PRIMARY GREEN PRODUCT STANDARDS AND CERTIFICATION PROGRAMS: A COMPARISON

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With growing concerns about climate change, healthy indoor environments, and energy and resource conservation, green building is quickly moving from an emerging trend to a viable mainstream option that continues to gain market share at impressive rates (Table 1). Architectural and building contracting firms (non-residential sector) agree that to remain competitive they must shift toward green building, including the use of green building products to achieve energy efficiency, water conservation and indoor environmental quality (IEQ) goals (MHC 2008a, b, c).

In non-residential construction, the majority of specifiers (88 percent) are using some type of green building product in their projects, with that number expected to increase to 91 percent in 2013. Interest among architects, contractors and builders in the types of green products used in their projects varies, however. For example, in the non-residential sector, architects most often specify green mechanical systems, plumbing fixtures and building automation systems, with contractors focusing more on materials and finishes. In the residential market, homebuilders are more interested in products that promote energy and water efficiency (MHC 2008a, b, c).

Table 1. US Green Building Market Share Growth: 2008 – 2012 / 2013*

Building Sector	2008 Market Share	Projected Market Share
Commercial, Institutional	12% ($24 to $29 billion)	20% to 25% ($56 to $70 billion)
Education	15% to 20%	30%
Residential	6% to 10% ($12 to $20 billion)	12% to 20% ($40 to $70 billion)

*MHC, 2008a, b, c

Regardless of the type of green building product, making wise product selections can be challenging, especially when confronted by a myriad of marketing claims, concerns about green washing and no single source for reliable industry-independent, third party information. More than one-half of those surveyed (architectural / engineering firms, owners and contractors) for the 2008 McGraw-Hill Construction Smart Reports said that green building certification programs (in some quarters referred to as eco-labels) are valuable or very valuable in selecting green products. The survey results also showed that energy efficiency is a principal factor in deciding if a product is green, with 85 percent of the respondents indicating that is it important. Other key factors following closely behind in importance were health and well being benefits at 72 percent, water efficiency at 71 percent, and recycled content or recyclability at 70 percent (MHC 2008a).

Even though green product standards and certification programs offer helpful guidance and assurances, they have significant differences, which have lead to confusion in the market place. Specifiers, building owners, contractors, homebuilders and consumers need to be very clear about what each program offers and what it means when a product sports a particular product certification. This white paper compares eight programs identified in the McGraw-Hill Construction 2009 SmartMarket reports as the primary market movers, including:

- ENERGY STAR (US Environmental Protection Agency, US Department of Energy)
- WaterSense (US Environmental Protection Agency)
- Cradle to Cradle Certification (MBDC)
- GREENGUARD (GREENGUARD Certification Program)
- Green Seal
- GreenSpec Directory (Building Green, LLC)
- Forest Stewardship Council (FSC)
- Sustainable Forestry Initiative (SFI)

Table 2. Knowledge, Awareness of Green Building Product Standards, Certifications Among Industry Players (A/E Firms, Contractors, Owners)*

Program	Percent
ENERGY STAR	83%
GreenSpec	21%
FSC	21%
Green Seal	19%
SFI	18%
Cradle to Cradle	16%
GREENGUARD	14%
WaterSense	14%

* Adapted from MHC 2008a, page 33.

Another point of confusion is the interchangeable use of the terms “eco-label” and “product certification.” In the marketplace, they seem to be used interchangeably, but within certification and standard setting bodies, such as the International Organization of Standardization (ISO), the terms are not synonymous. A future white paper will provide an in-depth review of this topic. For the purposes of this discussion, the programs will be categorized according to the following definitions for product certifications or standards:

- **First-party standard/certification** describes an individual or organization that offers a product, process or service that provides some type of verification of assurance, label or certification to a standard or set of criteria. This is self-declaration. There is typically no independent, third-party testing or auditing following a transparent, accredited process. If, however, laboratory testing or auditing is employed, it is conducted by the organization providing the product, process, or service; a subsidiary of the organization; or a third party chosen by the organization.

  Example: GreenSpec Directory

  Although an editorial board rather than product manufacturers makes this declaration, certifications are granted based on information provided by the manufacturer. No external test data or verification processes are required.

- **Second-party standard/certification** describes an industry-based association, to which an individual or organization belongs, that provides the standard, label, or set of criteria for certification toward which a product, process or service may aspire. The laboratory or organization conducting any testing or auditing may be a third party or independent agent however the test data are measured against an industry-managed standard or guideline, and is therefore dictated in part by a group of vested interests.

  Examples: ENERGY STAR, WaterSense, Sustainable Forestry Initiative (SFI).

  Although ENERGY STAR and WaterSense may not fit squarely in either first- or second-party certification categories, they are self-certification programs where the manufacturer strives to reach the

standards or set of criteria established by the federal government. This defines them more firmly as a second-party standard / certification organization. The Sustainable Forestry Initiative is also an example of a second-party certifier.

- **Third-party standard/certification** describes a product, process or service that meets specified, industry-independent criteria or standards according to the verification and review by an impartial, industry-independent agent. Verification is performed through a certifying body conducting independent data reviews, auditing, and/or testing in accordance with industry-independent standards or criteria. To ensure credibility of third-party certification, the testing laboratory or certifying body must not be an extension or subsidiary of the company requesting the certification. These standards may or may not be consensus-based.

  Examples: Cradle to Cradle, Green Seal, GREENGUARD Certification Program and Forestry Stewardship Council (FSC)

Note: These definitions were developed based on a number of sources, because as of yet there is no one accepted definition of these categories. While they may be further refined, they are offered here to provide some perspective and to help specifiers, product manufacturers and consumers with their understanding of the product certification programs reviewed in this white paper. In addition to categorizing these programs as first-, second- or third-party certification programs, this comparison will focus on the following questions:

- What are the primary goals and characteristics of these programs?
- How much of a need is there for these programs in the green market (market penetration)?
- What products do these programs cover?
- How do these programs work? Do they have defined, robust certification procedures or a verification program relying primarily on manufacturer-supplied information? Are these programs open and transparent with third-party governance?

Two of the green product certification programs to be reviewed (Forest Stewardship Council-US and the Sustainable Forestry Initiative) were developed to promote responsible management of forests and procurement practices, rather than certifying specific products. Some background on certification of sustainable forests might provide a helpful perspective before going into detailed discussions of the programs in their respective first-, second- and third-party certification categories.

