Multi-Attribute Certification Pinpoints True Sustainability

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Multi-Attribute Certification Pinpoints True Sustainability

The Cradle to Cradle Certified approach evaluates and improves products for a greener world

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E
drence wants a healthier, more sustainable world. As the consciousness of sustainability has been raised over the last several decades, that statement is increasingly a given. The question becomes how to get there. Green rating systems of various stripes have emerged in an effort to guide architects and designers in creating a built environment that is safe, non-toxic, and meets energy efficiency, resource conservation, and carbon-neutral goals. Multi-attribute certifications are gathering acceptance as the preferred way of evaluating—often in some cases improving—products of all types.

This article will describe the growing influence of multi-attribute certification systems, focusing on the Cradle to Cradle Certified approach as a means of getting to products that make a beneficial impact on the world. Cradle to Cradle certification will be discussed in detail, including parameters examined and the process required, highlighting examples of improvements in certified products that are upping the sustainability quotient of working and living spaces.

MULTI-ATTRIBUTE CERTIFICATIONS

Green building has its fair share of single-attribute certifications that give products the nod for everything from forestry practices to energy ratings. But increasingly the industry is looking for a more comprehensive system of evaluating products, and favoring the multi-attribute certification approach. The goal of multi-attribute certifications is to recognize products that score well not just in one parameter but across a comprehensive battery of environmental, health, and even social measures. Some of these certification systems include full analysis of a product’s life cycle, while others simply use life-cycle thinking to identify the top issues to cover in the standards. One of the best recognized multi-attribute systems is Cradle to Cradle Certified, which was developed along visionary guidelines to evaluate products according to five parameters and to set out a path of continuous improvement towards the ultimate goal of products that are safe for human and environmental health and infinitely reutilized.
THE CONCEPT BEHIND THE CRADLE TO CRADLE MOVEMENT

The phrase “cradle to cradle” itself was coined by Walter R. Stahel in the 1970s. The current model is based on “The Intelligent Product” initiated by Michael Braungart and colleagues at the Environmental Protection Encouragement Agency (EPEA) in the 1990s. In 1992, William McDonough and Dr. Michael Braungart published The Hannover Principles: Design for Sustainability. In 2002, they published Cradle to Cradle: Remaking the Way We Make Things, encapsulating a journey of discovery about materials as either biological or technical nutrients. In their cradle to cradle model, technical nutrient refers to a material or product that is designed to be returned to the industrial metabolism from which it came. Biological nutrients are materials or products that are designed to return to the biological cycle to be consumed by microorganisms in soil and other animals.

This concept that everything is “food” or a resource for something else is a core tenet of the Cradle to Cradle design philosophy. With conventional use and consumption come waste—and a lot of it. The U.S. alone generates approximately 254 million tons of municipal solid waste. Building-related construction and demolition (C&D) debris amounts to an additional 160 million tons per year. Cradle to Cradle proposes that we don’t have a waste problem, we have a design problem. If we design intelligently from the start, we don’t need to think in terms of waste, contamination, or scarcity. Good design would allow for abundance and endless reuse—elegant solutions. In addition, the Cradle to Cradle approach strives for eco-effectiveness or rather, doing more good instead of reducing and eliminating with the goal of being less bad. Cradle to Cradle co-founder Dr. Michael Braungart points out that mankind strives to make a positive impact both economically and socially, but when it comes to the environment, we strive for “zero”—net zero, zero waste, etc.—and zero is not a terribly inspiring goal. The Cradle to Cradle approach suggests that, when it comes to the making of things, mankind can go well beyond zero to have a positive, restorative, beneficial impact on the environment.

The Cradle to Cradle design ideal then is a world that is not resource constrained, where the concept of waste does not exist, where resources can be reused infinitely, and consumption is sustainable. All materials will be safe and healthy because they have been designed knowing the metabolism they will feed, with safe and healthy ingredients. Greenhouse gas pollution is addressed through commitments to make products with clean, renewable energy and products that are produced in systems that are fair and equitable to all stakeholders.

