Glossary of Green Standards, Codes, and Test Methods

ANSI 12-60: American National Standard – Acoustical Performance Criteria, Design Requirements and Guidelines for Schools: This ANSI S12.60 standard provides acoustical performance criteria, design requirements, and design guidelines for new school classrooms and other learning spaces. The ANSI standard is commonly referred to in high-performance school criteria and on projects registered as LEED for Schools.

ASHRAE 189.1-2011: Standard for the Design of High-Performance Green Buildings: ASHRAE 189.1 is an ANSI standard. Unlike other sustainable building documents, it is not a design guide or a rating system; it is a standard. It provides minimum requirements for high-performance green buildings and applies to all buildings with the exception of low-rise residential. The standard is an optional compliance path to the International Green Construction Code.

ASTM E2129: Standard Practice for Data Collection for Sustainability Assessment of Building Products: The E2129 standard covers a set of instructions for collecting data to be used in assessing the sustainability of building products for use in both commercial and residential buildings. This reference may appear in specifications that are following the Federal Green Specifications or the Whole Building Design Guide.

CALGreen: The California Green Building Standards Code, referred to as CALGreen, went into effect on January 1, 2011. This California code requires that new buildings reduce water consumption, employ building commissioning to increase building system efficiencies, divert construction waste from landfills, and install low-pollutant-emitting finish materials. CALGreen’s mandatory measures establish a minimum for green construction practices.

California Air Resources Board (CARB): The California Air Resources Board (CARB) approved an Airborne Toxic Control Measure (ATCM) in April 2007. The goal of this ATCM is to reduce formaldehyde emissions from composite wood products, including hardwood plywood, medium density fiberboard, and particleboard. Manufacturers, distributors, importers, fabricators, retailers, and third-party certifiers of composite wood products, as well as finished goods that contain composite wood products destined for the California market, are affected. The ATCM establishes two tiers of formaldehyde emission standards. Phase 1 became effective on January 1, 2009, and a more stringent Phase 2 will be implemented over the next year. Manufacturers of such products will label them as meeting CARB PH1 Compliant, CARB PH2 Compliant, or as Ultra Low-Emitting Formaldehyde (ULEF).

Composite products affected by this regulation include:
- Particleboard
- Medium density fiberboard (MDF)
- Thin MDF (< 8 mm in thickness)
- Hardwood plywood made with a veneer core
- Hardwood plywood made with a composite core (particleboard or MDF)

Collaborative for High-Performance Schools (CHPS): The CHPS criteria is a benchmarking system that outlines the fundamentals of a high-performance school. Similar to other green building standards, it addresses site and materials selection, energy and water efficiency, indoor environmental quality, innovation, performance, and integrated delivery. The purpose of the CHPS criteria is to provide high-performance school strategies that can be used by school districts and their design teams for new campus facilities, new buildings, and major modernizations. CHPS criteria will vary by state and by version of the standard. CHPS criteria are already being followed in the following states: California, Colorado, Hawaii, Massachusetts, New York, Texas, Virginia, and Washington. There is also a Northeast CHPS criteria, which includes New Hampshire, Rhode Island, Connecticut, Maine, and Vermont.

When bidding a CHPS project, be aware of the version of the CHPS standard to ensure that you are quoting the correct product, especially as it pertains to low-emitting materials or EQ credits. Specifications for projects to be built to the CHPS criteria may also require that all products be listed on the CHPS High-Performance Product Database.

Federal Green Specifications: See Whole Building Design Guide

Green Globes: Green Globes is an environmental assessment rating system and guide. It is suitable for either large or small buildings, including offices, multi-family structures, or institutional buildings such as schools, universities, and libraries. Green Globes is different from other green building standards, as it uses a streamlined approach with data submitted online through a questionnaire. A report is automatically generated once the data has been completed.

Green Guide for Healthcare (GGHC): The GGHC provides the healthcare sector with a set of best practices that designers, owners, and operators can use to guide and evaluate their progress toward...
high-performance healing environments. Some of the principals of the LEED rating systems have been incorporated into this guide. It is voluntary self-certifying.

**International Green Construction Code (IGCC):** The IGCC is a new green building code that addresses energy use, water use, material and resource use, indoor environment quality, and building impacts on the environment. The IGCC focuses on greenhouse gas emissions, site design, existing buildings, and education as it pertains to sustainability. The code is designed to provide a regulatory framework regarding sustainability in commercial buildings. The IGCC was created by the International Code Council (ICC) board of directors. The American Institute of Architects and ASTM International served as sponsors. The IGCC will be updated every three years, similar to other ICC codes.

**ISO 14021, Environmental Labels and Declarations — Self-Declared Environmental Claims (Type II Environmental Labelling):** The ISO 14021 international standard describes a general evaluation and verification system for self-declared environmental claims and includes requirements for the labeling of those claims.