Sustainable forest certification programs were originally developed to address the issue of tropical deforestation. Most of today's certified forests (87 percent), however, are in temperate and boreal regions in developed countries, with 58 percent in North America and more than 30 percent in Western Europe. Certification of sustainable forest management continues to increase every year worldwide. From 2005 to 2006, the area of certified forests increased by 12 percent, exceeding 667 million acres (7 percent) of the global forest area. In 2006, potential supply of certified timber currently was 22 percent of timber consumption (Alvarez 2007).

Business-to-business markets in the wood supply chain are the primary drivers of certification, although procurement policies, governments and the business community worldwide are requiring that wood products come from responsibly managed forests (Alvarez 2007). For example, the US Green Building Council's LEED program recognizes wood products that are FSC certified (see Forest Stewardship Council-US discussion below for more about FSC-US market share). Both FSC-US and SFI have responded to the market demands by providing chain-of-custody certification labels (see discussions below on FSC-US and SFI).

The Forest Stewardship Council, founded in 1993, is an international nonprofit organization whose members, from more than 70 countries, represent social, economic and environmental (conservation) interests of forests. The Sustainable Forestry Initiative program was developed by the American Forest and Paper Association in 1994 to document the commitment of member companies to sustainable forestry in the US and Canada. Although they are slightly different, both SFI and FSC-US standards encourage integration of perpetual growing and harvesting of trees with strong measures to protect wildlife, plants, soil, water and air quality (Alvarez, 2007, Washington State 2007).

In recent years, SFI and FSC have certified increasing numbers of forest acres in the US, while the American Tree Farm System acreage has remained stable. American Tree Farm System, the oldest voluntary, third-party forest management verification process in the US, certifies the forestry practices of family-owned and other nonindustrial private landowners. In 2007, these three systems together have certified more than 107 million acres, representing 14 percent of total US forests. Some 25 percent of private US forestland is now certified by one of these three programs (Alvarez 2007). The American Tree Farm System does not have a green product certification program, and thus is not discussed further. For more information, visit the American Tree Farm System website at www.treefarmsystem.org.

THIRD-PARTY CERTIFICATION

As third-party certifications are considered the leadership standards, they provide opportunity for market transformation and greater assurance that marketing claims truly reflect the products' "green" capabilities. The comparison of these programs starts with this category, which as noted, includes Cradle to Cradle, Green Seal, GREENGUARD and the Forestry Stewardship Council.

Cradle to Cradle Certification

Primary Goals / Characteristics / Market Penetration. Cradle to Cradle Certification is an outgrowth of Cradle to Cradle Design, developed by the consulting firm McDonough Braungart Design Chemistry (MBDC). Cradle to Cradle Design recommends designing products and services based on patterns found in nature and requires that products be developed for closed-loop systems within which every ingredient is safe and beneficial, either to biodegrade naturally and restore the soil or to be fully recycled into high-quality materials for subsequent product generations, again and again ("cradle to cradle" vs. "cradle to grave") (see Figure 1). To that end, Cradle to Cradle Design has three primary principles upon which the Cradle to Cradle Certification is based: waste equals food, use current solar income and celebrate diversity (MBDC 2007a, b).

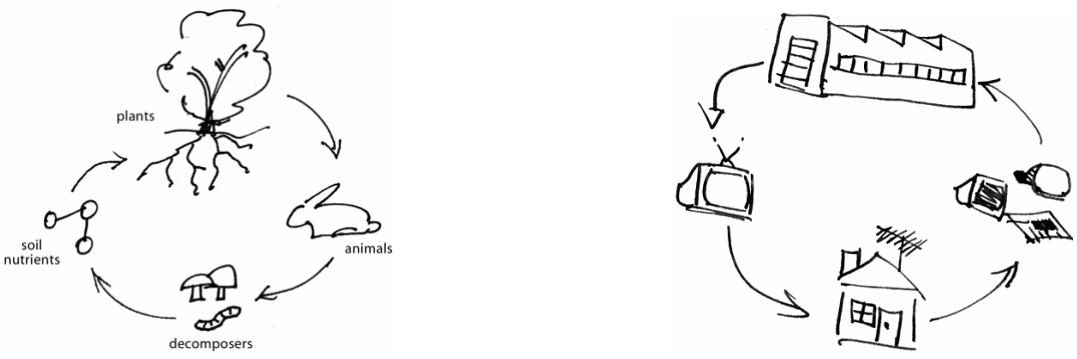

Figure 1. Cradle to Cradle Closed Loop System (MBDC 2007b)

Cradle to Cradle Certification focuses on the life cycles of materials used in a product and the life cycle of the product itself, specific characteristics of the materials used in the product and the product's manufacturing process. As a result, this process places a major emphasis on human and ecological health impacts of

product ingredients, the ability of that product to be recycled or safely composted, the quality and quantity of energy and water used to create a product, and the manufacturer's social responsibility (MBDC 2007c).

According to the McGraw-Hill Construction 2008 SmartMarket reports, Cradle to Cradle is known to about 16 percent of architectural / engineering firms, contractors and building owners, who were surveyed for the reports. This result is comparable to five of the eight green product certification programs highlighted in these reports, with only ENERGY STAR, and Forest Stewardship Council having a significantly greater market awareness among those surveyed (see Table 2) (MHC 2008a).

Products Covered. Cradle to Cradle has a wide variety of certified products listed on its website, including antimicrobials; building exterior and interior products, materials, furnishings and finishes; athletic surfaces; baby care; bedding, linens and towels; body cleaners; carpet fiber; cleaning products; concrete additives; day lighting products; fabric coatings; fabrics for office furniture and other applications; packaging; house wares; pipe and coupling products; polymers; surfaces and coatings; sun shade systems; white board products; wood treatment; workplace and workstation accessories; and surf board wax. The listings are organized by product type, manufacturer or level of certification, including links to individual product descriptions and when a particular product's Cradle to Cradle certification expires.

How Cradle to Cradle Works. MBDC employs the Cradle to Cradle Design Protocol to assess materials used in a product, the complete product formulation and the manufacturing process. There are five categories that comprise the certification criteria: materials, material reutilization / design for the environment, energy, water and social responsibility. The first step is to inventory and evaluate a material or product's ingredients as well as the complete product formulation for human and environmental health impacts throughout the ingredients' and the product's life cycles. Chemicals used in the materials and the complete product are identified down to the 100 parts per million (ppm) level and placed into one of four categories:

- Green – Little or no risk. This chemical is acceptable for use in the desired application.
- Yellow – Low to moderate risk. This chemical is acceptable for use in the desired application until a green alternative is found.
- Orange – There is no indication that this is a high risk chemical for the desired application, but a complete assessment is not possible due to lack of information.
- Red – High risk. "Red" chemicals (also sometimes referred to as "X-list" chemicals) should be phased out as soon as possible. "Red" chemicals include all known or suspected carcinogens, endocrine disruptors, mutagens, reproductive toxins and teratogens. In addition, chemicals that do not meet other human health or environmental relevance criteria are "red" chemicals.