Cradle to Cradle Certified is becoming increasingly important as a quick reference for everyone looking for quality, sustainable products for the built environment.

DEVELOPMENT OF THE CERTIFIED PRODUCTS PROGRAM

Following the publication of Cradle to Cradle: Remaking the Way We Make Things, McDonough and Braungart began working with clients to apply these concepts to product design in their consulting firms, McDonough Braungart Design Chemistry (MBDC) and EPEA. In 2005, MBDC first used the Cradle to Cradle Certified logo as recognition of achievement in design and production. Over the years it evolved and in 2010, in order to scale the certification globally and make it available to the public, McDonough and Braungart gifted the Certification Standards Board is the main governing body for the program. It reviews the quality standard criteria, makes revisions, additions, and changes as necessary to maintain the integrity and viability of the program.

THE FRAMEWORK—A CONTINUOUS IMPROVEMENT STANDARD

Companies pursuing certification are asked to follow a strict process that includes inventory and assessment in five areas including Material Health, Material Reutilization, Renewable Energy and Carbon Management, Water Stewardship, and Social Fairness, and to develop a plan to design and optimize their products towards the goal of being safe, healthy, and regenerative. The program recognizes that manufacturers may be at different levels of optimization, and it allows those seeking certification to enter the program at various levels and make a commitment to continuous improvement and optimization. Products are recertified every two years.

System Overview

Cradle to Cradle Certified is a multi-attribute approach to certification of a wide range of products, with an emphasis on the built environment, fashion, and personal care products. In order to achieve certification, a product must meet the requirements for a given level in all of the following five categories:
**MULTI-ATTRIBUTE CERTIFICATION PINPOINTS TRUE SUSTAINABILITY**

The minimum level of achievement in any of the five categories ultimately determines the final certification level.

- **Material Health.** Identifying, managing, and, where possible, replacing substances of concern with ones that are safe and healthy for humans and the environment.
- **Material Reutilization.** Designing products so all materials can be re-used safely by nature or industry.
- **Water Stewardship.** Making products in ways that protect and enrich water supplies.
- **Social Fairness.** Treating all the people involved in the product manufacturing process in socially responsible ways.

**Levels of Certification**

Because the program is not based on the binary, pass/fail model, but instead certifies the intention to continuously improve, the certification results are split into a five-level system of Basic, Bronze, Silver, Gold, and Platinum. A scorecard is created to rate the product on all certification criteria. Each criterion is assigned a level of achievement. The minimum level of achievement in any of the five categories ultimately determines the final certification level.

A product may be “Gold” or even “Platinum” in one or two categories but “Silver” in three others, making the overall product certification “Silver.” The applicant is expected to optimize each aspect of their product over time, with the ultimate goal being to encourage innovation and the design of products that effectively and positively impact people and the environment.

The latest version of Cradle to Cradle certification protocol, Version 3.0, was made publicly available in late 2012. In this iteration, the bar has been raised across all attributes. In particular, the Material Health attribute features a banned list of chemicals for both biological and technical nutrients. The basic level is now a provisional level allowing a manufacturer to establish baseline/inventory for each category while allowing products to get on the path of continuous improvement. Certification levels progress from there.

New to Version 3 is the addition of a Bronze level. In Version 2, the bar to achieve Silver was so high and broad that it didn’t allow for clear distinction between products that were in different stages along the optimization path.

Institute President Bridgett Luther adds, “The move from version 2.1 to the new version 3.0 was exciting and really brought together the teams at MBDC and EPEA to translate the best practices with their clients into something that others could teach and learn. Version 3.0 is more rigorous, but the whole program becomes a sustainability platform.”

**The Parameters**

Manufacturers seeking Cradle to Cradle certification must meet stringent criteria in five different areas, which are discussed in depth below.

