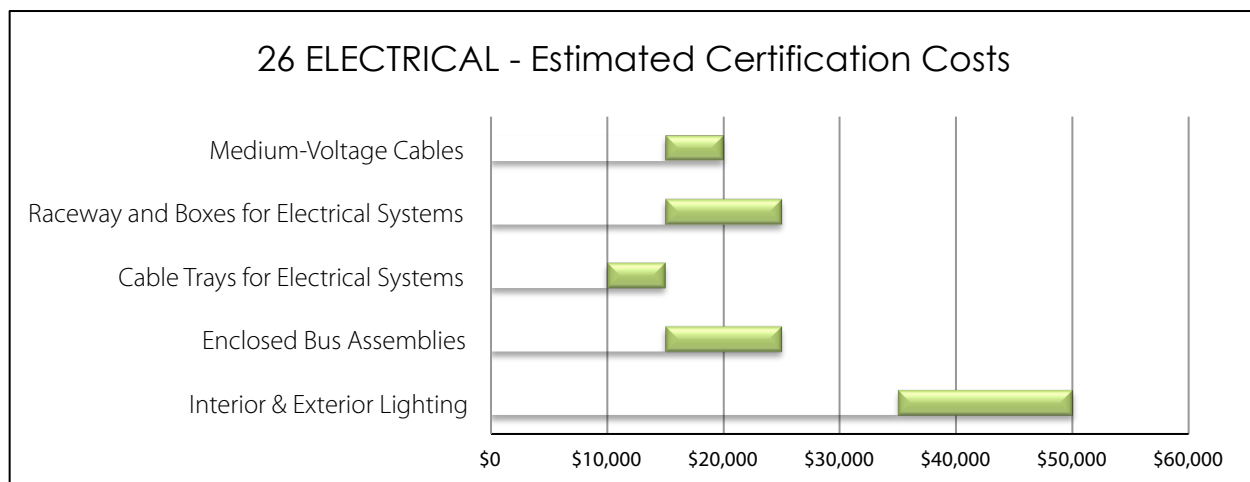
26 - ELECTRICAL



Photo Credit : LiteControl

Product Categories	Cradle to Cradle Certified Products	Priority Materials for Certification
26 05 13 Medium-Voltage Cables	<ul style="list-style-type: none"> ○ Hueson Wire Corporation, Enviro-Wire and Cable 	<ul style="list-style-type: none"> ○ Non halogenated flame retardant polymers for cables
26 05 33 Raceway and Boxes for Electrical Systems	<ul style="list-style-type: none"> ○ None 	<ul style="list-style-type: none"> ○ Metal alloys (i.e. steel, aluminum) ○ Coatings and finishes for metals

Product Categories	Cradle to Cradle Certified Products	Priority Materials for Certification
26 05 36 Cable Trays for Electrical Systems	○ None	○ Aluminum alloys
26 25 00 Enclosed Bus Assemblies	○ None	○ Coatings for steel housing (e.g. powder coat) ○ Non halogenated flame retardant polymers for insulation
26 51 00 Interior and 26 56 00 Exterior Lighting	<ul style="list-style-type: none"> ○ Espacio Solar s.l., Deplosun Glass Top & Flat Top Silver Level ○ LITECONTROL, Architectural Lighting Fixtures Silver Level ○ The Lighting Quotient, Elliptipar & Fraqtir Fixtures Silver Level 	<ul style="list-style-type: none"> ○ Electrical ballasts ○ Scratch resistant non-halogenated powder coat



*Actual certification costs will vary based on the number of materials in each unique product, the complexity of individual manufacturer's supply chain and processes, and the accredited assessor providing the certification services.

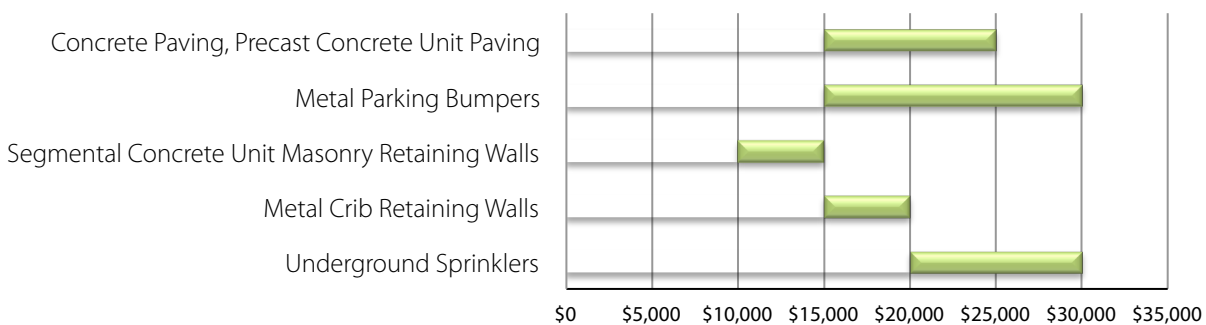
32 - EXTERIOR IMPROVEMENTS



Photo Credit : Allied Concrete

Product Categories		Cradle to Cradle Certified Products		Priority Materials for Certification
32 13 13 32 14 13	Concrete Paving, Precast Concrete Unit Paving	○ Allied Concrete, Pervious Paving	Silver Level	○ Concrete ○ Additives ○ Fly ash
32 17 13.13	Metal Parking Bumpers	○ None		○ Coatings
32 32 23.13	Segmental Concrete Unit Masonry Retaining Walls	○ Allied Concrete Company, Redi- Rock	Basic Level	○ Concrete ○ Additives ○ Fly ash
32 32 26	Metal Crib Retaining Walls	○ None		○ Paint ○ Coatings ○ Primer
32 84 23	Underground Sprinklers	○ None		○ Optimized Polymers (PP, PEX) ○ Coupling Technologies (elbows, joints)