After all of the chemicals are assessed, MBDC recommends replacing "Red" with "Green" chemicals, as they are available (MBDC 2007d).

Certification of the finished product also requires evaluating the manufacturing process for the amount of energy used and the quality (such as renewable energy), with strong emphasis on solar power; water use quantity and water effluent quality; and workplace ethics (corporate ethics and fair labor practices). Finally, the reuse of materials and composting at the end of the materials and/or product's life cycles are assessed (MBDC 2007b).

There are four levels of Cradle to Cradle Certification: Basic, Sliver, Gold and Platinum. The application process is the same for all levels. Manufacturers are required to sign a non-disclosure agreement and agree

to pay a certification fee to MBDC. Manufacturers also are required to provide data for the materials inventory and on the manufacturing process, from which MBDC makes its appraisal and delivers a certification assessment report. Annual recertification is required. All required documentation needed for certification as well as descriptions of the process may be found on the Cradle to Cradle Certification website: **www.c2ccertified.com** (MBDC 2007b).

GREENGUARD

Primary Goals / Characteristics / Market Penetration. The GREENGUARD Certification Program, developed and administered by the GREENGUARD Environmental Institute (GEI), is an industry-independent, third-party testing and certification program for products that emit low levels of volatile organic compounds (VOCs), formaldehyde, aldehydes, respirable particles and other indoor air pollutants. The GREENGUARD Environmental Institute was established in 2001, with the first product becoming GREENGUARD Indoor Air Quality Certified in 2002. In 2005, GEI introduced the GREENGUARD Children & Schools standard, the most stringent product emissions criteria to date. The GREENGUARD Environmental Institute is currently developing a health-based emission standard for residential, healthcare, educational and commercial environments.

The GREENGUARD for Building Construction Program certifies newly constructed multifamily and commercial properties that follow best practice guidelines for preventing indoor mold growth during design, construction and ongoing operations. GREENGUARD also has a Microbial Resistance Listing Program, which lists representative samples of products that have been found to be microbial resistant when tested pursuant to ASTM D 6329-98 and analyzed based on a quantitative scale for measuring product performance (GREENGUARD 2008). Among the eight product certification programs highlighted in the McGraw-Hill Construction 2008 SmartMarket reports, GREENGUARD is the only one that focuses specifically on chemical and particulate emissions and on building occupant safety and health. Other programs, such as Cradle to Cradle and GreenSeal, primarily focus on chemical content and rely on air pollutant levels established by state and federal agencies or professional organizations for outdoor air or for occupational environments. These are important distinctions that make a significant difference in how much a product or material may contribute to indoor air pollution and the affect is has on building occupants.

Also, of the eight product certification programs, there are two that are ANSI Authorized Standards Developers; GEI is one and Green Seal is the other. Being an ANSI Authorized Standards Developer adds significant credibility to the GREENGUARD program and substantiates GEI's industry independence and transparency. As an ANSI standards developer, GEI establishes performance-based, field-validated standards that are the backbone of the product certification procedures. The process for developing these standards is open and transparent. A GEI Advisory Board comprised of independent volunteers, who are renowned experts in indoor air quality, public and environmental health, building design and construction, and public policy provide guidance, review and leadership to GEI (GREENGUARD 2004, 2008).

According to the McGraw-Hill Construction 2008 SmartMarket reports, awareness of GREENGUARD ranks highest among architects at 22 percent of those surveyed. This is a significant finding as architects strongly influence which products are specified for a given project. GREENGUARD's relative awareness in the building industry is among the lowest (14 percent) of the eight green product certification programs (MHC 2008a, b).

GREENGUARD certified products are specified more often in education, retail and public buildings than in other types of buildings. GREENGUARD certified products are specified in the mid-Atlantic region at a rate nearly twice that of other regions in the US, likely because of the number of federal government buildings located in this area. McGraw-Hill Construction concluded that green product certification programs based on

sound science, such as GREENGUARD and Green Seal will become more prevalent (MHC 2008a, b). Because of growing awareness about how indoor air pollution, particular chemicals and particulates can adversely impact health and stricter indoor environmental regulations applied to education and public buildings, the GREENGUARD certification programs are well positioned.

Products Covered. The GEI website lists all GREENGUARD Indoor Air Quality Certified and GREENGUARD Children & Schools certified products. The GREENGUARD Product Guides are organized by product category or by manufacturer, including links to individual product descriptions, printable GREENGUARD certification certificates, and manufacturer contact information. Presently, 200,000 products from 200 manufacturers are GREENGUARD Indoor Air Quality Certified, GREENGUARD Children & Schools certified or both. Product categories include adhesives / sealants; air filters; bedding; ceiling systems; cleaning and maintenance products / systems; doors; flooring; wall and floor finishes; construction materials; insulation; paints and coatings; surfacing materials; interior furnishings, furniture and textiles; window treatments; visual display products; electronic equipment; and personal care products (GREENGUARD 2008).

How GREENGUARD Works. The GREENGUARD certification process begins with the submitting company providing product information to GEI and agreeing on a certification scope, testing schedule and associated fees. Newly manufactured products are packaged, sealed and shipped where testing begins within seven days of receipt. Products are tested in dynamic environmental chambers for specific pollutants over a period of one week. Product specific emission rates are measured and are then used to determine exposure concentrations in microgram per cubic meter ($\mu g/m^3$) or parts per million (ppm). For most products, data is obtained for formaldehyde and other aldehydes, VOCs and respirable particles. Additional gases, such as ozone, carbon monoxide and nitrogen oxide are monitored for electronic equipment and processes.

Environmental chamber operation and testing protocols follow the GREENGUARD test method, *Method for Measuring Various Chemical Emissions Using Dynamic Environmental Chambers*. The method relies on the guidance of ASTM standards D-5116-06 and D-6670-01, the US EPA's testing protocol for furniture, the State of Washington's protocol for interior furnishings and construction materials, and California's Department of Health Services (CDHS) standard practice for the Special Environmental Requirements, Specification Section 01350. Manufacturers also are required to provide GEI with a statement of their environmental practices and processes, including recycling programs, waste reduction programs, use of non-toxic materials, environmentally friendly packaging, and corporate safety and health programs.