**Leadership in Energy and Environmental Design (LEED):** LEED is an internationally recognized green building certification system developed by the U.S. Green Building Council. Numerous LEED rating systems exist, such as LEED for Building Design and Construction, LEED for Schools, LEED for Existing Buildings O&M, LEED for Neighborhood Development, etc. LEED offers building owners a framework for identifying and applying practical and measurable green building design, construction, operations, and maintenance solutions.

**LEED 2012:** LEED 2012 is the latest draft of the LEED rating system. The goal of the USGBC is to publish the updated standard sometime in 2012.

**Living Building Challenge Certification (LBC):** The Living Building Challenge is a certification program that is based on seven performance areas: site, water, energy, health, materials, equity, and beauty. The LBC standard includes a “Red List” of chemicals that are to be avoided on projects. Unlike other green building standards that require composite wood or agrifiber products to be manufactured with no added urea-formaldehyde, the Living Building Challenge Red List restricts the use of all added formaldehyde. This includes both phenol-formaldehyde and urea-formaldehyde. Unfortunately, both phenol- and urea-formaldehyde resins are still commonly used in the fabrication of composite products such as particleboard and MDF.

**NAHB Model Green Building Guidelines:** The National Association of Home Builders Green Building Guidelines is a voluntary standard designed for homebuilders. The guidelines of this standard recognize multiple forest certification schemes, including FSC and SFI, and include innovative design credits for using life cycle assessment in determining the most environmentally preferable product for that building.

**NAHB Model Green Building Standard:** The National Green Building Standard is an ANSI-approved construction standard. It was developed through a joint effort of the International Code Council and the National Association of Home Builders. The standard is referred to as ICC 700-2008 and applies to all residential construction work in the United States, including single-family residences, condos, and apartments. The standard includes guidelines for residential designers and builders and focuses on water conservation, energy and material use, indoor air quality, and education. Multiple forest certification schemes are also accepted in this standard.

**South Coast Air Quality Management District (SCAQMD) Rule 1113:** The purpose of this rule is to limit the volatile organic compound (VOC) content of architectural coatings applied on site. Some examples of the materials covered under this rule are clear wood finishes, floor coatings, and below-ground wood preservatives.

**South Coast Air Quality Management District (SCAQMD) Rule 1168:** The purpose of this rule is to reduce emissions of volatile organic compounds (VOCs) and to eliminate emissions from site-applied adhesives, primers, sealants, etc.

**Whole Building Design Guide (WBDG):** The Whole Building Design Guide offers strategies to achieve a true high-performance building: one that is cost-effective over its entire life cycle, safe, secure, accessible, flexible, aesthetic, productive, and sustainable. The WBDG is specified on many government projects.

**General References**

**Agrifiber Products:** Agrifiber products are made from agricultural products. Wheat board, rice board, and strawboard are some examples of agrifiber.

**American National Standards Institute, Inc. (ANSI):** ANSI is the national coordinator of voluntary standards development in the U.S. for information on national and international standards.

**Biomass:** Biomass is material derived from trees, grasses, or agricultural crops that can be converted to heat energy to product electricity.

**Building Information Modeling (BIM):** BIM is a computer-aided design tool used by the architecture, engineering, and construction industries. BIM modeling is the process of generating and managing building data during its life cycle.

**Carbon Footprint:** Carbon footprint refers to the amount of greenhouse gases that are emitted from organizations such as manufacturing facilities and other businesses.

**Certified Wood:** Certified wood is timber that is officially approved by a certification organization as coming from a responsibly man-
-aged forest anywhere in the world. FSC, SFI, and PEFC are organizations that certify wood.

**Chain of Custody (CoC):** CoC is a procedure that tracks a product from extraction or harvesting to its end use, including all stages of the process.

**Chain-of-Custody Certification (FSC):** FSC Chain-of-Custody Certification is awarded to companies that produce, sell, promote, or trade wood products. Companies certified by FSC to sell FSC goods undergo a rigorous audit process. All certified companies are required to have systems in place to allow the tracking of all purchases and invoiced sales of products with an FSC claim.

**Closed-Loop Recycling:** This is a system in which the waste or by-product of one process or product is used in the making of another product.

**Cradle to Cradle:** Cradle to cradle is a design method that minimizes waste and allows for the reuse of materials in the making of new products.

**Cradle to Grave:** Cradle to grave is an assessment that tracks the life of a product from the point of creation until the disposal of the product.

**Environmental Product Declaration (EPD):** Environmental Product Declarations include quantified environmental data for products or systems based on information from a life cycle analysis. The purpose of an EPD is to provide quality-assured information regarding environmental performance of products.

