GreenFormat™

Structured Format for Information to Support Sustainable Design and Product Choices.

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Version 2.0 Development Draft For Comment January 2014

For Further Information Please Contact Christopher Gummo at: cgummo@csinet.org

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CSI gives acknowledgement and thanks to the members of the GreenFormat Task Team for their work:

George Middleton, CSI, AIA, LEED AP BD+C, GGA (Chair)
Paul Sternberg, CSI, CCS, CCCA, LEED AP, NCARB
Chris Hsieh, LEED AP
Susan Kaplan, CSI, CDT, LEED AP
Lisa Turner Britton, CSI CCPR LEED-AP BD+C
Renee Doktorczyk, CSI, CCS, FAIA, SCIP
Wade Bevier, FCSI, CCS, LEED AP BD+C
Brian Wolf (Tech Com Liaison)
Kirby Davis, CSI, CCTS, CDT, LEED AP BD+C (Board Liaison)

DRAFT

CSI
110 South Union Street, Suite 100
Alexandria, VA 22314
800-689-2900
www.csinet.org

For Further Information Please Contact Christopher Gummo at: cgummo@csinet.org

Introduction

CSI's *GreenFormat*™ is a standardized structure for organizing sustainable ('green') information elements associated with materials, products, systems and technologies used in the built environment. By using this standardized format, manufacturers can accurately identify key product characteristics and provide designers, constructors, and building operators with information needed to help meet sustainable design and operation goals. The information collected and organized by using *GreenFormat* can be used to produce a sustainability profile of a product. The identification of the criteria, standards, and applicable certifications by using *GreenFormat* provides designers, constructors and building operators an easy way to evaluate the various sustainable aspects of materials, products, and processes across a wide variety of manufacturers.

The *GreenFormat* Task Team has organized the structure into specific categories in an effort to make the process of understanding and using sustainability-related product information easy. Information classified according to *GreenFormat* is grouped into nine categories (with three of those reserved for expansion), each containing individual sub-categories and classifications.

The first three categories allow suppliers and manufacturers to identify information specific to their *product* and these include:

1.0 Product General Information
2.0 Product Details
3.0 Product Lifecycle

Categories 4.0, 5.0 and 6.0 are presently reserved for future expansion.

The last three categories focus on information about the *manufacturer*, which may include environmental policies, environmental or life-cycle assessment initiatives, and social responsibility initiatives. These categories include:

7.0 Manufacturer Sustainability Policies
8.0 Manufacturer Support Documentation
9.0 Manufacturer Certification

The systematic approach of *GreenFormat* provides manufacturers with a way to communicate the sustainability features of their products and operations, allowing design professionals and other information users to make informed decisions.

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This flexible structure is designed to be adaptable to anticipated changes in the industry. As sustainability issues and product selection criteria evolve, new topics may be added in the appropriate category, and existing topics that become obsolete or may change and can be removed as necessary. The structure is designed to support specification writers and the project specification documents they produce by providing the information needed for the four different methods of specifying: Reference Standard, Performance, Descriptive, and Proprietary.

One way to understand the structure and purpose of *GreenFormat* and how it supports the specification writing process is to consider the fact that specifications are typically written with a project requirement stated as a "salient feature" followed by a "value" for that salient feature. For example the salient feature "VOC content" written into a project specification would be accompanied by a value such as "5 grams/liter" which would be one element of information provided by a product manufacturer under a category heading defined under *GreenFormat*.

The organization of *GreenFormat* into specific classifications of information is not intended to imply a hierarchy or relative level of importance of the information within a category. It is the responsibility of the user of the information classified according to *GreenFormat* to determine the suitability of information provided. The user of *GreenFormat* determines project specific requirements and prioritizes the sustainability criteria by which products will be evaluated. There are many existing evaluation and rating systems available to assist owners, designers, and specifiers in determining the relative contributions of different products to sustainability. The comprehensive structure of *GreenFormat* allows the user to organize the many sources of sustainability information within a hierarchy of both information quality and specificity applicable to each product type. Data providers can organize their data reporting according to GreenFormat categories while retaining their own proprietary features.

One of the key goals of *GreenFormat* is for product information to be transparent and verifiable. A manufacturer is being transparent when the company provides sufficient detailed information about its products and processes so that design professionals can make informed decisions.

GreenFormat emphasizes the importance of objective, science-based and widely-recognized standards and evaluation criteria, arrived at through consensus standard-setting processes. *GreenFormat* is also designed to work in conjunction with *MasterFormat*™ and can be applied to all construction products and categories.

GreenFormat Structure

GreenFormat has a numbered hierarchical outline structure consisting of Categories and Sub-categories. Following the approach used in MasterFormat, *GreenFormat* is divided into levels, each separated by a period (.). Printed documents may include indents for each level, but it is not required. Information may be listed under different levels of specificity within each category or sub-category. Manufacturers should select the level of specificity appropriate to the information being provided. *GreenFormat* generally includes sub-categories down to level 3 or level 4.