Once a product line has been certified, it may carry the GREENGUARD Indoor Air Quality Certified or GREENGUARD Children & Schools mark and be listed in the GREENGUARD Product Guide. The GREENGUARD certification program requires annual re-certification. Products also must undergo quarterly testing of their materials and breadth of manufactured products to ensure they maintain their compliance with GREENGUARD certification emission standards.

The US Green Building Council's (USGBC) LEED 2009 Green Building Rating System Certification recognizes GREENGUARD Indoor Air Quality Certified products as credit criteria for numerous points including the following:

- **LEED for Commercial Interiors:** EQ Credit 4.3, low-emitting materials, flooring systems; EQ Credit 4.5, low-emitting materials, system furniture; Innovation for Design Credits, low-emitting materials, adhesives and solvents, paints and coatings (Children & Schools)

- **LEED for New Construction / Core & Shell:** EQ Credit 4.3, low-emitting materials, flooring systems; Innovation in Design Credit, low-emitting furniture; Innovation for Design Credits, low-emitting materials, adhesives and solvents, paints and coatings (Children & Schools)

- **LEED for Existing Buildings:** EQ Credit 3.3, green cleaning – purchase of sustainable cleaning products and materials (Children & Schools); Innovation Design Credit, low-emitting furniture

- **LEED for Schools:** EQ Credit 3.3, green cleaning – purchase of sustainable cleaning products and materials (Children & Schools); Innovation Design Credit, low-emitting furniture

For more information about GREENGUARD Indoor Air Quality Certified or GREENGUARD Children & Schools, visit the GEI website at **www.greenguard.org**.

Green Seal

Primary Goals / Characteristics / Market Penetration. Green Seal is an independent, non-profit organization that identifies and promotes products and services that cause less toxic pollution and waste, conserve resources and habitats, and minimize global warming and ozone depletion. Founded in 1989, Green Seal uses an open consensus-based process to develop its standards and relies on outside funding to support this process. As noted above, Green Seal is an ANSI accredited standards developer. For an interior building product to achieve certification, the product must meet the Green Seal Environmental Standard for its category as demonstrated by rigorous evaluation, testing and a plant visit.

In addition to Green Seal's product certification program, the organization has several other programs that recognize environmentally preferred products and assist companies and governments (local, state and federal) with their goals of being environmentally responsible in their business and manufacturing practices, procurements, and building operation and maintenance programs. These include the Green Seal Laureate Program, the Green Seal Institutional Greening Programs, Greening Your Government Program and the Green Lodging Program. This discussion will focus on the Green Seal Product / Service Certification Program.

Green Seal primarily evaluates VOC levels in terms of VOC content and in general does not require testing for product emissions, as does GREENGUARD. The specific VOC content requirements vary with each product category and even among products within each category. The newly revised Green Seal Standard GS-37 for institutional cleaners includes the GREENGUARD Children & Schools Certification for Cleaners and Cleaning Maintenance Products and Systems inhalation criteria and dynamic chamber test method as one of two options for assuring low VOC emissions for Green Seal certification.

Approximately 20 percent of the architects / engineers, contractors and building owners surveyed for the McGraw-Hill Construction 2008 SmartMarket reports were aware of Green Seal, with products most often specified for projects in the Pacific Northwest and on the East Coast (see Table 2). Green Seal products are more likely to be found in dorms, education and healthcare buildings than in other building types. As noted above, McGraw-Hill Construction believes that green product certification programs based on sound science, such as GREENGUARD and Green Seal will become more prevalent.

Products Covered. Green Seal certified products and services are listed on the Green Seal website and are organized by product categories: household products, facility operation and maintenance, construction materials, equipment and systems. There are also other categories that are not specifically related to indoor air quality. The listings include the manufacturer, with a link to the manufacturer's website, product name and the Green Seal Environmental Standard under which the product is certified. Product categories relevant to

indoor air quality include consumer bathroom, glass and carpet cleaners, paints and coatings, and coated printed paper. New standards are under development that will expand this list.

How Green Seal Works. Green Seal requires upfront payment of all fees as a part of the application process. It utilizes a life-cycle approach, which means it evaluates a product or service from the creation of the materials used in the product, to manufacturing and use of the product itself, to recycling and disposal of the product. After products are evaluated and found to be in compliance with the applicable Green Seal standard, the manufacturing facility is visited to ensure that the current product is representative of future production. Manufacturers must keep extensive records to demonstrate continued compliance with this requirement. Once certified, products are subject to annual monitoring. Different Green Seal Environmental Standards have different requirements. Manufacturers are required to demonstrate that their products meet each standard's specific criteria, including providing test results. As with GREENGUARD, The USGBC's LEED 2009 Green Building Rating System Certification recognizes Green Seal products as credit criteria for several different points. For more information about Green Seal, visit the Green Seal website at **www.GreenSeal.org**.

Forest Stewardship Council-US

Primary Goals / Characteristics / Market Penetration. The Forest Stewardship Council (FSC) is an international, not-for-profit, membership-based organization created in 1993 to promote the responsible management of the world's working forests through the development of forest management standards, trademarks and a voluntary certification system for forest management, chain-of-custody, joint forest management chain-of-custody and products. In 1995, the US national chapter of FSC was established (FSC-US). The FSC's international headquarters are located in Bonn, Germany, with offices in more than 40 countries, including Minneapolis, MN (FSC-US 2006).

The Forest Stewardship Council standards are based on a set of 10 Principles and 57 Criteria for forest management that addresses legal issues, indigenous peoples' rights, labor rights, multiple benefits and local environmental impacts surrounding forest management. They are applicable to all FSC-certified forests throughout the world. Within the US, there are nine approved regional standards covering the forested portions of the entire continental US. As of the Spring 2006, FSC standards have been applied in more 170 million acres and in 60 countries around the world. According to the FSC, the number of countries using FSC standards has increased to nearly 80 (FSC-US 2006, FSC-US 2008a).

The Forest Stewardship Council offers three types of certification:

- Forest Management: Applies to managing forested lands
- Chain-of-Custody: Applies to manufacturers and processors of forest products and demonstrates credible tracking of certified wood and wood products from certified forests through trade and manufacturing to committed retailers and consumers
- Joint Forest Management / Chain-of-Custody: Applies to managing forested land and requires forest managers to provide documentation that forest products can be traced to point of origin

The remainder of this discussion will focus on the FSC Chain-of-Custody certification, as it is the FSC certification program that applies to green building products.