32 EXTERIOR IMPROVEMENTS Estimated Certification Costs



*Actual certification costs will vary based on the number of materials in each unique product, the complexity of individual manufacturer's supply chain and processes, and the accredited assessor providing the certification services.

PRIORITY PRODUCT CATEGORIES

To help prioritize certification efforts, the sixty priority product categories are divided into three tiers below based on the number of certified products that are currently available.

TIER 1

The following product categories currently contain **zero (0) Cradle to Cradle Certified products**. For these product types, there are no available options to use Cradle to Cradle Certified products. Therefore it is recommended that these product categories be given top priority for growing the number of Cradle to Cradle Certified products.

Product Categories with Zero Cradle to Cradle Certified Products	
03 11 19	Insulating Concrete Forming
03 21 13	Galvanized Reinforcement Bars
03 24 00	Fibrous Reinforcing
03 45 00	Precast Architectural Concrete
04 05 13	Masonry Mortar
04 23 00	Glass Unit Masonry
05 15 16	Steel Wire Rope Assemblies
05 21 00	Steel Joist Framing
05 40 00	Cold-Formed Metal Framing
06 16 23	Subflooring
06 25 16	Prefinished Plywood Paneling
08 11 16	Aluminum Doors and Frames
08 71 00	Door Hardware
09 29 00	Gypsum Board
10 21 13	Toilet Compartments
10 73 00	Protective Covers
12 93 23	Trash & Litter Receptacles
22 11 13	Facility Water Distribution Piping
22 14 26.13	Facility Storm Drains: Trench Drains
22 42 00	Commercial Plumbing Fixtures
26 05 33	Raceway and Boxes for Electrical Systems
26 05 36	Cable Trays for Electrical Systems
26 25 00	Enclosed Bus Assemblies
32 17 13.13	Metal Parking Bumpers
32 32 26	Metal Crib Retaining Walls
32 84 23	Underground Sprinklers

TIER 2

The following product categories currently contain **two (2) or less Cradle to Cradle Certified products**. While there are one or two options for Cradle to Cradle Certified products for these product types, more options need to be available in order for architects and specifiers to be able to choose from only Cradle to Cradle Certified products that meets their specifications. Therefore it is recommended that these product categories be given secondary priority for growing the number of Cradle to Cradle Certified products.

Product Categories		Cradle to Cradle Certified ^{CM} Products (2 or Less per Product Category)	Cert. Level
03 30 00	Cast-in-Place Concrete	Allied Concrete 3000/3500/4000 PSI Concrete	Silver
04 22 10 04 28 00	Concrete Unit Masonry, Concrete Form Masonry Units	Allied Concrete, Concrete Masonry Units	Silver
04 43 00	Stone Masonry	Las Vegas Rock, Meta-Quartzite Stone Products	Silver
05 12 00	Structural Steel Framing	ConXtech, ConXL and ConXR	Silver
05 31 00	Steel Decking	HH Robertson Taproot/Q Floor	Silver
06 11 00	Wood Framing	Thoma Holz GmbH, Thoma Holz100m	Gold
06 13 00	Heavy Timber Framing	Thoma Holz GmbH, Thoma Holz100m	Gold
		Accsys Technologies PLC, Accoya® Wood (Radiata Pine & Alder)	Gold
06 22 00	Millwork	Boral Composites, Inc., Boral TruExterior Trim (note: this is a wood alternative product)	Silver
07 25 00	Weather Barriers	Dow, Styrofoam SIS Structural Insulation Sheathing	Basic
07 41 13	Metal Roof Panels	RHEINZINK, PrePatina Titanium Zinc Roof and Façade	Basic
07 46 00	Siding	Highland Craftsmen, Barkhouse Shingle Siding	Gold
08 51 13	Aluminum Windows	Schott, PYRAN Platinum Fire-Rated Glass-Ceramic	Silver
08 52 00	Wood Windows	Schott, PYRAN Platinum Fire-Rated Glass-Ceramic	Silver
09 30 13	Ceramic Tile	Koninklijke Mosa BV, Floor Tiles	Silver
		Tagawa Sangyo Co. Ltd., Limix (non-baked lime ceramic "marble")	Silver
10 14 00	Signage	DanSign A/S, PlanSign,	Basic
12 51 23	Office Tables	Koninklijke Ahrend NV, A500 Tables	Silver
		Herman Miller, Everywhere	Silver