As noted previously, the *GreenFormat* Categories are divided into two groups of three categories each, with the middle three category numbers reserved for future use. Categories 1, 2 and 3 are specific to the product or product category being described. Category 7 is specific to the sustainability efforts of the manufacturer independent of the actual product being described. Categories 8 and 9 are specific to the documentation of the information provided under all other categories.

Use of *GreenFormat* Category Levels

The use of Category levels is intended to be flexible and to provide information detail suitable across a wide range of applications. Each Category is hierarchical, however each Category or sub-category level may, at the option of the information provider, include all information below that level. A *GreenFormat* product listing is most useful and supports data comparison when information is provided at the appropriate sub-category level. For example, if the product information includes the Volatile Organic Compound (VOC) content, this salient feature may be shown in the following ways:

Level 1: Performance Criteria

Level 2: Product Composition (one specific aspect of 'Performance Criteria')

Level 3: Emissions (one specific aspect of 'Product Composition')

Level 4: Emission Value (one specific aspect of 'Emissions')

Each subsequent level is intended to be more specific and detailed than the previous level. Use of the appropriate level of information is necessary if multiple sub-categories of information are provided. No category level should contain more than one type of descriptive content. In the example below, listing the VOC content and Urea Formaldehyde content under the same heading would not be correct:

2.3.6 Emissions: Volatile Organic Compound (VOC) Content, 50 g/L, no added Urea Formaldehyde

Instead, these properties should be shown as follows:

2.3.6.1 Volatile Organic Compound (VOC) Content: 50 g/L
2.3.6.2 Formaldehyde Content: No added Urea Formaldehyde

It is not necessary to include higher level sub-categories as titles when listing information according to *GreenFormat*. If the information is being provided in a readable format, it is recommended that at least the Level 1 titles be used as titles for the sub-category information below it. For example, a minimal listing might be:

2 Performance Criteria:

2.3.6.1 Volatile Organic Compound (VOC) Content: 50 g/L
2.3.6.2 Formaldehyde Content: No added Urea Formaldehyde

While a complete listing might be:

2 Performance Criteria:

2.3 Composition of Product:

2.3.6 Emissions:

2.3.6.1 Emissions Value: Volatile Organic Compound (VOC) Content: 50 g/L
2.3.6.2 Emissions Value: Formaldehyde Content: No added Urea Formaldehyde

Information that is provided purely as data, such as BIM object data, does not require higher level titles. Blank field entries may be required for data consistency between objects and to provide more readable reports of object attributes.

Category information should be clearly separated from the category title by using a semicolon (:), tab space, or separate cell in a table listing.

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Using *GreenFormat* for Data Organization and Comparison

GreenFormat is not intended to be a prescriptive guide defining how product information should be provided, nor is it intended to be, in and of itself, any particular form of information tool. *GreenFormat* is designed to be an organizational format upon which many potential information tools may be structured. The basis of that structure will almost always be based on elements of information or data.

Manufacturer websites are data driven and designers increasingly seek out websites that allow them to make side-by-side comparisons of product salient features. Sustainability rating systems require input of information into online data bases and evaluation tools. Product cataloging and reporting systems are also dependent on data. While a designer or owner may require printed documents – or electronic facsimiles of those documents – the designers may need access to digital BIM models that allow them to analyze the compliance of their design to project criteria in real time.

GreenFormat addresses these disparate organization needs by providing a structured, numerical outline and hierarchy of information that can be consistently used across all platforms of data delivery. The key component is use of the outline numbering to locate information. It is not necessary to provide a response to every category of information requested in *GreenFormat*. What is necessary is to use the outline numbering to consistently locate the information that is provided. Those numbers can then be used, for example, to identify specific information elements in a marketing brochure or catalog page. The graphic approach is left entirely up to the manufacturer. Data can be listed in a numbered outline or as fields in a table. Like MasterFormat, the number locates the information within a larger hierarchy.

Electronic approaches to data delivery are even more varied, but even so, the organization data can be consistent with the recommendations provided in *GreenFormat*. Each information element is connected to an outline number and title. The outline numbers then become the key field identifier that can be used to build spreadsheets or databases. Consistent field identifiers are necessary for data sorting and comparisons. The output can be utilized in any form, from stand-alone databases, to spreadsheets, delimited-format data that can be imported into multiple data systems, to web-based applications and information collection or BIM object data. Information in *GreenFormat* categories can be used to populate data under UniFormat Table 49. Design and construction firms that have existing databases of sustainable product information can even map their existing data to *GreenFormat*-based fields that will permit direct importing of *GreenFormat*-based data.