The FSC-US surprised McGraw-Hill Construction market researchers with how often it is specified when compared with other eco-labels. The industry awareness of FSC-US is 21 percent and ranks a distant second along with the GreenSpec Product Directory behind Energy Star (83 percent) (see Table 2). Even so,

McGraw-Hill Construction concluded in its 2008 SmartMarket Reports that when specifiers or owners know about FSC-US, they tend to specify FSC-US certified products in their projects, which bodes well for continued growth in market share (MHC 2008b).

Contractors are more likely to specify FSC-certified products than architects / engineers or building owners. Overall, the rate at which FSC-certified products are being specified has seen significant growth from 11.6 percent in 2006 to 13.3 percent in 2007. The Pacific Northwest (16.3 percent) and Mid-Atlantic (15.8 percent) regions have the highest specification rates, which is expected given higher awareness of FSC-US in a region where forestry is one of the major regional industries (MHC 2008b).

Products Covered. Any product made with solid wood or wood fiber may be FSC certified as long as the wood originates from an FSC-certified forest, including green building products, lumber, and paper and pulp products. Presently, there are more than 10,000 FSC-certified products worldwide (FSC-US 2008b).

A searchable database of FSC-certified products is available on the FSC-US website (**www.fscus.org**). It may be searched by certificate holder, FSC code, certification category, product type, species of wood, country where certificate holders reside, and certification status. Each listing includes details about the certificate holder including contact information, status of certification, when the certificate was issued, date of expiration, and under what standard the certificate was issued. There is also a database of FSC building product suppliers which may be accessed at **www.findfsc.org** (FSC-US 2008b).

How FSC Works. All FSC processes and decisions are open for public review and comment, including standards development and certification assessments. To maintain the integrity of FSC standards worldwide, certification of forest managers and forest product manufacturers is achieved by FSC accredited certification organizations. With respect to chain-of-custody, these organizations verify that companies selling FSC-certified products have tracked their supply back to FSC-certified forests. There are three FSC-certified product labels:

- FSC 100%: Products with a 100% FSC label originate entirely from forests certified as meeting the environmental and social standards of FSC.
- FSC Recycled: Products with an FSC Recycled label support re-use of forest resources and use only post-consumer recycled wood or fiber in accordance with FSC standards.
- FSC Mixed Sources: Products with a Mixed Sources label support the development of responsible forest management worldwide. The wood comes from FSC-certified well-managed forests, along with company-controlled sources and/or post-consumer reclaimed material. At least 70 percent of the material used in the production is FSC-certified and post-consumer recycled content. Otherwise, the volume credit system allows mixing FSC eligible inputs with FSC Controlled Wood. Under volume credit, products equaling the volume of FSC eligible inputs can be labeled as FSC certified. Controlled wood is not FSC-certified material, but it is controlled by the company to avoid wood from forested areas where traditional or civil rights are violated, high conservation values are threatened, trees are genetically modified or illegally harvested, and to avoid wood from natural forests which have been converted to plantations or other non-forest uses. The recycling symbol identifies post-consumer reclaimed content in these products (FSC-US 2008b).

Companies interested in certifying their products submit an application to an FSC-accredited certifier, who upon acceptance of the application sends a certifier to inspect the manufacturing site. The goal is to ensure that there are adequate systems in place to keep records of certified inventory, according to FSC's Chain-of-Custody Standard FSC-STD-40-4004. The inspector sends an assessment report to the applicant for review.

Once the inspector is satisfied he/she grants certification, with both the company and certifier signing a certification agreement. An annual audit is required to ensure the terms of the agreement are being followed. Certifiers also can conduct short-notice inspections of the client's facilities and records. Applicants are required to pay a certification fee, which can vary among FSC accredited certifiers (FSC-US 2008c, d).

For more information or to obtain copies of FSC standards and documents, visit the FSC-US website at **www.fscus.org**.

SECOND-PARTY CERTIFICATION

As noted, ENERGY STAR and WaterSense do not fit neatly into either the first- or second-party certification categories. They are self-certification programs in some sense, but because they require manufacturers to self-certify to specific criteria established by the federal government rather than a particular industry, they fit better into this category. The Sustainable Forestry Initiative is also an example of a second-party certifier.

ENERGY STAR

Primary Goals / Characteristics / Market Penetration. ENERGY STAR®, a joint program of the US Environmental Protection Agency (US EPA) and the US Department of Energy (US DOE), identifies efficient products that will reliably deliver energy savings and environmental benefits. ENERGY STAR also provides builders, architects, contractors, financial institutions, and organizations / companies with policies and practices to create, operate and maintain energy efficient buildings. The focus of this discussion will be on the ENERGY STAR product label.

Of the eight product certification programs, ENERGY STAR enjoys the deepest market penetration, which is reflective of a primary emphasis on energy conservation. By the end of 2007, more than 70 percent of the US public could identify the ENERGY STAR label. One in three households knowingly purchased an ENERGY STAR qualified product in 2007, and more than 70 percent of those households credited the label as an important factor in their decision (US EPA 2008). Also see Table 2, which provides a comparison of market penetration among the eight product certification programs cited in the McGraw-Hill Construction 2008 SmartMarket reports.

These results were achieved in part by more than 1,000 retail partners who promoted ENERGY STAR products and educational information to their customers. In the nonresidential sector, the ENERGY STAR building performance rating system also drives the use of ENERGY STAR labeled products. It, too, has had tremendous growth in 2007. More than 62,000 buildings throughout the US are now rated as ENERGY STAR, representing more than 7.5 billion square feet, including 55 percent of hospital space (acute care), 52 percent of supermarket space, 31 percent of office building space, 24 percent of school space and 24 percent of hotel space (US EPA 2008).

Products Covered. ENERGY STAR covers more than 50 product categories, with approximately 2,000 manufacturers using the ENERGY STAR label on more than 40,000 individual product models. The major categories include appliances, HVAC equipment, home building envelope, home electronics, lighting, commercial food service and other commercial products. About 500 million ENERGY STAR qualified products were purchased in 2007, for a cumulative total of more than 2.5 billion products purchased since the program began in 1992 (US EPA 2008).