**Forest Stewardship Council (FSC):** The Forest Stewardship Council is a nonprofit organization devoted to encouraging the responsible management of the world’s forests. The mission of the FSC is to promote environmentally appropriate, socially beneficial, and economically viable management of the world’s forests. Independent certification organizations (certification bodies) are accredited by the FSC to carry out assessments of forest management to determine if the FSC standards have been met. FSC may be referenced in green building standards as it pertains to the use of certified wood.

**Formaldehyde:** Formaldehyde is a chemical used widely in the manufacturing of wood-based products. Phenol-formaldehyde- and urea-formaldehyde-based resins are commonly used adhesives for making particleboard (PB) and medium-density fiberboard (MDF). Formaldehyde is also naturally produced in plants and animals.

**Global Warming:** Global warming is the perception that the Earth’s atmosphere has an increased level of carbon dioxide. It is believed that the increase in carbon dioxide is being caused by deforestation and the burning of fossil fuels, resulting in the warming of the planet.

**Green Seal:** Green Seal is a nonprofit, third-party certifier and standards development body. It certifies products based on life cycle sustainability standards. A Green Seal certification mark on a product means that it has gone through a rigorous process to show that it has a reduced amount of impact on the environment and on human health.

**GREENGUARD:** This is a product certification program for low-emitting building materials, furniture, furnishings, finishes, cleaning products, electronics, and consumer products.

**LEED-Accredited Professional (LEED AP):** LEED-accredited professionals demonstrate current knowledge of green building technologies and best practices. They have the designation of LEED Green Associate, LEED AP with Specialty, or LEED AP Fellow.

**Life Cycle Assessment (LCA):** LCA is a method for assessing the effect that a particular product has on the environment. Both positive and negative impacts are evaluated. A life cycle assessment begins with the evaluation of the raw materials that are used to produce the product, including the origin of those materials and the impact those materials may have had on the environment. It also accounts for the process used to manufacture the final product, along with the product packaging, transportation, distribution, consumer usage, and disposal of any waste material. LCA is sometimes referred to as a life cycle analysis or a cradle-to-grave analysis.

**Net Zero Building:** A net zero building can be defined in many ways; however, the basis of a net zero building is that it produces at least as much energy as it uses in a year.

**No Added Formaldehyde (NAF):** NAF-based resins are resins formulated with no added formaldehyde. Resins may be made from soy, PVA, or MDI.

**No Added Urea-Formaldehyde (NAUF):** Urea-formaldehyde (UF) resins are used in the production of composite panel products such as medium-density fiberboard (MDF) and particleboard (PB). Urea-formaldehyde is typically added to improve the bonding of composite materials. Several of the LEED rating systems, along with other green building standards, include a credit that requires all composite wood and agrifiber products to be manufactured with no added urea-formaldehyde. It is important to note that natural-occuring formaldehyde commonly found in wood is not an issue. Composite products manufactured with phenol-formaldehyde are considered compliant with the EQ 4.4 credit.

**No Formaldehyde (including natural-occurring):** No formaldehyde restricts the use of both phenol- and urea-formaldehyde, commonly used in the fabrication of composite products. In some cases, the reference may also include natural-occurring formaldehyde. Since wood has natural-occurring formaldehyde, products manufactured with wood components would not meet this requirement.
Off-Gassing: This is the emission of gaseous pollutants. Off-gassing has negative effects on indoor air quality. All chemically processed or petroleum-based materials produce off-gassing. Fortunately, many products are now available that have reduced toxicity and therefore off-gas much less.

Phenol-formaldehyde: Phenol-formaldehyde is a synthetic resin made by mixing phenol with formaldehyde. Phenol-formaldehyde resins are commonly used today as adhesives in the bonding of composite woods such as particleboard and MDF.

Polyvinyl Acetates (PVA): Polyvinyl acetates are probably the most common adhesive on the market. They are designed to work on porous materials. They are water-based and clean up with warm soapy water. PVAs do not emit any harmful fumes and are not hazardous to touch.

Post-Consumer (Recycled Content): Post-consumer waste material is an end product that has completed its life cycle as a consumer item and would otherwise have been disposed of as solid waste. Post-consumer materials include recyclables collected in commercial and residential recycling programs, such as office paper, cardboard, aluminum cans, plastics, and metals. Milk containers, pop bottles, newspapers, and construction and demolition debris are additional examples of post-consumer waste. Post-consumer recycled content is the percentage of material in a product that was consumer waste.

Pre-Consumer (Recycled Content): Also referred to as post-industrial, pre-consumer waste refers to materials generated in manufacturing and converting processes. Pre-consumer materials may consist of scrap, trimmings, and other by-products that were never used in the consumer market. Pre-consumer recycled content is the percentage of material in a product that is recycled from manufacturing waste.