**Material Health**

“Today, many architects and designers are concerned with avoiding chemicals of concern in their projects. The Material Health score of certified products can provide a quick reference for what a product contains,” says Stacy Glass, the Institute’s executive in residence for the built environment.

A product often contains many materials and each material contains many chemicals. The Cradle to Cradle Material Health assessment looks at each of these levels to arrive at an overall assessment of the products material health impact. First, the manufacturer completes a Bill of Materials detailing each material used in the product. The Bill of Materials is provided to the accredited assessor who looks at all of the material components. Then they identify all the chemicals contained in those materials down to very minute levels (100 parts per million) by working directly with the manufacturer’s supply chain, often under non-disclosure agreements to ensure all chemicals are examined. Assessors even conduct a site visit to verify inputs into the manufacturing process. Then, all of the chemicals are assessed against the program’s rating system. If products contain substances that are on the program’s banned list—such as PVC—these products will never receive certification at any level. Other chemicals are judged by establishing their potential risk to human health and the environment, across 24 different human and environmental “endpoints.”

**NYLON 6 FORMULATION**

**MATERIAL ASSESSMENT SUMMARY**

<table>
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<tr>
<th>CAS #</th>
<th>FUNCTION</th>
<th>CONCENTRATION</th>
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</thead>
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<tr>
<td>25038-54-4</td>
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<td>Green</td>
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<td>Reinforcement</td>
<td>33%</td>
<td>Yellow</td>
</tr>
<tr>
<td>822-16-2</td>
<td>Lubricant</td>
<td>&lt;1%</td>
<td>Green</td>
</tr>
<tr>
<td>7758-02-3</td>
<td>Stabilizer</td>
<td>&lt;1%</td>
<td>Yellow</td>
</tr>
<tr>
<td>7681-65-4</td>
<td>Stabilizer</td>
<td>&lt;1%</td>
<td>Green</td>
</tr>
<tr>
<td>1333-86-4</td>
<td>Pigment</td>
<td>&lt;1%</td>
<td>Red</td>
</tr>
</tbody>
</table>

For each material in a product, the chemicals are assessed for potential hazards, exposure, and cyclability.

**INGREDIENT ASSESSMENT SUMMARY**

<table>
<thead>
<tr>
<th>CAS #</th>
<th>FUNCTION</th>
<th>CONCENTRATION</th>
<th>PROFILE</th>
<th>ASSESSMENT</th>
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<td>Green</td>
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<tr>
<td>65997-17-3</td>
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<td>Stabilizer</td>
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<td>Green</td>
<td>Green</td>
</tr>
<tr>
<td>1333-86-4</td>
<td>Pigment</td>
<td>&lt;1%</td>
<td>Red</td>
<td>Yellow(1)</td>
</tr>
</tbody>
</table>

(1) The potential routes of exposure of carbon black as it exists in a polymeric material do not pose a risk to the user or recycler of the material. Therefore the red flag for this ingredient is changed to a yellow assessment as used in this material. While there is very little recycled content in this material, glass filled nylon 6 can be mechanically or chemically recycled and therefore is positioned to be a true technical nutrient.
Materials are also judged on how well they can return to either technical or biological cycles. These criteria are combined to assign each material a final grade.

Materials get an A or B when it is determined that they largely support Cradle to Cradle design objectives. Materials are graded C if they are moderately problematic due to either their chemical risk or their inability to be composted or recycled. Or materials are assessed X, meaning they have highly problematic properties that should be phased out. Products with a Material Health rating of Gold or higher have achieved this ideal and contain no X-assessed materials.

As can be seen in the table (see page 142) describing an assessment summary for a Nylon 6 formulation, in some cases, a red flag material can be changed to a moderate risk if there is no chance that the chemical will be an exposure risk to humans or the environment. In this way, Cradle to Cradle encourages product designers to change their thinking. Instead of asking whether a chemical is good or bad, ask if it is being used in the proper way.

