

Introduction to GreenSpec®

Welcome to *GreenSpec*, your comprehensive guide to environmentally responsible building products and materials from the editors of *Environmental Building News*. More than 1,850 listings are included in these pages. Additional information, newly added products, and updated listings are available with a subscription to the *BuildingGreen Suite* of online resources (see the end of this book or visit www.BuildingGreen.com).

Using the most environmentally sound materials is an important step in the overall goal of improving the environmental performance of any building. *GreenSpec* helps you locate the greenest materials and, with the included guideline specifications, helps you use those materials in the best way possible.


How to Use GreenSpec

GreenSpec is organized according to the 16-division system of *MasterFormat*™ (1995) from the Construction Specifications Institute. If you are used to seeing building products organized according to *building components* (foundations, wall systems, etc.)—as is common with residential product directories—the Contents by Builder Product Categories (pages *vii–xi*) may prove useful. Specific companies and specific products can also be found by looking them up in the Company Index or Product Index.

Fifteen of the 16 CSI divisions begin with guideline specifications written by Siegel & Strain Architects (an earlier edition of some of this material was published under the title *reSourceful Specifications*) and further refined by BuildingGreen's editors. The guideline specifications provide overview information on how best to choose and utilize products and materials in those divisions, as well as sample language for use in writing project specifications. Care should be taken with the use of this material, as only small parts of it are likely to be relevant to any specific project. Suggestions for preparing specifications for a green project are provided in an article originally published in *Environmental Building News* Vol. 11, No. 7/8 and reprinted on pages *xxiv–xxviii* of this directory. Guideline specification language is provided only for selected sections of the respective 15 divisions.

The product listings in each division are divided into separate sections, following—to the extent possible—the *MasterFormat* system. Each section begins with a quick summary of environmental considerations

relating to products in that section. The products are then listed (alphabetically by company name) with full contact information and a brief description. In some cases, the *MasterFormat* numbering was modified slightly to better fit the green products covered.

Products marked with this icon  are new listings added since the 4th edition was published. Some product category descriptions and individual product listings include references to more detailed coverage in *Environmental Building News*. Back issues of *EBN* can be purchased individually or as part of the *BuildingGreen Suite*. Up-to-date information on these and other BuildingGreen resources is found at the end of this book and may be viewed online at www.BuildingGreen.com.

How Products Are Selected for GreenSpec

The editors of *Environmental Building News* identify potential products to list from company press releases, trade shows, articles in other publications, e-mail discussion groups, *EBN* subscribers, and research by *EBN* editorial staff.

Once a potential product is identified for *GreenSpec*, that product is carefully assessed for its “greenness.” Over more than thirteen years of publishing *Environmental Building News*, the editorial staff has developed comprehensive criteria for environmental performance. All products included in the *GreenSpec* directory are screened using these criteria, which were initially published in the January 2000 issue of *EBN* in an article titled: “Building Materials: What Makes a Product Green?” These criteria are regularly revised, reflecting new understanding about environmental impacts of manufacturing or new developments in the manufacturing industry, and new performance standards for specific product areas (appliances, for example). The most up-to-date version of the *GreenSpec* criteria is posted on the BuildingGreen.com website and available for downloading free. (The revised article also appears on pages *xviii–xxiii* of this book.) Because the editorial staff is constantly reexamining these criteria, you are invited to send in comments and suggestions. Please send any comments by e-mail addressed to greenspec@BuildingGreen.com.

Our goal with *GreenSpec* is to include only the greenest products. In areas where the industry has evolved over the past few years or energy-efficiency standards

have increased substantially, our *GreenSpec* standards have become more selective than they were in previous editions. For example, engineered wood products have now become mainstream for many applications, so we've included them here only if they have other environmental features, such as being produced from certified wood from well-managed forests or using formaldehyde-free binders. In the case of appliances and mechanical equipment, our energy-efficiency standards for most product categories are quite a bit more stringent than those required for an ENERGY STAR® rating from EPA and DOE, and some are more stringent now than they were just a year ago.