Product Categories		Cradle to Cradle Certified ^{CM} Products (2 or Less per Product Category)	Cert. Level
22 13 16	Sanitary Waste & Vent Piping	Steinzeug-Keramo GmbH, Vitrified Clay Pipe Systems	Silver
22 14 26.13	Facility Storm Drains: Roof Drains	Rheinzink, prePATINA Gutter and Downspouts	Basic
26 05 13	Medium Voltage Cables	Hueson Wire Corporation, Enviro-Wire and Cable	Silver
32 13 13 32 14 13	Concrete Paving, Precast Concrete Unit Paving	Allied Concrete, Porous Pavement	Silver
32 32 23.13	Segmental Concrete Unit Masonry Retaining Walls	Allied Concrete, Redi-Rock	Basic

TIER 3

The following product categories currently contain **three (3) or more Cradle to Cradle Certified products**. In these product categories, architects and specifiers have a few different Cradle to Cradle Certified products from which to choose in order to meet their specifications. If a project requires three different options for each product, then only Cradle to Cradle Certified products could be specified in these product categories. Therefore it is recommended that these product categories be given lower priority for growing the number of Cradle to Cradle Certified products.

Product Category		Cradle to Cradle Certified ^{CM} Products (3 or more per product category)	Cert. Level
04 21 00	Clay Unit Masonry	Daax Baksteen Zeddam BV Handmade Bricks	Basic
		Daax Baksteen Zeddam BV, Waterstruck Bricks	Basic
		Boral Bricks Inc., Bricks	Silver
		Crh Clay Solutions, Bisschopprood Facing Bricks	Basic
		Daax Baksteen Zeddam BV, Extruded Bricks	Basic
		Daax Baksteen Zeddam BV, Click Brick	Silver
07 21 13	Board Insulation	Dow, Styrofoam XPS Insulation	Silver
		Dow, Thermax Exterior Insulation	Silver
		Dow, Styrofoam SIS Structural Insulation Sheathing	Basic

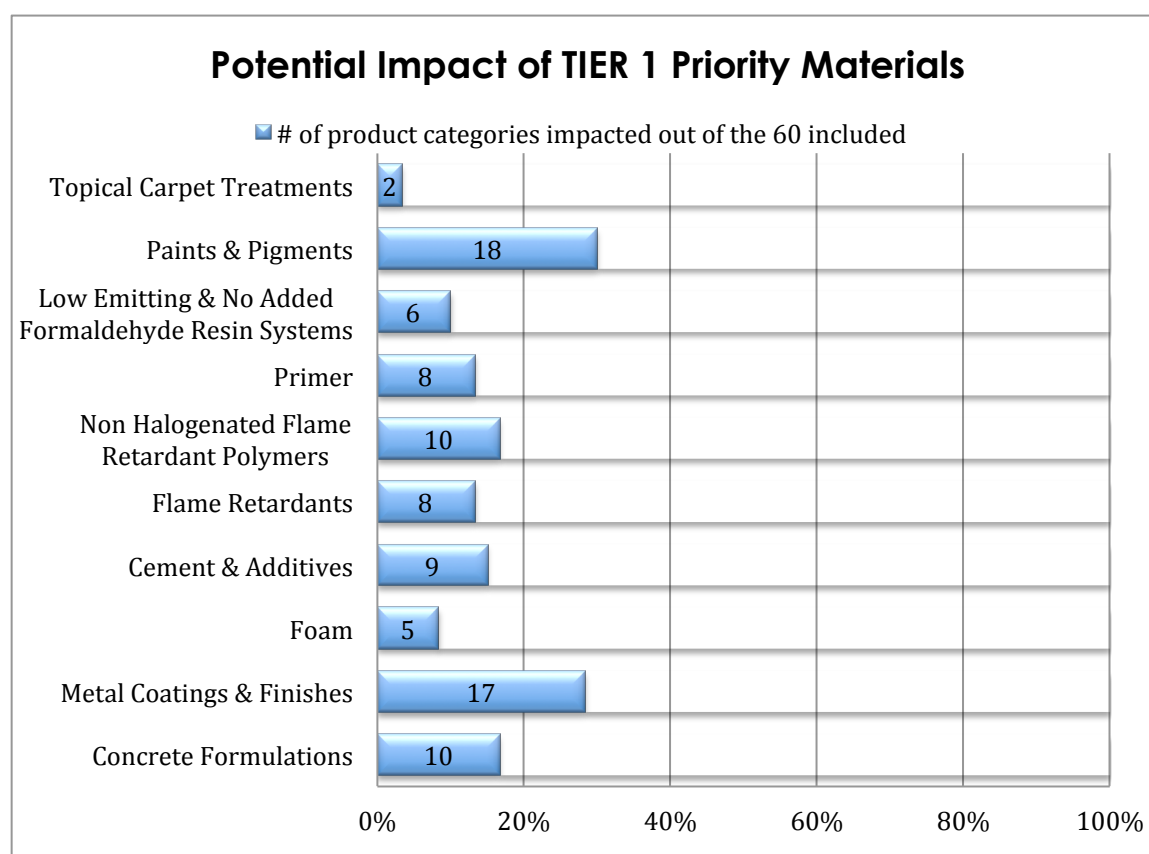
Product Category		Cradle to Cradle Certified ^{CM} Products (3 or more per product category)	Cert. Level
07 42 13	Metal Wall Panels	RHEINZINK, PrePatina Titanium Zinc Roof and Façade	Basic
		CENTRIA EcoScreen	Silver
		CENTRIA Dimension Series 59/60	Silver
08 44 13 08 44 26	Glazed Aluminum Curtain Walls & Structural Glass Curtain Walls	Alcoa, Kawneer 1600 Wall System 1&2 (Glass only)	Silver
		AGC Glass Europe, Planibel and Stoprey Float & Coated Glass	Silver
		PPG Industries, Solarban and Solarcool Coated & Uncoated Glass	Silver
		Schott, PYRAN Platinum Fire-Rated Glass-Ceramic	Silver
09 51 00	Acoustical Ceilings	Armstrong, Tierra Acoustical Ceiling Tile	Silver
		Armstrong, Perla OP 0.95	Basic
		Armstrong, Bioacoustic Infill Panel	Silver
		Armstrong, Alpina	Silver
		Troldtekt, Nature	Silver
09 65 16	Resilient Sheet Flooring	Rosa Gres, Proyectota	Silver
		Tarkett, Silencio sf Linoleum	Basic
		Forbo, Linoleum / Marmoleum	Silver
09 68 16.10	Sheet Carpet	Desso, Broadloom Business & Consumer Carpets	Bronze C2C v3
		Shaw, Anso and Unbranded Type 6 Nylon Carpet	Silver
		Shaw, EcoWorx Broadloom	Silver
		Bentley, Piece-Dyed Broadloom	Silver
10 22 00	Partitions	Herman Miller, My Studio	Silver
		Interwand, Intersmart Wall System	Basic
		Steelcase, Privacy Wall	Silver
10 71 00	Exterior Protection	Construction Specialties, Sunshades (including Suspended, Shadowline, Cantilevered, Vertical & Horizontal, & Perform)	Silver
		YKK AP America, ThermaShade	Silver
		Alcoa, Kawneer 1600 SunShade	Silver
12 36 00	Countertops	Icestone, Durable Surface	Silver
		Cosentino, Eco	Silver
		Glass2, Solid Surface	Silver
12 51 16	Case Goods	Herman Miller, Canvas Office Landscape	Silver
		Steelcase, c:scape, Montage, Tour, and Answer	Silver