How ENERGY STAR Works. The ENERGY STAR program develops performance-based specifications that determine the most energy efficient products in a particular category. Products that meet these specifications earn the ENERGY STAR label. To develop ENERGY STAR product specifications, the US EPA and US DOE

use a systematic process that relies on market, engineering and pollution savings analyses, as well as input from industry stakeholders (see Figure 2). This open and transparent process ensures that ENERGY STAR identifies products where large gains in energy efficiency and pollution reduction can be cost-effectively realized and can play an influential role in expanding the market for these products. The agencies rely on the following criteria when determining whether to develop or revise an ENERGY STAR product specification:

- Significant energy savings will be realized on a national basis
- Product energy consumption and performance can be measured and verified with testing
- Product performance will be maintained or enhanced
- Purchasers of the product will recover any cost difference within a reasonable time period
- Specifications do not unjustly favor any one technology
- Labeling will effectively differentiate products to purchasers (US EPA 2003, ENERGY STAR 2008)

Manufacturers who wish to use the ENERGY STAR label must agree to a set of partner commitments, test their products per specified testing procedures and self-certify that their products meet the ENERGY STAR guidelines for that product category. Manufacturers are required to submit test results to the US EPA or the European Commission, as appropriate, and to submit periodic updates. To the extent ENERGY STAR is a self-certification program, the US EPA relies on the integrity of participating companies to ensure all products for which ENERGY STAR claims are made meet all aspects of the ENERGY STAR performance specification. The product partner commitments and product specifications for all categories are posted on the ENERGY STAR website. For more information about ENERGY STAR, visit the program's website at **www.energystar.gov** (ENERGY STAR 2008).

Figure 2. US EPA ENERGY STAR Specification Development Cycle

WaterSense

Primary Goals / Characteristics / Market Penetration. As with ENERGY STAR, WaterSense is a partnership program sponsored by the US EPA. Its primary goal is to protect the future of the nation's water supply by promoting water efficiency and enhancing the market for water-efficient products, programs and practices. In general, WaterSense labeled products are about 20 percent more water-efficient and perform their intended function as well as or better than their less water-efficient products (WaterSense 2008).

As with ENERGY STAR, WaterSense partners with manufacturers, retailers, distributors and utilities to bring WaterSense products to the marketplace and make it easy to purchase high-performing, water-efficient products. WaterSense also partners with irrigation professionals and irrigation certification programs to promote water-efficient landscape irrigation practices.

Further, WaterSense is developing a labeling specification for new water-efficient, single-family homes. WaterSense labeled new homes will combine WaterSense labeled products with other water-efficient fixtures and practices to reduce the amount of water used by approximately 20 percent. In addition to WaterSense labeled toilets and faucets, these new homes may include dishwashers and clothes washers with the ENERGY STAR label, if those appliances are installed when the home is built. This discussion will focus on the WaterSense product label.

WaterSense began in 2006 and is just now getting established in the market place. Presently, about 14 percent of industry players (architectural / engineering firms, contractors and owners) are aware of WaterSense (see Table 2). According to the McGraw-Hill Construction 2008 SmartMarket reports, however, sensor faucets and waterless urinals are becoming more popular, especially in healthcare, education and institutional buildings, which are among the stronger green building sectors. This indicates a strong market for WaterSense labeled products (MHC 2008a, b). Given that it is a US EPA program patterned after the ENERGY STAR program, WaterSense is positioned to gain greater market penetration over time.

Products Covered. Thus far, final product specifications for the WaterSense label have been developed for high-efficiency lavatory faucets and high-efficiency toilets, with product specifications under development for high-efficiency showerheads and high-efficiency urinals.

How WaterSense Works. As with ENERGY STAR, manufacturers who wish to use the WaterSense label must agree to a set of partner commitments, which are available on the WaterSense website. They also must have their products certified by an independent organization that is qualified to test products for the WaterSense program. Products that bear the WaterSense label must meet all the criteria in US EPA's specifications for water efficiency and performance for the appropriate product category. Annual updates are also required. The US EPA relies on the following technical and marketing criteria when determining whether to develop a WaterSense product specification:

- Potential for significant water savings on a national level
- Equal or superior product performance compared to conventional models
- State of technology development – product categories that rely on a single, proprietary technology will not be eligible for the label
- Ability to measure and verify water savings and performance
- Cost-effectiveness

As with ENERGY STAR, to the extent WaterSense is a self-certification program, the US EPA relies on the integrity of participating companies to ensure all products for which WaterSense claims are made, meet all aspects of the WaterSense performance specification. In addition, the US EPA invites manufacturers or stakeholder groups who would like WaterSense to develop a specification for a particular product category to supply needed data for specification development. In developing a specification, the US EPA follows these steps:

- Conducts technical analysis and market research to evaluate water savings potential and environmental and economic impacts
- Announces intention to develop specifications for a product to stakeholders
- Assesses existing test methods and determines the type of testing necessary for label consideration
- Releases draft product specifications for review and solicits input and comments from stakeholders and the general public; stakeholder meetings and outreach are an integral part of this process

- Posts comments on the WaterSense web site and revises the specification as necessary
- Announces final product specifications
- Reviews existing specifications periodically to assess whether or not to update them
- Monitors the market to determine whether or not to develop specifications in new product areas

For more information about WaterSense, visit **www.epa.gov/watersense** (WaterSense 2008.)

Sustainable Forestry Initiative

Primary Goals / Characteristics / Market Penetration. Sustainable Forestry Initiative, Inc. (SFI) is an independent, charitable organization dedicated to promoting sustainable forest management. The organization's forest certification standard (SFI 2005-2009) is based on principles that promote sustainable forest management, including measures to protect water quality, biodiversity, wildlife habitat, species at risk and forests with exceptional conservation value. The standard is used widely across North America and, according to SFI, has strong acceptance in the global marketplace. The Sustainable Forestry Initiative also has requirements that govern its chain-of-custody and fiber sourcing certification labels. Certification is voluntary and requires third-party audits to ensure compliance (SFI 2008a).

A number of conservation, social interest, professional and government organizations officially support SFI. Others partner with SFI and SFI program participants to conduct research, with the goals of advancing understanding of forestry-specific issues, achieving mutual conservation goals and providing tangible, on-the-ground benefits for North American forests. The SFI program recognizes its partners' achievements through an awards program that includes the Sharon H. Haines Memorial Award for Innovation and Leadership in Sustainability and the Achievement in Wildlife Management Award. In 2008, SFI awarded the first Leadership in Conservation Research Award (SFI 2009).

Market research conducted by McGraw-Hill Construction found that building industry awareness of SFI ranks fifth among the eight green building product certification programs highlighted in its 2008 SmartMarket Reports. Awareness among contractors (16 percent) and building owners (17 percent) is comparable with architect / engineering firms having a bit less awareness (13 percent). Overall awareness among these groups averaged 18 percent (see Table 2) (MHC 2008a). The Sustainable Forestry Initiative reports that its standard covers more than 135 million acres in North America, has 212 program participants, and in 2007 has seen a 90 percent increase in chain of custody certification, which is primarily applicable to manufacturers of forest products, paper merchants, brokers, printers and publishers (SFI 2007, SFI 2008a).