Proposition 65: Proposition 65 requires businesses to notify Californians about significant amounts of chemicals in the products they purchase, in their homes or workplaces, or that are released into the environment. Wood dust is one of the chemicals found on the Proposition 65 chemical list. Manufacturers should be able to provide you with a supporting letter as it relates to wood dust if needed.

Rapidly Renewable Materials: These are agricultural products that are harvested in a 10-year cycle or less.

Reclaimed Wood: Reclaimed wood is wood salvaged from old structures that has been cleaned and milled for use on new projects. Note: FSC chain-of-custody certification requires that companies using reclaimed material in their FSC products verify that the material meets FSC’s definitions of post-consumer and/or pre-consumer reclaimed material. FSC-STD-40-007 V2-0 must be added to the scope of the certificate before such products can be invoiced.

Regional Materials: These are identified in standards as products that are extracted, harvested, and manufactured within a prescribed distance of a given project. LEED currently defines this distance as within 500 miles.

Renewable Resource: Renewable resource refers to any natural resource that can be replaced or replenished in the same amount of time or less than it takes to draw the supply down. Solar radiation, geothermal, and wind, as well as biomass, which includes wood, are just some examples of renewable resources.

Scientific Certification Systems (SCS): Scientific Certification Systems is a third-party verifier of agricultural and environmental product claims, including for the Forest Stewardship Council (FSC). In addition to numerous other certifications, SCS also certifies products for recycled content and VOC emissions.

SCS Indoor Advantage™ Gold: Indoor Advantage Gold is a product certification offered by SCS that is based on the California Office of Environmental Health Hazard Assessment’s (OEHHA) Chronic Section 01350. This certification is often used by manufacturers to validate VOC emission levels of finished products such as doors. Certified products are reviewed on an annual basis, which also includes quarterly monitoring to ensure that they maintain the certification.

Self-Declared Environmental Claims: These are environmental claims made on products without independent third-party certification.

SmartWood: SmartWood is a global forest certification program sponsored by the Rainforest Alliance. It is a third-party verifier for the Forest Stewardship Council (FSC).

Sustainable Forestry Initiative, Inc. (SFI): SFI is an independent organization dedicated to promoting sustainable forest management. The SFI forest certification standard is based on principles that promote sustainable forest management, which includes protecting water quality, biodiversity, wildlife habitat, species at risk, and forests with exceptional conservation value. SFI may be referenced in green building standards as it pertains to the use of sustainable wood products.

Ultra Low-Emitting Formaldehyde (ULEF): ULEF resins are formaldehyde-containing resins formulated such that the formaldehyde emissions from composite wood products are consistently below applicable Phase 2 emission standards.

Urea-Formaldehyde (UF): Urea-formaldehyde is a combination of urea and formaldehyde that is used in some glues. Urea-formaldehyde resins are used in the production of composite panel products such as particleboard and MDF. Urea-formaldehyde is currently used in combination with other resin systems and scavengers to meet reduced formaldehyde emission requirements.

U.S. Green Building Council (USGBC): The U.S. Green Building Council is a nonprofit organization that promotes buildings that are environmentally responsible, profitable, and healthy places to live and work. The LEED rating systems were developed by the USGBC.

Volatile Organic Compounds (VOC): VOCs are chemicals that are emitted as gases from solids or liquids and easily evaporate into the air at room temperature.
Website References

ANSI: www.ansi.org
ASHRAE: www.ashrae.org
ASTM: www.astm.org
CALgreen: www.bsc.ca.gov/Home/CALGreen.aspx
California Air Resources Board: www.arb.ca.gov/homepage.htm
Collaborative for High-Performance Schools: www.chps.net/dev/Drupal/node
Collaborative for High-Performance Schools – High-Performance Products Database: www.chps.net/dev/Drupal/node/445
Forest Stewardship Council: www.fsc.org
Green Globes: www.greenglobes.com
Green Guide for Health Care: www.gghc.org
Green Seal: www.greenseal.org
Living Building Challenge: https://ilbi.org/lbc
National Association of Home Builders: www.nahb.org
Rainforest Alliance: www.rainforest-alliance.org
Scientific Certification Systems: www.scscertified.com
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U.S. Green Building Council: www.usgbc.org
Whole Building Design Guide: www.wbdg.org

About the Author:

Judy Landwehr is the Environmental Technical Administrator for the Department of Environmental Sustainability at Masonite Architectural DoorSystems. As a certified LEED Green Associate with more than 36 years of experience in the wood door manufacturing industry, Judy oversees product certification programs for various Masonite Architectural DoorSystems manufacturing locations, including; FSC Chain of Custody, material content, and finished product VOC emission testing.