Product Category		Cradle to Cradle Certified ^{CM} Products (3 or more per product category)	Cert. Level
		Steelcase, Garland, Elective Elements 6, and Walden	Silver
12 52 23	Office Seating	Ahrend, A2020 Desk Chair	Silver
		Geiger International, Foray Chair	Silver
		Herman Miller, Sayl, Setu, Mirra, Caper, Celle, Aeron, and Embody Chairs,	Silver
		Keilhauer, Simple 9323 Task Chair	Silver
		Koninklijke Ahrend NV, A230 & A250 Desk Chairs	Silver
		Steelcase, Leap, Amia, Siento, Move, and Think Chairs	Silver
		Stoll Giroflex AG, Giroflex G 656 Office Chair	Silver
26 51 00 26 56 00	Interior and Exterior Lighting	Espacio Solar s.l., Deplosun Glass Top & Flat Top	Silver
		LITECONTROL, Architectural Lighting Fixtures	Silver
		The Lighting Quotient, Elliptipar & Fraqtir Fixtures	Silver

PRIORITY MATERIALS

For each of the sixty product categories, priority materials were identified as a priority for assessment, optimization and certification. Priority materials are commonly used ingredients in more complex building products that have exhibited toxicity to humans and/or the environment. If these priority materials (or 'gateway materials') were optimized for safety to human and environmental health and then Cradle to Cradle Certified^{CM}, they would facilitate certifications for a wide range of more complex building products.

TIER 1



Concrete Formulations (concrete, admixtures, gypsum, fly ash)

- Material is used in high volume in construction
- Admixtures are the main differentiator between concrete products and can be applied to multiple concrete applications
- Sources of uncontaminated gypsum/fly ash is needed for optimization
- Identified as a key component within multiple product divisions

- Currently a high concern with greenhouse gas emissions from the cement manufacturing process.
- The cement additives market includes a wide range of proprietary formulations utilizing many different chemicals for various applications. The full range of toxicity concerns associated with these substances is unknown, in some cases due to lack of toxicity data, but also due to confidentiality of formulation information. There is a need to identify acceptable and preferred admixtures from the wide range of those available.

Metal Coatings & Finishes

- Key component in building products without any Cradle to Cradle Certified options
- Possible high toxicity concern with prevalence of halogenated organic or heavy metal components to metal finishes
- Identified as a key component within multiple product divisions
- Currently a high toxicity concern with prevalence of fluorinated and hexavalent chromium based coatings and finishes
- Corrosion protection primer identified as a key component within multiple steel product divisions and currently a high toxicity concern with prevalence of chromium and even nitrate based systems

Flame Retardants

- Identified as a key component within multiple product divisions
- Currently a high toxicity concern with prevalence of brominated organic molecules that are persistent, bioaccumulative, and often toxic.