We are increasingly relying on life-cycle assessment (LCA) approaches and data from LCA studies in our product screening. A detailed look at LCA and how it is being used in the building industry is provided on pages *xxix–xxxvii*.

Thanks for Doing Your Part!

In spite of our best efforts, we have inevitably omitted many products that should have been included. We hope that you, the user, will help us find and include these products for the next edition. In addition, we would appreciate your feedback on the information included here, the criteria we use for product approval, and our organization of the material. Please e-mail any comments to greenspec@BuildingGreen.com, or call us at 802/257-7300, extension 107.

We trust that you will find *GreenSpec* helpful in your efforts to make environmentally sound buildings, and we look forward to your feedback. Thank you for your commitment to improving the world that our children will inherit.

Alex Wilson, Nadav Malin, and Mark Piepkorn
Editors, *GreenSpec Directory*

Introduction to Guideline Specifications

Building a typical home in the United States requires about one acre of forest and generates roughly 4 lbs. of waste per square foot of floor area. Manufacturing the cement for the 55 yards of concrete in the foundation generates on the order of 20,000 lbs. of CO₂ emissions. The steel nails are responsible for over 600 lbs. of gaseous emissions. Commercial buildings may be even more resource-intensive to build. Over their operating lives, most buildings consume many times the energy used during construction. Buildings consume vast amounts of our resources and threaten the ecological systems that support life, from the ozone layer to the world's forests. Changing the way we build has become imperative.

The building industry is beginning to respond to these concerns. New products and materials are being developed that use resources more efficiently. There is consumer interest in materials that are renewable, biodegradable, low in embodied energy, and locally produced. Manufacturing processes are being redesigned to reduce waste and pollution. We are recycling more, and new products made from recycled materials are increasingly available. Concern over toxins entering the environment is being reflected in less toxic materials. Construction methods are being developed to increase efficiency and reduce job-site waste.

GreenSpec's Guideline Specifications collect and organize information on these "greener" materials and construction methods into a specification framework so that architects, homeowners, contractors and prop-

erty managers can begin to incorporate them into their projects.

How Building Specifications Work

Standard building specifications define and describe the materials and methods of construction for a building project. Together with the working drawings, they make up the construction documents that are used by a contractor to bid and build a project. Specifications are divided into 16 divisions following the Construction Specifications Institute (CSI) format covering the broad categories listed below.

The Divisions are subdivided into Sections, and each section is organized into three parts as follows:

Part 1 - General: Summary of the section including requirements for submittals, testing, and warranties.

Part 2 - Products: Defines and describes the products and materials to be used in each section in terms of their appearance, performance, and physical characteristics.

Part 3 - Execution: Describes methods of installation, application, or construction, and defines the type and quality of the work to be performed.

How to Use These Guideline Specifications

These specifications are intended to supplement—with additional environmental information—the existing criteria, definitions, and performance requirements contained in a set of standard specifications. These specifications are not intended to replace standard specifications or to signify that those standard specifications are met by the materials or methods listed. The materials and methods contained in these specifications must still meet all other performance requirements for a given application. These specifications are designed to be edited and adapted for each particular project and incorporated into standard specifications. In general, these guideline specifications only address "green" performance issues. The exceptions to this are the more comprehensive sections covering Stabilized Earth and Straw-Bale. These Guideline Specifications cover a variety of sections in 15 of the 16 Divisions.

These guideline specifications frequently list more than one choice under Products. It is the responsibility of the specifier to select the appropriate material for each specific application. No attempt was made to rate the various materials and methods covered.

Division 1	General Requirements
Division 2	Sitework
Division 3	Concrete
Division 4	Masonry
Division 5	Metals
Division 6	Wood and Plastics
Division 7	Thermal and Moisture Protection
Division 8	Windows and Doors
Division 9	Finishes
Division 10	Specialties
Division 11	Equipment – includes appliances
Division 12	Furnishings
Division 13	Special Construction – includes renewable energy systems
Division 14	Conveying Systems
Division 15	Mechanical
Division 16	Electrical



The Construction Product Sustainability Information Reporting Guide

Introduction:

GreenFormat[™] is a new CSI Format that will allow manufacturers to accurately report the sustainability-measuring properties of their products, and provide designers, constructors and building operators with basic information to help meet 'green' requirements. Here's how it works:

- Construction product manufacturers complete an online *GreenFormat* reporting questionnaire that collects the sustainable information about their product.
- Data from the questionnaires is displayed in a standardized fashion designed to ease sustainable design decision-making.
- Access to both will be provided through www.greenformat.com.