GreenFormat Outline Structure

1.0 PRODUCT - GENERAL INFORMATION

1.1 MANUFACTURER PROPERTIES
- 1.1.1 Company Name
- 1.1.2 Subsidiary Name(s)
- 1.1.3 Address
- 1.1.4 Contact Information

1.2 PRODUCT PROPERTIES
- 1.2.1 *MasterFormat* Number
- 1.2.2 Product Identification
- 1.2.3 Product Description
- 1.2.4 Product Photo(s) or Drawing(s)

2.0 PRODUCT DETAILS

2.1 Sustainable Standards and Certifications
- 2.1.1 Third Party Certification
  - 2.1.1.1 Whole Product Sustainability
  - 2.1.1.2 Single Attribute
  - 2.1.1.3 Other Certification Categories
- 2.1.2 Second Party Certification
  - 2.1.2.1 Whole Product Sustainability
  - 2.1.2.2 Single Attribute
  - 2.1.2.3 Other Certification Categories
- 2.1.3 Self-Declaration of Compliance
  - 2.1.3.1 Whole Product Sustainability
  - 2.1.3.2 Single Attribute
  - 2.1.3.3 Other Certification Categories

2.2 PROPERTIES OF SUSTAINABILITY
- 2.2.1 Facility Construction
  - 2.2.1.2 Existing Conditions
  - 2.2.1.3 Concrete
  - 2.2.1.4 Masonry
  - 2.2.1.5 Metals
  - 2.2.1.6 Wood, Plastics and Composites
  - 2.2.1.7 Thermal and Moisture Protection
  - 2.2.1.8 Openings
  - 2.2.1.9 Finishes
  - 2.2.1.10 Specialties
  - 2.2.1.11 Equipment
  - 2.2.1.12 Furnishings
  - 2.2.1.13 Special Construction
  - 2.2.1.14 Conveying Equipment
- 2.2.2 Facility Services
  - 2.2.2.21 Fire Suppression
  - 2.2.2.22 Plumbing
  - 2.2.2.23 Heating, Ventilating, and Air-Conditioning (HVAC)
  - 2.2.2.26 Electrical
  - 2.2.2.27 Communications
- 2.2.3 Site and Infrastructure

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For Further Information Please Contact Christopher Gummo at: cgummo@csinet.org

2.2.3.31 Earthwork
2.2.3.32 Exterior Improvements
2.2.3.33 Utilities
2.2.3.34 Transportation
2.2.3.35 Water and Marine Construction
2.2.4 Process Equipment
2.2.4.40 Process Integration
2.2.4.41 Material Process and Handling Equipment
2.2.4.42 Process Heating, Cooling, and Drying Equipment
2.2.4.43 Process Gas and Liquid Handling, Purification, and Storage Equipment
2.2.4.44 Pollution and Waste Control Equipment
2.2.4.45 Industry-Specific Manufacturing Equipment
2.2.4.46 Water and Wastewater Equipment
2.2.4.48 Electrical Power Generation
2.2.99 Additional Product Performance

2.3 SUSTAINABLE COMPOSITION OF PRODUCT
2.3.1 Product Composition
2.3.2 Chemicals Composition
2.3.2.1 Unregulated Chemical Content
2.3.2.2 Regulated Chemical Content
2.3.2.3 Product Content Declarations
2.3.3 Recycled Content
2.3.3.1 Pre-Consumer Material
2.3.3.2 Post-Consumer Material
2.3.4 Rapidly Renewable Materials
2.3.5 Reused Materials
2.3.6 Emissions
2.3.6.1 Volatile Organic Compound (VOC) Content
2.3.6.2 Formaldehyde Content

3.0 PRODUCT LIFE CYCLE

3.1 LIFE CYCLE Assessment

3.2 MATERIAL EXTRACTION AND TRANSPORTATION
3.2.1 Regional Materials
3.2.2 Supply Chain

3.3 MANUFACTURING PROCESS

3.4 CONSTRUCTION
3.4.1 Construction Waste Management
3.4.2 Installation
3.4.3 Contract Closeout

3.5 FACILITY OPERATIONS
3.5.1 Product Service Life
3.5.2 Recommended Cleaning and Maintenance

3.6 REUSE, RECYCLING, DISPOSAL
3.6.1 Manufacturer/Industry Programs
3.6.2 Product Reuse
3.6.3 Product Recycling / Disposal

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4.0 RESERVED FOR FUTURE USE

5.0 RESERVED FOR FUTURE USE

6.0 RESERVED FOR FUTURE USE

7.0 MANUFACTURER SUSTAINABILITY POLICIES

7.1 ENVIRONMENTAL STEWARDSHIP

7.2 COPORATE GOVERNANCE
- 7.2.1 Employment Policies
- 7.2.2 Employer Responsibility
- 7.2.3 Community Engagement
- 7.2.4 Financial Leadership

7.3 MANUFACTURING
- 7.3.1 Manufacturing and Support Facilities
- 7.3.2 Manufacturing Process
- 7.3.3 Manufacturers Comments

7.9 TRANSPARENCY OF INFORMATION

8.0 MANUFACTURER SUPPORT DOCUMENTATION

8.1 MARKETING MATERIAL
- 8.1.1 Website
- 8.1.2 Product Listings

9.0 MANUFACTURER CERTIFICATION

9.1 AUTHORIZATION OF INFORMATION
- 9.1.1 Full Name
- 9.1.2 Title
- 9.1.3 Authorization
- 9.1.4 Date
- 9.1.5 Company
- 9.1.5.1 Contact Name
- 9.1.5.2 Contact Title
- 9.1.5.3 Contact Email
- 9.1.5.4 Contact Phone

9.2 TECHNICAL REPRESENTATIVE
- 9.2.1 Contact Name
- 9.2.2 Contact Title
- 9.2.3 Contact Email
- 9.2.4 Contact Phone

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