Foam

- Identified as a key component within multiple product divisions
- Currently a high toxicity concern with prevalence of brominated organic flame retardants & blowing agents with climatic concern

Non Halogenated Flame Retardant Polymers

- Identified as a key component within multiple (electrical) product divisions
- Currently a high toxicity concern with prevalence of PVC based polymers and brominated flame retardant chemistry

Low Emitting & No Added Formaldehyde Resin Systems

- Identified as a key component within multiple wood product divisions
- Formaldehyde is highly toxic and is present as part of binder systems
- There are existing material solutions currently on market

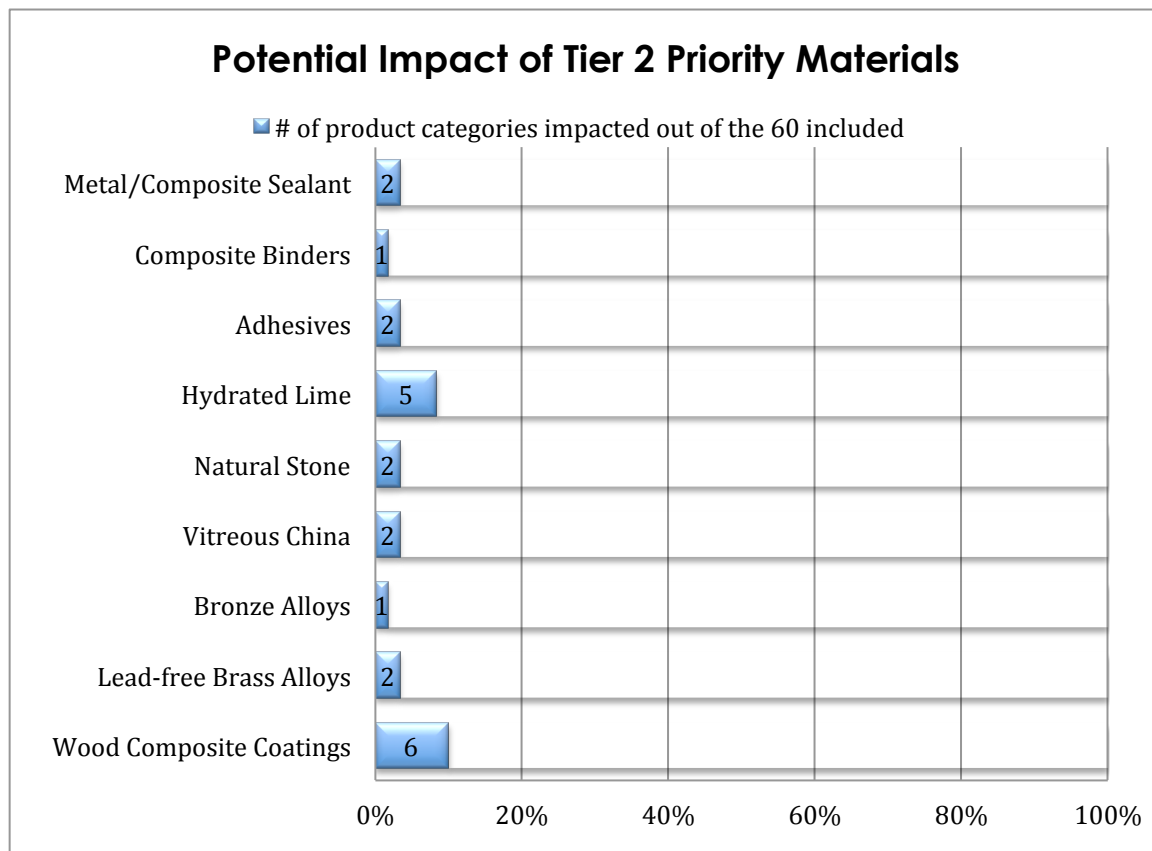
Paints/Pigments

- Key component in product division with zero (0) current C2C products
- Ubiquitous in metal and wood building products
- Possible toxicity concerns with halogenated and metallized pigments
- Possible indoor air quality concerns with solvent-based paints
- Existing solutions potentially available on market

Topical Carpet Treatments (Stain & Soil)

- High possibility for exposure due to carpet abrasion
- Currently a high toxicity concern with prevalence of fluorinated organic molecules that are persistent, bioaccumulative, and often toxic.
- A long standing hurdle preventing flooring products from being optimized for material health

TIER 2



Wood/Composite Coatings

- Key component in building products without any Cradle to Cradle Certified options

Aluminum Alloys

- Key component in building products without any Cradle to Cradle Certified options

Steel Alloys

- Ubiquitous in buildings
- Possible toxicity concerns with various heavy metal content depending on application

Lead-free Brass Alloys

- Key component in building products without any Cradle to Cradle Certified options
- Possible high toxicity concern with prevalence of lead in brass

Bronze Alloys

- Key component in building products without any Cradle to Cradle Certified options
- Possible high toxicity concern with prevalence of lead in bronze

Vitreous China

- Key component in building products without any Cradle to Cradle Certified options
- Possible toxicity concerns with pigments used in glaze

Natural Stone: Granite, Limestone, Sandstone

- Key component in building products without any Cradle to Cradle Certified options

Hydrated lime (key component of mortar along with cement)

- Key component in building products without any Cradle to Cradle Certified options

Adhesives

- Adhesives used commonly in office furnishings contain chlorinated organic resins which are persistent, bioaccumulative, and often toxic
- Optimized adhesives needed for office furniture