Those using the website will be able to print reports on specific products based on their queries within the database.

General Organizational Structure:

Sustainable information reported in *GreenFormat* is grouped into categories, each containing individual topics and questions about product sustainability. The categories are organized with topics more likely to be important to design decisions first. This flexible structure will adapt to anticipated changes in the industry. As sustainability issues evolve, new topics and questions will be added in the appropriate category, and existing topics and questions that become obsolete or change will be dropped if necessary. The structure can be applied to all construction products and product categories.

GreenFormat Category Summary

- **Categories 1, 2, and 3** are general, used to categorize the information by *MasterFormat* number, manufacturer's name, product name or trade name (with a manufacturer's brief description of the product), and date the information is provided. This allows manufacturers the flexibility to describe either standard products or unique products. Users can search this information by *MasterFormat* number, by manufacturer name, by trade name, or by keyword. It is flexible enough to also link to *UniFormat* and *OmniClass* classification systems.
- **Category 4 - Regulatory Agency Sustainability Approvals** asks the manufacturer which regulatory agency approves the product meets and the date the product was last approved. This allows the design professional to search the database for products that are approved for use by various regulatory agencies. As more regulations come into effect, this section will expand.
- **Categories 5, 6, and 7** address three of the four methods of specifying - Category 5 for a reference standard specification, Category 6 for a performance specification, and Category 7 for a descriptive specification. The fourth method of specifying, the proprietary method, would use the information presented in Categories 2 and 3.
- **Category 5 - Sustainable Standards and Certifications** relates to the information a specifier would include in the Quality Assurance article of a specification, and it provides verification of environmental claims. This unique and important section of *GreenFormat* relates to the Quality Assurance article in CSI's *SectionFormat* and is necessary if the specifier is writing a reference standard specification. The information provided in this category allows the specifier to search for a product based on its meeting a sustainable standard.

- **Category 6 - Sustainable Performance Criteria** relates to the product's sustainable performance, and would be of interest when writing a performance specification or when a product's performance is being evaluated or compared to other products.
- **Category 7 - Sustainable Composition of Product** relates to what the product is made from, as well as material off-gassing. This is descriptive information and would be used when writing a descriptive specification, or when researching the composition of a product.
- **Categories 8, 9, 10, 11, and 12** relate generally to the five phases of a construction material's life cycle, which a design professional evaluates when selecting a sustainable product. It is not an attempt to collect all the information necessary to perform the life cycle analysis of a product, but only to categorize the most important and most commonly asked sustainability questions that relate to a product's lifespan. These are generally recognized categories used by the sustainability community, categorized and named following the construction phases used in CSI's *Project Resource Manual (PRM)*.
- **Category 8 - Material Extraction and Transportation** relates to the embodied energy within the raw materials that make up a product and the greenhouse gasses emitted into the environment as a result of material extraction and transportation to the manufacturing plant. This category will evolve in the future as more detailed information on greenhouse gas emissions becomes available.
- **Category 9 - Manufacturing Phase** relates to the sustainability of the manufacturing facilities and processes and their effect on the environment. Questions relate to manufacturers' verifiable commitment to sustainability, actions they have taken, and the byproducts produced as a result of their manufacturing process.
- **Category 10 - Construction Phase** relates to sustainable issues during the construction phase. These include construction waste management, indoor air quality during construction, and contract closeout issues such as final cleaning, testing and balancing, and commissioning. The answers to these questions can be incorporated into contract document specifications under Part 3 - Execution. This information is relevant for all buildings - not just sustainable construction.
- **Category 11 - Facility Operations Phase** relates to the durability and life span of the product, and cleaning, maintenance, and facility operation issues. This information informs the designer, the owner, and the facility manager in selecting products with long life and low maintenance.
- **Category 12 - Deconstruction / Recycling Phase** relates to how products are processed after their useful life in the building. Material reuse and recycling have positive effects on manufacturing and construction activities by lessening the use of virgin materials. Questions in this category relate to manufacturer and industry recycling programs, product reuse, recycling options, and disposal options.
- **Category 13 - Additional Information** allows manufacturers to provide any additional information they want to share about their company's environmental policy or programs, other environmental groups that also list their products, or other environmental information they want to share.
- **Category 14 - Certification** is an assurance to *GreenFormat* users that the information provided by the manufacturer is true and correct and has the company's official endorsement behind it. Also included is a request for a manufacturer technical contact if *GreenFormat* users have questions.