Optimization is the process of continuously improving these aspects of a product so it gets a better grade the next time it is assessed. Optimization in the Material Health criteria often requires intensive effort and innovation. Ken Tameling, general manager at Steelcase, cites an example where the company successfully found a product alternative for a particular chair, which is Cradle to Cradle Certified at the Silver level. The company initiated a redesign project to eliminate a small concentration of an identified material of concern.

“The material we sought to replace was an integral ingredient in the product assembly. It was our objective to completely eliminate this material from the chair and our product portfolio. We had two options—search for an acceptable replacement or redesign the chair. After an extensive global search, we discovered that an alternate material did not exist. This type of deep commitment to materials chemistry can lead to cost savings, a cost increase, or cost-neutral. The expertise of our designers, engineers, and procurement people allows us to take on these challenges,” says Tameling. The company’s design and engineering team focused on solutions that could be produced utilizing materials that had already been assessed. The resulting material met the desired environmental criteria while doubling the durability of the product at a reduced cost.

While some companies do find alternative ingredients, others cannot yet. Innovation and breakthroughs in green chemistry are needed across industries to truly eliminate chemicals of concern.

Reusing and its materials recovered as ‘food’ for new products,” says Angela Nahikian, director of global environmental sustainability at Steelcase. One example is the company’s signature chair, which was the very first Cradle to Cradle Certified product. “Our developers worked diligently to create a chair that could be disassembled in five minutes with common hand tools and as few parts as possible. During a recent redesign of the chair, we have again made sustainability advancement part of the design problem, including further reducing the number of parts. The cradle to cradle philosophy and the Cradle to Cradle certification is an inherent commitment to ongoing improvement,” says Nahikian.

One industry that has made strides in material reutilization is the carpet industry—and with good reason. Traditional carpet is made from petrochemicals, a nylon surface and a polypropylene backing. U.S. statistics indicate that despite a guaranteed life of between 10 and 25 years, carpeting is replaced on average every seven years. When carpeting wears out, it has traditionally been sent to a landfill. Each year, billions of pounds of old carpet are removed from residential and commercial buildings and sent to landfills across the United States. This disposal of carpet contributes to the loss of landfill space, as well as the loss of valuable resources.

Consistent with Cradle to Cradle principles, some leading manufacturers have designed their carpet products as technical nutrients that can remain in constant use, effectively “closing the loop.” According to its website, more than half of the carpet sold by the carpet manufacturer Shaw Floors is Cradle to Cradle Certified Silver. The company’s technical nutrient carpet tile is designed to be returned to it after use and be perpetually recycled into the next generation of high quality carpet. In fact, the company will take back and recycle certain products at the end of their first use at no charge to the customer—a scenario made possible because the company is getting its raw materials back. This is a radical change in business model, and an example of how Cradle to Cradle design can fundamentally change business.

Reclaiming carpet is no easy feat, though, and is dependent on economically feasible collection of an ample supply of old carpet and ways of reusing the material that make financial sense. Commercial and consumer customers alike need to be made aware of the recycling option. So far, manufacturers are seeing results.

Since 2008, European carpet and sports pitches manufacturer, Desso, has been learning how to move towards the less wasteful circular economy via its Cradle to Cradle commitment. This embraces a whole new way of looking at doing business in which goods are made out of
students the healthiest materials so they can be recycled in a healthy way at the end of the product’s life.

The company offers a “Take Back” program to ensure that products can be recycled according to Cradle to Cradle principles. “Take Back,” explains the director of marketing, communications for Cradle to Cradle, Anette Timmer-Larsen, “introduces the concept of a product of service. Instead of the current paradigm in which goods are bought, owned, and disposed of, products containing valuable technical nutrients will be reconceived as new products that new consumers will wish to purchase. In that manufacturing scenario, customers are effectively buying the service of that product for a certain period and then, at the end of its useful life, the manufacturer takes it back, takes it apart and reuses its nutrients to make new products. Yes, we will still be in the business of selling products but, unlike now, we will retain responsibility for those products—to the end of their useful lives and beyond.”