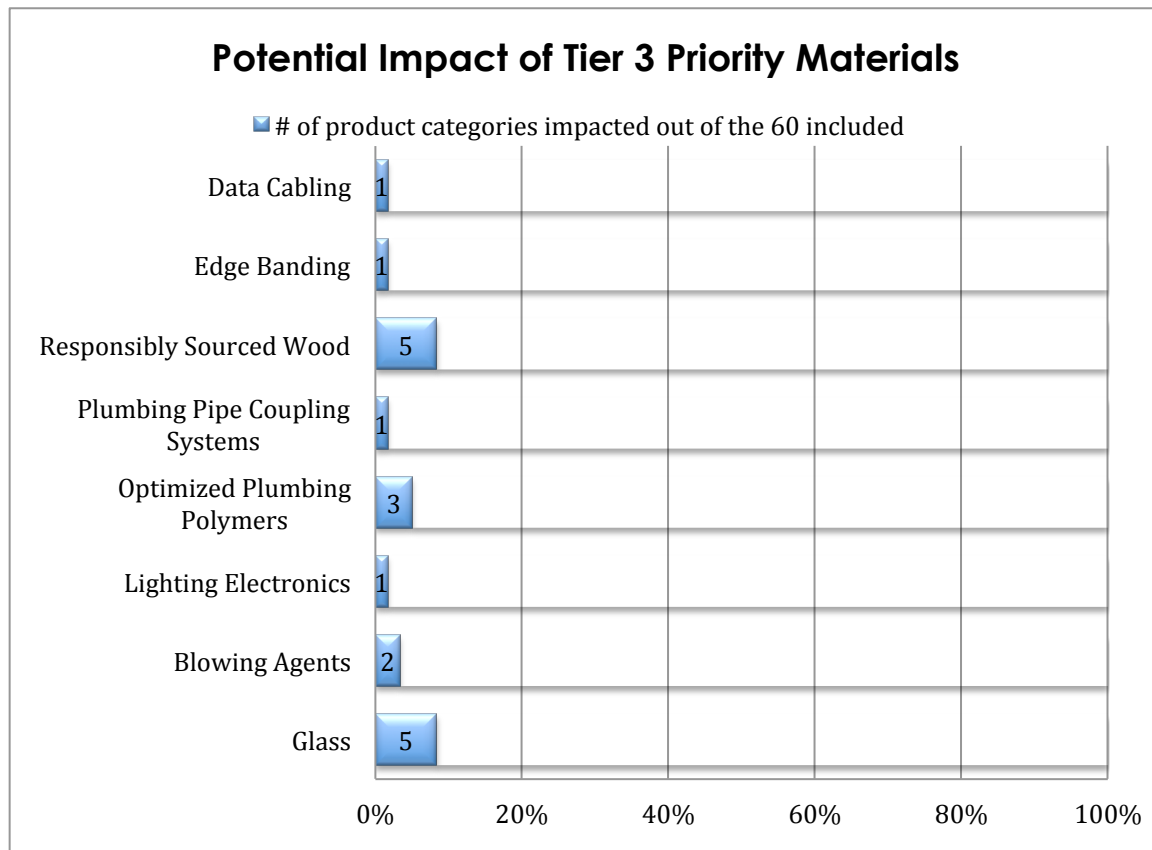
Composite Binders

- Key ingredient currently preventing ceiling tiles from achieving higher levels of the Cradle to Cradle Certified Program
- Formaldehyde-based binders negatively impact indoor air quality and should be phased out of products used indoors

Metal/Composite Sealant

- Key ingredient currently preventing stone countertops from achieving higher levels of the Cradle to Cradle Certified Program
- Most common sealants contain fluorinated organic polymers that are persistent, bioaccumulative, and sometimes toxic.

TIER 3



Glass

- Key component in building products
- Currently have Cradle to Cradle Certified glass products

Blowing Agents

- Key to optimization of foams

Lighting iss

- Key to optimization of lighting fixture products
- Affordable alternatives for lead solder and PVC wiring are needed

Optimized Plumbing Polymers

- Key to introduce viable alternatives to toxic halogenated organic polymers
- Cross-linked polyethylene and polypropylene are of interest for assessment and the Cradle to Cradle Certified Program

Plumbing Pipe Coupling Systems

- Integral part to all piping and plumbing within buildings
- Potential to optimize current offerings of toxic solvents and resins

Responsibly Sourced Wood

- FSC-Certified or equivalent is required for higher levels of the Cradle to Cradle Certified Program
- Key to add as many basic wood products to the Cradle to Cradle Certified Program as possible to expedite certification of finished wood systems within buildings.

Edge Banding

- Key to optimization of conference/office tables
- Halogenated polymers currently used as default

Data Cabling (Ethernet)

- Key to optimization of demountable partitions
- Improved wiring options now available for electricity, but data cables need to be examined next

SUMMARY

The market analysis on building products identifies building product categories and building materials with great potential to impact human health. More specifically, recommendations are provided for allocating resources towards increasing the number of Cradle to Cradle Certified^{CM} products that have been inventoried, assessed, and optimized for human and environmental health and are thus eligible for the LEED V4 Materials & Resources credit (MRc4): Building Product Disclosure and Optimization—Material Ingredients.

In order to create healthy buildings, a variety of safe options are needed for all product categories. The design community (including architects, interior designers, and specifiers) can use this analysis to identify areas within a building project in which to prioritize selection of healthy materials and create demand for safe alternatives. Product manufacturers, particularly within these priority product and material categories, can view this as a call to action and an invitation to get on the path to material health.