Products Covered. Products with a SFI certification label serve as a guarantee that the wood or wood fiber used in those products comes from responsibly managed (sustainable) forests in North America and from responsible procurement practices. The SFI website has an online directory of SFI certified forests, products, and paper and printers (SFI 2009). This discussion will focus on products.

The directory may be searched by product category, product type, certification, business type, country, state/province, company, wood species, certification body (authorized to assess whether an applicant complies with the SFI standard and requirements – see How SFI Works below), and date of certification. The categories most relevant to architects / engineering firms, contractors, building owners and consumers include exterior products, finished products, panels and composite products, and veneer. Within each category are groupings that further subdivide the types of products in that category and a listing of companies that manufacture, distribute or sell these products. Specific product brand names and descriptions of the products are not listed (SFI 2009).

How SFI Works: The SFI Standard is reviewed through an open public process every five years and is subject to continuous improvement. The review process for the SFI 2010-2014 Standard, for example, began in June 2008, and the new standard will take effect on January 1, 2010. Companies that are SFI certified have one year after a new standard is approved to implement new requirements and must demonstrate conformance at their next surveillance audit. The SFI External Review Panel, an independent panel of experts, ensures that the development and revision of the SFI Standard embodies an open, fair and inclusive process. The Panel also provides quality assurance on all SFI public documents and advises SFI on emerging issues (SFI 2008b, SFI 2009).

The following certification labels are available from SFI:

- SFI Forest Management Certification: Open to any organization, agency, non-profit or university that owns or manages forestland in the US or Canada and meets the forest management certification requirements in the SFI 2005 – 2009 Standard.

- SFI Chain-of-Custody Certification: Open to manufacturers, brokers or printers with processes in place to track wood fiber content from certified forests through production and manufacturing to the end product. This "certified content" label shows what percentage of a product's wood comes from forests that are certified to the SFI, Canadian Standards Association (CSA), and/or the American Tree Farm System forest management standards; from a certified fiber source; and/or from recycled content.

- SFI Fiber Sourcing Certification: Open to producers who obtain certified and/or uncertified wood fiber directly from the forest or buy secondary products such as semi-finished solid wood, paper or market pulp for manufacturing. Producers who use uncertified fiber can assure customers it is from legal, responsible sources and not from sensitive areas. It also demonstrates that they are promoting sustainable forest management. The Fiber Sourcing label does not make claims about certified content.

- SFI Procurement Certification: Requires participants to employ an auditable system to assess the overall characteristics of the wood and wood fiber from the forests of origin to the end user. This is done by auditing the on-the-ground practices for a portion of the wood that is supplied to their processing facilities. The program emphasizes reforestation, the utilization of best management practices and enhancing the professional capacity of wood production operations. The SFI labeling program also recognizes landowners certified under the American Tree Farm System® and Canadian Standards Association (CSA) programs, who supply raw materials to SFI program participants as a source equivalent to forests certified under the SFI program for fiber sourcing labels (SFI 2008a).

The application process is relatively straightforward and requires a licensing fee. Applications for Participation in the program are available online as are the SFI 2005 – 2009 Forest Management Standard and requirements for SFI certification labels. Once SFI accepts and approves the application, the applicant works with an SFI accredited certification body, which makes onsite visits and assesses the applicant for compliance with the SFI Standard or applicable requirements for the SFI Certification labels. Annual surveillance audits are required and, once every five years, SFI certified forests must be recertified (SFI 2008a). For more information, visit the SFI website at **www.sfiprogram.org**.

FIRST-PARTY CERTIFICATION

The GreenSpec Directory is neither a certification program nor a standard. However, products are listed based on a review process more like a first-party certification program. In this case, rather than the organization or individual providing the product offering a label or certification, the Building Green editorial board makes the declaration as to which products meet its green criteria. Decisions are based on manufacturer provided information and are subjective, as no external test data or verification is required.

GreenSpec Directory

Primary Goals / Characteristics / Market Penetration. Building Green, LLC publishes the GreenSpec Directory as one of its print and electronic resources designed to help building industry professionals and policy makers improve the environmental performance and reduce the adverse impacts of buildings. This program is not a third-party certification program, but a product review based on manufacturers supplied information. Building Green's editors state their objective is to list only the top 5 percent to 10 percent of environmentally preferable products in the directory, as determined by GreenSpec's product selection criteria. The directory presently is in its seventh edition and is available for purchase in print or free online at **www.greenspec.com**.

The GreenSpec Directory is also available as a part of the BuildingGreen Suite which integrates online versions of the GreenSpec Directory, articles about green buildings, peer-to-peer comments and more than 200 project case studies. This information is searchable and cross-referenced based on the CSI MasterFormat 2004 hierarchy, LEED™ credit or green topic. Each article, product listing and case study also lists related content and information sources. Access to the BuildingGreen Suite is granted upon paid membership. In addition, BuildingGreen is involved in a number of other initiatives, including book and magazine publishing, training programs; consulting on selected projects; and since 2001 has developed and maintained the US DOE database of high performance buildings (Building Green 2009). This discussion will focus on the GreenSpec Directory.

The GreenSpec Directory is one of the most recognized programs among the architectural / engineering firms, contractors and building owners surveyed for the McGraw-Hill Construction 2008 SmartMarket Reports. It is tied in level of awareness at 21 percent with the Forest Stewardship Council. Only Energy Star outranked these two programs. Architectural / engineering firms are much more familiar with the GreenSpec Directory (34 percent) than are owners (16 percent) and contractors (13 percent), which is not surprising as these firms are more likely to specify green products due to their greater involvement with green building projects (see Table 2) (MHC 2008a).

Products Covered. The GreenSpec Directory includes more than 2,000 products, organized into 24 categories, which are subdivided into product groupings. The number of products listed and articles associated with each grouping appears next to the grouping's name. Within each grouping is a detailed description of what kinds of products are included in the grouping, the criteria GreenBuilding uses to decide which products to list and guidance for the specifier / purchaser.

How the GreenSpec Directory Works. The GreenSpec Directory is continually updated online and published in print annually. BuildingGreen editors conduct their own research based on GreenSpec's current editorial focus. According to BuildingGreen, this independent research ensures that product descriptions contain unbiased, quality information. Unlike many other directories, BuildingGreen does not charge for listings or the review process nor does it sell advertisements in the GreenSpec Directory (BuildingGreen 2009). Thus, the development of selection criteria is not an open process but solely at the discretion of the BuildingGreen editors.