Companies in other fields are following suit. One provider of window shading solutions, MechoSystems, for example, considers its shadecloth material as a technical nutrient. Typically, shadecloths are woven with a PVC jacket and a core of fiberglass or polyester core, which cannot be separated for reuse. But by using thermoplastic olefin (TPO) yarn, which is PVC-free, the company can reclaim the shadecloth once it has reached the end of its useful life, and indefinitely recycle it by melting it down and spinning it again into new, first-quality material. This approach also enables the immediate reuse of scraps during manufacture, diverting an estimated 1 million pounds per year that would otherwise go to landfills and incinerators.

Continuous improvement in Material Reutilization is characterized by a progressive path towards total recovery, reuse, and upcycling, which is defined as converting waste or useless products into new materials or products of better quality or better environmental value. At the Basic level, materials are defined as an intended part of a biological or technical metabolism. Beginning at the Bronze level, the reutilization potential of the product is calculated as a score from 1 to 100, based on its cyclability and recycled or rapidly renewable content. At the Gold level, a nutrient management strategy is required to outline how a product is to be appropriately managed through proprietary, municipal, or cooperative commercial systems. Other changes in V3 include the designation of a Platinum rank in material reutilization signifying the product is being actively and successfully managed in complimentary metabolisms.

**Renewable Energy and Carbon Management**

The goal of the renewable energy and carbon management category is to encourage the use of more renewable energy than is required to manufacture the product, and to manage greenhouse gas emissions. The sun allows us to use today’s energy without having to put future generations at risk. The direct capture of solar energy is one possibility for renewable energy; wind and biogas are also viable. Electricity generation can be one of the largest environmental impacts associated with an organization’s operations. Until renewable power is available everywhere, purchasing green power is an effective way to reduce the environmental impacts of electricity use.

The Basic level requirement for this category is to quantify purchased energy and on-site emissions attributable to the final manufacturing stage(s) of the product. At the Bronze level, a plan to use renewable energy and manage emissions must be developed. At the Silver, Gold, and Platinum levels, increasing percentages of production energy must be displaced with renewable energy or other management strategies as outlined in the standard. At the Platinum level, a surplus of renewable energy is being generated for the final manufacture of the product and the applicant has begun to address the embodied energy of the product from back through the supply chain.

**Water Stewardship**

Changing the way companies interact with water requires a fundamental shift in thinking about a resource that has traditionally been viewed as cheap and plentiful. The overall goal of this category is to move
companies to responsible water stewardship and eventually to production that positively impacts water resources. Companies begin at the Basic level demonstrating regulatory compliance with their effluent permit and developing a plan to manage any local or business specific water issues. At the Bronze level, a facility water audit is conducted. At the Silver and Gold levels, a manufacturer will either optimize their product-related process chemicals in effluent (for wet manufacturing facilities) or work with their supply chain to identify and manage water related concerns (for dry manufacturing facilities). A product that has achieved Platinum level is produced in such a way that water leaving the production facility meets drinking water standards.

Social Fairness
The Social Fairness category ensures that progress is made towards sustaining business operations that protect the value chain and contribute to all stakeholder interests including employees, customers, community members, and the environment. After conducting a social responsibility audit, companies are required to explore supply chain social issues, and engage in social projects with employees and in their communities. At the Basic level, companies seeking certification must conduct a streamlined self-audit of social issues affecting their business, and develop a management plan to address any potential issues. As the product moves to higher certification levels, a more comprehensive self-audit is completed, and measures are taken towards addressing issue and industry-specific social concerns internally and through the supply chain. At the Platinum level, product manufacturers have undergone a third party, facility level social audit often against an internationally recognized social responsibility standard, such as the SA8000 standard or B-Corp program.