APPENDIX

LEED V4 - MRc4: Building product disclosure and optimization – material ingredients

Intent

To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically, and socially preferable life-cycle impacts. To reward project teams for selecting products for which the chemical ingredients in the product are inventoried using an accepted methodology and for selecting products verified to minimize the use and generation of harmful substances. To reward raw material manufacturers who produce products verified to have improved life-cycle impacts.

Requirements

Option 1. material ingredient reporting (1 point)

Use at least 20 different permanently installed products from at least five different manufacturers that use any of the following programs to demonstrate the chemical inventory of the product to at least 0.1% (1000 ppm).

- Manufacturer Inventory. The manufacturer has published complete content inventory for the product following these guidelines:
 - A publicly available inventory of all ingredients identified by name and Chemical Abstract Service Registration Number (CASRN)
 - Materials defined as trade secret or intellectual property may withhold the name and/or CASRN but must disclose role, amount and GreenScreen benchmark, as defined in GreenScreen v1.2.
- Health Product Declaration. The end use product has a published, complete Health Product Declaration with full disclosure of known hazards in compliance with the Health Product Declaration open Standard.
- Cradle to Cradle. The end use product has been certified at the Cradle to Cradle v2 Basic level or Cradle to Cradle v3 Bronze level.
- USGBC approved program. Other USGBC approved programs meeting the material ingredient reporting criteria.

AND/OR

Option 2: material ingredient optimization (1 point)

Use products that document their material ingredient optimization using the paths below for at least 25%, by cost, of the total value of permanently installed products in the project.

- GreenScreen v1.2 Benchmark. Products that have fully inventoried chemical ingredients to 100 ppm that have no Benchmark 1 hazards:
 - If any ingredients are assessed with the GreenScreen List Translator, value these products at 100% of cost.
 - If all ingredients are have undergone a full GreenScreen Assessment, value these products at 150% of cost.
- Cradle to Cradle Certified. End use products are certified Cradle to Cradle. Products will be valued as follows:
 - Cradle to Cradle v2 Gold: 100% of cost
 - Cradle to Cradle v2 Platinum: 150% of cost
 - Cradle to Cradle v3 Silver: 100% of cost
 - Cradle to Cradle v3 Gold or Platinum: 150% of cost
- International Alternative Compliance Path – REACH Optimization. End use products and materials that do not contain substances that meet REACH criteria for substances of very high concern. If the product contains no ingredients listed on the REACH Authorization or Candidate list, value at 100% of cost.
- USGBC approved program. Products that comply with USGBC approved building product optimization criteria.

AND/OR

Option 3: Product Manufacturer Supply Chain Optimization (1 point)

Use building products for at least 25%, by cost, of the total value of permanently installed products in the project that:

- Are sourced from product manufacturers who engage in validated and robust safety, health, hazard, and risk programs which at a minimum document at least 99% (by weight) of the ingredients used to make the building product or building material, and
- Are sourced from product manufacturers with independent third party verification of their supply chain that at a minimum verifies:
 - Processes are in place to communicate and transparently prioritize chemical ingredients along the supply chain according to available hazard, exposure and use information to identify those that require more detailed evaluation
 - Processes are in place to identify, document, and communicate information on health, safety and environmental characteristics of chemical ingredients
 - Processes are in place to implement measures to manage the health, safety and environmental hazard and risk of chemical ingredients
 - Processes are in place to optimize health, safety and environmental impacts when designing and improving chemical ingredients
 - Processes are in place to communicate, receive and evaluate chemical ingredient safety and stewardship information along the supply chain

- Safety and stewardship information about the chemical ingredients is publicly available from all points along the supply chain

Products meeting Option 3 criteria are valued at 100% of their cost for the purposes of credit achievement calculation.

For credit achievement calculation of options 2 and 3, products sourced (extracted, manufactured, purchased) within 100 miles (160 km) of the project site are valued at 200% of their base contributing cost. For credit achievement calculation, the value of individual products compliant with either option 2 or 3 can be combined to reach the 25% threshold but products compliant with both option 2 and 3 may only be counted once. Structure and enclosure materials may not constitute more than 30% of the value of compliant building products.

LEED v4 Includes Credits for Cradle to Cradle Certified^{CM}

With the recent approval of LEED v4, Cradle to Cradle Certified products can contribute to LEED projects in new ways.

By Stacy Glass, Institute Executive in Residence for the Built Environment

Cradle to Cradle Certified is increasingly becoming a quick reference for consumers and specifiers looking for quality, sustainable products

The current (LEED 2009) and previous versions of the U.S. Green Building Council's (USGBC) LEED rating system did not specifically include credits for Cradle to Cradle Certified products. However, a Credit Interpretation Ruling in 2007 determined that projects *can* earn an Innovation in Design credit if 2.5% of the materials (by cost) in a project design are Cradle to Cradle Certified^{CM}. Better still, with the upcoming launch of the new LEED v4, Cradle to Cradle Certified^{CM} products will be written into the main LEED program, contributing to a Materials & Resources credit. LEED v4 was approved by the USGBC membership in July 2013 and will be rolled out at November's Greenbuild in Philadelphia.