The BuildingGreen editors use quantifiable and easily verifiable standards in creating specific criteria for product groupings, including those highlighted in this white paper. The editors often use multiple criteria to make their selections: "…in other words, a product may be considered green for more than one reason." There are five primary categories of criteria for selecting products. BuildingGreen editors are quick to point out that the list of criteria, including more detailed criteria within each category does not indicate order of importance. The five categories include:

1. Products made with salvaged, recycled or agricultural waste content
2. Products that conserve natural resources
3. Products that avoid toxic or other emissions
4. Products that save energy or water
5. Products that contribute to a safe, healthy built environment (Environmental Building News 2006)

Manufacturers are invited to submit a Product Suggestion Form to apply for inclusion in the GreenSpec Directory. They also are invited to subscribe to the BuildingGreen Suite in order to view the full contents of the GreenSpec and BuildingGreen's database of articles and resources. The Product Suggestion Guidelines follow the five primary criteria categories for selection and require manufacturers to provide detailed information for each of the criteria that apply to their product(s). As such, there is no independent verification of data or product testing, unless a green product certification program, such as those discussed in this white paper, has already certified the product.

For more information, visit the GreenSpec Directory website at **www.greenspec.com**.

For More Information

Tables 3a, 3b and 3c summarize each of the programs based on their accreditation, type of product standard or certification program, and currently available LEED credits on existing programs. Readers are encouraged to visit each of the product certification programs' websites for more details about these programs.

Table 3a. Green product certification comparison: ANSI developer, LEED credits

Certification Program / Label	ANSI Accredited Standards Developer	LEED – CI	LEED - NC
ENERGY STAR	No – Gov't Program		
WaterSense	No – Gov't Program	1) WE Prereq 1 - Water Use Reduction 2) WE Credit 1 - Water Use Reduction	1) WE Prereq 1 - Water Use Reduction 2) WE Credit 3 - Water Use Reduction
Cradle to Cradle	No	1) Innovation in Design Credit - Environmentally Intelligent Design	1) Innovation in Design Credit - Environmentally Intelligent Design
GREENGUARD	Yes	1) EQ Credit 4.3 – Flooring 2) EQ Credit 4.5 - Systems Furniture 3) Innovation in Design Credit - Adhesives & Sealants 4) Innovation in Design Credit - Paints & Coatings	1) EQ Credit 4.3 - Flooring 2) Innovation in Design Credit - Systems Furniture 3) Innovation in Design Credit - Adhesives & Sealants 4) Innovation in Design Credit - Paints & Coatings
Green Seal	Yes	1) EQ Credit 4.1 - Adhesives & Sealants 2) EQ Credit 4.2 - Paints & Coating	1) EQ Credit 4.1 - Adhesives & Sealants 2) EQ Credit 4.2 - Paints & Coating

GreenSpec Directory	No	No	No
Forest Stewardship Council	No	1) MR Credit 7 - Certified Wood	1) MR Credit 7 - Certified Wood
Sustainable Forestry Initiative	No	No	No

Table 3b. Green product certification comparison: LEED credits continued

Certification Program / Label	LEED for Schools	LEED – EB
ENERGY STAR		1) EA Prereq 2 - Minimum Energy Efficiency Performance 2) EA Credit 1 - Optimize Energy Efficiency Performance 3) EA Credit 6 - Emissions Reduction Reporting 4) MR Credit 2.1 - Sustainable Purchasing
WaterSense	1) WE Prereq 1 - Water Use Reduction 2) WE Credit 1 - Water Use Reduction	
Cradle to Cradle	1) Innovation in Design Credit - Environmentally Intelligent Design	1) Innovation in Design Credit - Environmentally Intelligent Design
GREENGUARD	1) EQ Credit 4 - Low-Emitting Materials - Option 1 - Adhesives & Sealants 2) EQ Credit 4 - Low-Emitting Materials - Option 2 - Paints & Coatings 3) EQ Credit 4 - Low-Emitting Materials - Option 3 - Flooring Systems 4) EQ Credit 4 - Low-Emitting Materials - Option 4 - Composite Wood & Agrifiber Products 5) EQ Credit 4 - Low-Emitting Materials - Option 5 - Furniture & Furnishings 6) EQ Credit 4 - Low-Emitting Materials - Option 6 - Ceiling and Wall Systems	1) Innovation in Design Credit – Systems Furniture
Green Seal		1) EQ Credits 3.3 - Green Cleaning

GreenSpec Directory	No	No
Forest Stewardship Council	1) MR Credit 7 - Certified Wood	1) MR Credit 2.2 - Sustainable Purchasing
Sustainable Forestry Initiative	No	No

Table 3c. Green product certification comparison: LEED credits continued

Certification Program / Label	LEED Core & Shell	LEED for Homes
ENERGY STAR		1) EA Credit 1 - Optimize Energy Performance 2) EA Credit 4 – Windows 3) EA Credit 6 - Space Heating and Cooling Equipment 4) EA Credit 8 - Lighting 5) EA Credit 8.3 - Advanced Lighting Package 6) EA Credit 9 – Appliances 7) EQ Credit 1 - Energy Star w/ IAP 8) EQ Credit 5 - Local Exhaust
WaterSense	1) WE Prereq 1 - Water Use Reduction 2) WE Credit 1 - Water Use Reduction	1) WE Credit 3 - Indoor Water Use
Cradle to Cradle	1) Innovation in Design Credit - Environmentally Intelligent Design	1) Innovation in Design Credit - Environmentally Intelligent Design
GREENGUARD	1) EQ Credit 4.3 – Flooring 2) Innovation in Design Credit - Systems Furniture 3) Innovation in Design Credit - Adhesives & Sealants 4) Innovation in Design Credit - Paints & Coatings	1) MR Credit 2.2 - Environmentally Preferable Products – Insulation 2) MR Credit 2.2 - Environmentally Preferable Products - Flooring
Green Seal	1) EQ Credit 4.1 - Adhesives & Sealants 2) EQ Credit 4.2 - Paints & Coatings	1) MR Credit 2.2 - Environmentally Preferable Products - Paints & Coatings
GreenSpec Directory	No	No
Forest Stewardship Council	1) MR Credit 7 - Certified Wood	1) MR Credit 2.2 - Environmentally Preferable Products - Exterior Wall 2) MR Credit 2.2 - Environmentally Preferable Products – Floor 3) MR Credit 2.2 - Environmentally Preferable Products - Interior Wall 4) MR Credit 2.2 - Environmentally Preferable Products – Landscape 5) MR Credit 2.2 - Environmentally Preferable Products - Other 6) MR Credit 2.2 - Environmentally Preferable Products - Roof
Sustainable Forestry Initiative	No	No

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