The Process
The actual process of Cradle to Cradle certification can be broken down into three stages—define, assess, and optimize. The inventory of parameters described above helps the manufacture understand and uncover the information needed to then analyze and assess their operations. A time-consuming, intensive process in itself, the inventory effort can require proprietary information that manufacturers or their suppliers are reluctant to cite. But unlike the tools and rating systems that rely on manufacturers to self-disclose known ingredients, Cradle to Cradle Certified uses independent, accredited assessors to collect formulations and proprietary ingredients throughout the entire supply chain that would not otherwise be accessible without signed non-disclosure agreements. Recognizing the existence of proprietary formulations in the inventory process, Cradle to Cradle Certified does not make full disclosure to the public a requirement but does encourage manufacturers to consider voluntary disclosure.

Throughout the building community, the call for transparency is becoming more and more apparent. Participation in such open programs is an important part of the LEED and Living Building Challenge certifications, and manufacturers that provide ingredient disclosure of their products are being given preferential consideration by some architectural firms. Cradle to Cradle Certified goes beyond knowledge of ingredients and provides a useful reference for material health and other attributes. This multi-attribute approach is valued by leading property owners.

Dan Probst, head of sustainability at the global commercial real estate firm, Jones Lang LaSalle, speaking at Greenbuild 2012 shared his company’s sustainability priorities.

“We manage nearly 3 billion square feet of property around the globe. The buildings that we manage house millions of workers, each of whom has the right to a healthy and productive work environment. So in addition to focusing on energy, we are making sure that our clients understand the value of green workplace. And that natural light, and fresh air, and thermal comfort, and a chemical-free environment reduce absenteeism, and make employees happier and more productive.

Our firm is also responsible for billions of dollars of spending for the properties we manage and operate on behalf of our clients. And this is where we are working with our clients to prefer suppliers who certify through Cradle to Cradle and embrace these concepts, and push that accountability down to their suppliers and so on through the supply chain. So overall, we are in a great position to have a tremendous opportunity to improve the performance of buildings while creating a better and healthier work environment. We push LEED and Energy Star and Cradle to Cradle because we’re in this for the long term, and we want to ensure a healthy planet for our future generations.” Citation: Closing Plenary, Greenbuild 2012.

“in the two years since we have been actively managing the certification program we’ve seen a nearly 20 percent increase in the number of products certified,” says Institute president Luther. “I believe that companies are recognizing the overall value of how our certification communicates their intentions and that it has great value for their clients.”

Once the ingredients and other criteria are assessed, optimization can begin. First, reducing negative impacts such as eliminating chemicals of high concern, or cleaning up water issues in a manufacturing facility can be tackled, leading to a path of continuous improvement.

Though sometimes it can be a multi-year undertaking, the admittedly rigorous process holds the opportunities to make incremental changes with better ingredients or methods and can ultimately be well worth the investment it in terms of a more environmentally sound product that is well received in the marketplace. Companies in the Certified Cradle to Cradle universe are in it for the long term, taking steps to work themselves up the certification path over a period of years.

Ice Stone, a manufacturer of sustainable durable surfaces made from 100 percent recycled glass and concrete, for example, was initially certified at the Silver level. Going for the gold meant making efforts in all five Cradle to Cradle categories. These included reformulating a few colors that did not comply with the standards for material health, building a water recycling system to ensure all water used during manufacturing is filtered and reused in a closed loop, and required a new process to reduce their greenhouse gas emissions that ultimately reduced their energy output by 50 percent. CEO Dal LaMagna explains that the company “needs a tremendous amount of water during the cutting and polishing process so we installed a very large capacity water recycling system that takes the slurry that comes off our machines, and then we recycle that water within the factory itself. We are saving several million gallons a year of new, fresh water.”

Regarding the continuous improvement process, LaMagna explains, “Any company can design products with recycled content and off-set their energy use with carbon credits, but one big difference is how those companies treat their employees and the impact those companies have on the local and global community. Identifying a third-party certification that considered all aspects of our operations was imperative. Certification has helped our team create the safest and most sustainable surfaces possible.”