Substantially reworked, the [Materials & Resources](#) section of LEED v4 is different from LEED 2009 in that it applies lifecycle thinking at the whole-building and product level. Proposed credits reward projects for reusing as much material as possible and optimizing design to use less material overall. LEED 2009 credits were based on materials' individual attributes, such as recycled content. This approach only tells part of the story; a product may have above-average performance on a single attribute but far lower than average performance on others. The LEED v4 approach paints a more complete picture of materials and products, enabling project teams to make better-informed decisions that will have greater overall benefit for the environment, human health, and resource recovery.

The main [credit](#) that addresses Cradle to Cradle in LEED v4 - New Construction is Materials & Resources Credit 4, *Building Disclosure and Optimization—Material Ingredients*. This credit, worth up to 2 points, encourages project teams to choose products whose chemical ingredients are inventoried using an accepted methodology and to select products verified to minimize the use and generation of harmful substances.

Cradle to Cradle Certified^{CM} is listed as a path to compliance in Options 1 and 2 of the credit and may be eligible for Option 3 as the credit language further develops.

Option 1, Materials Ingredient Reporting, rewards project teams for selecting **products whose chemical ingredients are inventoried** using an accepted methodology. Understanding a product's chemical composition down to the 100 ppm is a necessary first step in working toward chemical optimization. Surprisingly, many manufacturers—due to complicated supply chain issues—are not fully aware of all of the chemicals in their products. This credit will provide encouragement for manufacturers to engage in the process. Option 1 awards a point to projects with at least 20 permanently installed products that meet at least one of a list of criteria. One of these criteria is Cradle to Cradle certification. The product must be certified “Cradle to Cradle v2 Basic level or higher or Cradle to Cradle v3 Bronze level or higher” to be eligible. **All products currently certified at these levels will contribute to the credit.** This credit recognizes the rigor required to complete the Bill of Materials and chemical inventory that form the basis of the Cradle to Cradle Certified's material health assessment.

Option 2, Material Ingredient Optimization, goes beyond knowledge of ingredients and rewards project teams for selecting products verified to **minimize the use and generation of harmful substances**. This point encourages use of products whose chemical composition has been assessed and optimized. To achieve the credit, projects must include optimized products comprising at least 25% of the total cost of permanently installed products. **Cradle to Cradle v3 Silver** certified products are valued at **100% of cost**, recognizing that they contain neither Cradle to Cradle banned list chemicals nor substances considered carcinogens, mutagens, or reproductive toxins. **Cradle to Cradle v2 and v3 Gold and Platinum products are valued at 150% of cost**, recognizing that these products' chemicals have been fully optimized.

While Cradle to Cradle Certified^{CM} is a [multi-attribute assessment](#), these credits focus on the material health aspect of the program. For this reason, **LEED will accept products that have achieved the material health scores outlined above but that may have a lower overall certification level.** For example, when looking at a certification scorecard, if the Material Health score is Gold but the Renewable Energy score is Bronze, the overall product would be rated Bronze. However, based on the Material Health score, the product would be eligible to contribute to both points outlined above and would be valued at 150% of cost in Option 2.


		CRADLE TO CRADLE CERTIFIED^{CM} PRODUCT SCORECARD			
QUALITY CATEGORY	BASIC	BRONZE	SILVER	GOLD	PLATINUM
 MATERIAL HEALTH				✓	
 MATERIAL REUTILIZATION			✓		
 RENEWABLE ENERGY & CARBON MANAGEMENT		✓			
 WATER STEWARDSHIP			✓		
 SOCIAL FAIRNESS				✓	
OVERALL CERTIFICATION LEVEL		✓			

Currently, Cradle to Cradle Certifications are listed in the Institute's online product registry by their overall certification level. The Institute is redesigning its database to include product's scorecard for manufacturers that opt to post this information. The new registry, expected to launch in November 2013, will be searchable by product type, manufacturer, quality category (e.g. material health) score, overall score, and more. The registry will also share information with Pharos and GreenWizard to help project teams using those tools easily identify Certified products.

With sustainable design becoming synonymous with human health and performance, it shouldn't have to be the purview of an architect to scrutinize every ingredient of every material for consistency with sustainability goals. With a Cradle to Cradle Certified mark and scorecard, architects and specifiers can know at-a-glance that:

- A product's recyclability and safety for human and environmental health have been externally verified;
- An expert assessment of toxicity hazards of all product ingredients throughout the supply chain has been made down to 100 ppm (0.01 percent)
- A continuous improvement path has been defined for optimizing product design and manufacturing processes.

Cradle to Cradle Certified is increasingly becoming a quick reference for consumers and specifiers looking for quality, sustainable products. The table below provides a quick reference for the Material Health achievement levels. A full achievement chart for all five quality categories can be found at assets.c2ccertified.org/pdf/v3_Achievement_Levels.pdf.

 Material Health Quick Reference Guide							
	v3 Basic	v2 Basic	v3 Bronze	v2 Silver	v3 Silver	v2 & v3 Gold	v2 & v3 Platinum
100% chemical disclosure							
at least 95% chemical disclosure							
at least 75% chemical disclosure							
Chemicals profiled for hazard and exposure							
No PVC's or related compounds							
No C2C v3 banned list chemicals							
No Carcinogens, Mutagens, or Reproductive toxins							
Only positive chemistry							
Re-certified every two years (minimum)							
Data verified by independent assessor							