For more information on this new CSI Format visit www.csinet.org/greenformat or www.greenformat.com or call CSI at 800-689-2900.



GreenFormat Questions

What is GreenFormat?

GreenFormat is a new CSI Format that will allow manufacturers to accurately organize and report the properties of their products that affect sustainability. Access to GreenFormat for listing and finding product information is via a database driven website, www.greenformat.com. Designers, contractors, and building operators will use GreenFormat to find products with properties that help them achieve their green goals.

What about greenwashing?

GreenFormat does not seek to determine whether a product is green. Instead, using a comprehensive questionnaire, GreenFormat reports on the properties of a product, referencing specific industry standards wherever possible, and allowing space at the end of each category for individual manufacturer input. The verification of sustainable claims by relating questions to standards and certifications benefits both manufacturers and designers.

Is GreenFormat a spec?

No, it is a format for structuring information and a database of product information, searchable by a designer, contractor, or building operator seeking products that may solve a particular problem. All products are organized by MasterFormat. Results will be exportable in a machine readable format that can be included in specs.

When will it be released to the public?

The public release target is November 2008 at the USGBC's Greenbuild International Conference and Expo.

How can I get involved in the beta testing process?

Manufacturers are invited to participate in beta testing of GreenFormat during 2008. You can contact Sarah Meyers directly at (703) 706-4733 or simeyers@csinet.org to participate in the upcoming testing.

CSI will open the site to designers, contractors or operators to test GreenFormat later in the next testing cycle. If you are interested in participating, sign up on the website and watch for announcements.

Why be involved in the beta test?

Manufacturers can provide valuable feedback as well as list one or more of their products FREE of charge for a year!

Is there a charge for using GreenFormat?

GreenFormat will be free to use to look up product information. Building product manufacturers will pay a modest fee to list products to allow CSI to continue to develop the Format and make the site available to the industry.

Where can I learn more about GreenFormat?

Go to www.greenformat.com. CSI has also printed a GreenFormat bookmark, available at CONSTRUCT2008, which outline the type of information covered in the questionnaire.

How is GreenFormat different from GreenSpec and other product rating services?

GreenSpec (and other product rating systems) only list the products that they have tested and that meet the specific standards and questions GreenSpec asks about. GreenFormat is open to any manufacturer that wants to list their product. GreenFormat's approach to greenwashing is in keeping with CSI's respected standards: CSI does not endorse any product, but instead encourages trained construction professionals to consider the merits of products that could meet their needs, and make the best decision for their unique project. GreenFormat will provide information, not evaluations or endorsements.

Will CSI validate the product claims made in GreenFormat?

No. Manufacturers self-complete and self-certify the form. CSI and BGI will perform random checks of information in the product listings and there will be a feedback loop for reporting questionable information and a process for investigation of claims.

Who has been involved in/is involved in the development of GreenFormat?

The format was originally developed by the CSI Sustainable Facilities Task Team consisting of CSI members in practice as specifiers, environmental consultants and product manufacturers. The deployment of GreenFormat is now being supported by the CSI GreenFormat Program Management Task Team which also consists of specifiers, environmental consultants and product manufacturers from leading national and international design and manufacturing organizations. CSI is also working with BuildingGreen, Inc., a leading environmental information research and publishing firm and McGraw-Hill Sweets with development funding provided in part through a grant from the Charles Pankow Foundation.