Often, success in a particular aspect of product optimization leads to a natural expansion of Cradle to Cradle achievement. One manufacturer of specialty architectural building products, Construction Specialties, saw its first step as the goal of eliminating PVC, a material commonly used in the building products industry. After its wall protection product line was completely PVC-free, the company realized there was more that could be done.
“Getting rid of PVC alone wasn’t enough, because you can have a PVC-free product that is still filled with other persistent, bioaccumulative, and toxic chemicals, also called PBTs. Committing to healthy chemistry has become the guiding principle for our material selection and product design,” said Howard Williams, Construction Specialties vice president and general manager. Rewarded for eliminating all chemicals of high exposure hazard to human and environmental health from the wall protection line with Certified Cradle to Cradle Gold, the company extended Cradle to Cradle principles to other product lines, implementing a company chemical policy throughout its supply chain. “The benefits are that it sets a direction for material selection, specifies areas of focus, and measures progress,” Williams said in an interview. “It’s not just about chemicals in our products; it’s about the chemicals and materials we use, or knowingly choose not to use, in all of our processes.”

**Cradle to Cradle and LEED v4**

In the current (LEED 2009) and previous versions of the U.S. Green Building Council’s (USGBC) LEED rating system, Cradle to Cradle was not specifically included as a path to compliance in the Materials and Resource section. However, a Credit Interpretation Ruling in 2007 determined that projects can earn an Innovation in Design credit if 2.5 percent of the building’s materials are Cradle to Cradle Certified, by cost. Now, LEED v4 will include Cradle to Cradle as a component in its Materials and Resources category. LEED v4 was approved by the USGBC membership in July 2013 and will be rolled-out at Greenbuild in November 2013.

Substantially reworked, the Materials & Resources section of LEED v4 is different from LEED 2009 in that it applies life-cycle 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 single attributes of materials, such as recycled content. This approach only tells part of the story; a product could have higher than average performance on that one 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 more informed decisions that will have greater overall benefit for the environment, human health, and communities.

The main credit that addresses Cradle to Cradle in LEED v4 of New Construction is Materials and Resources Credit 4, Building Disclosure and Optimization—Material Ingredients. This credit, which is worth up to 2 points, encourages the use of products for which the chemical ingredients are inventoried using an accepted methodology and for selecting products verified to minimize the use and generation of harmful substances.

Cradle to Cradle Certified is specifically listed as a path to compliance in Options 1 and 2 of the credit and maybe eligible for Option 3 as the credit language further develops.

Option 1, Materials Ingredient Reporting, rewards project teams for selecting products for which the chemical ingredients in the product are inventoried using an accepted methodology. Understanding a product’s chemical composition down to the 100 ppm is a necessary first step in working towards 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 for using at least 20 permanently installed products that meet at least one of a list of criteria. One of these criteria is Cradle to Cradle to Cradle Certified. 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 currently certified products will contribute to the credit. This recognizes the rigor required by Certified manufacturers in completing the Bill of Materials and chemical inventory that is the basis for the 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 that have been assessed and optimized for their chemical composition. To achieve the credit, the project must use products comprising at least 25 percent of the total cost of permanently installed products; products must be accounted for by cost. Cradle to Cradle v3 Silver certified products are valued at 100 percent of cost, recognizing that it does not contain Cradle to Cradle banned list chemicals and does not contain chemicals that are considered carcinogens, mutagens, or reproductive toxins. Cradle to Cradle v2 and v3 Gold and Platinum are valued at 150 percent of their costs recognizing that the product has been fully optimized from a chemical perspective.

While Cradle to Cradle Certified is a multi-attribute assessment, these credits focus on the material health aspect of the program. For that reason, LEED will accept products that have achieved the material health scores as outlined above but may have an overall lower certification. 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 percent of cost in option 2.

Option 3, Product Manufacturer Supply Chain Optimization, is worth its own point. While still in draft form, this credit addresses...
What You Know About a Cradle to Cradle Certified Product

With many certification programs, the concern becomes one of information overload. It is not the purview of an architect to scrutinize every ingredient of every material for consistency with sustainability goals. Yet reliable information on products and their constituent ingredients is still needed. While the analysis and optimization results of a product put through Cradle to Cradle Certified assessment are rigorous and detailed and full of complicated information unique to the particular company, when a product earned the Cradle to Cradle Certified mark, architects and specifiers know certain things about it.

To begin with, Cradle to Cradle Certified means there has been external verification of a product’s recyclability and safety for human and environmental health. An expert assessment of toxicity hazards of all product ingredients has been made throughout the supply chain down to 100 ppm (0.01 percent). A continuous improvement path has been defined for optimizing product design and manufacturing processes. For those who select Cradle to Cradle Certified products, there is also the sense of joining a growing community of specifiers and consumers who demand truly sustainable products and the transparent, holistic assessment of those products.

Commercial customers influenced by LEED and other environmental rating systems together with an overall demand for sustainable products and processes, are heightening the need for transparent, credible product information. In this environment, Cradle to Cradle Certified becomes increasingly important, as a quick reference for everyone looking for quality, sustainable products for the built environment.

Endnotes


Additional Resources

MBDC: www.mbdc.com
EPEA: www.epea.com
ToxServices: www.toxservices.com
Cradle to Cradle Certified product registry: http://www.c2ccertified.org/products/registry
USGBC’s LEED v4: http://www.usgbc.org/leed/v4

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1. Increasingly the industry is looking for a more comprehensive system of evaluating products, and favoring:
   a. life-cycle thinking.
   b. environmental product declarations.
   c. green building systems.
   d. the multi-attribute certification approach.

2. Cradle to Cradle Certified was developed along visionary guidelines to evaluate products according to:
   a. five parameters.
   b. ten parameters.
   c. life-cycle goals.
   d. sustainability goals.

3. Cradle to Cradle proposes that we don’t have a waste problem, we have a:
   a. landfill problem.
   b. material problem.
   c. consumption problem.
   d. design problem.

4. Cradle to Cradle Certification is based on a binary pass/fail system.
   a. True
   b. False

5. In the latest version of Cradle to Cradle certification protocol, Version 3.0, made publicly available in late 2012:
   a. a new Silver level has been added.
   b. the bar has been lowered for the basic level.
   c. the bar has been raised across all attributes.
   d. the Platinum level was discontinued.

6. If products contain substances that are on the program’s banned list—such as PVC—these products:
   a. can sometimes be accepted if they are modified.
   b. will be accepted if an alternative is not readily available.
   c. will be accepted if the manufacturer cannot make the product without the material.
   d. will never receive certification at any level.

7. As in Nylon 6 formulation, in some cases, a red flag material can be changed to a moderate risk:
   a. if there is no chance the material is considered hazardous.
   b. if there is no chance that the chemical will be an exposure risk to humans or the environment.
   c. a red flag material can never be changed to a moderate risk.
   d. if approved by an independent assessor.

8. To collect formulations and proprietary ingredients throughout the entire supply chain that would not otherwise be accessible, Cradle to Cradle Certified uses:
   a. independent, accredited assessors.
   b. representatives from academia.
   c. material specialists at the manufacturer.
   d. suppliers.

9. In the two years since the Cradle to Cradle Products Innovation Institute has been actively managing the certification program, there has been:
   a. no change in the number of products certified.
   b. a slight decline in the number of products certified.
   c. a 5 percent increase in the number of products certified.
   d. a 20 percent increase in the number of products certified.

10. What is the main credit that addresses Cradle to Cradle in LEED v4 New Construction?
    a. Indoor Environmental Quality Credit 4
    b. Materials and Resources Credit 4
    c. Innovation in Design Credit 1
    d. Energy and Atmosphere Credit 3