

Green Globes® environmental assessment and rating system was developed by the Green Building Initiative™ (GBI), and its development followed the ANSI consensus process.

The rating system assesses seven areas of a building's design, construction and operations, and Green Globes certification requires an on-site visit by a third-party assessment professional.

Green Globes gives credit for the Life Cycle Assessment (LCA) of building assemblies, which would include building envelope components such as a polished concrete foundational slab and intermediate floors on both low- and high-rise structures. The LCA calculations are performed with the ATHENA EcoCalculator, which examines the environmental impacts of an assembly from a cradle-to-cradle perspective.

The ingredients for concrete are regionally sourced, polished concrete floors are extremely durable, and represent potential feedstock for crushed aggregate at the end of their life. Polished concrete floors can score better in LCAs because other flooring systems have shorter replacement cycles.

While Green Globes does not assign points for products, the materials and building products that a manufacturer, such as L&M Construction Chemicals, provides have a very important role in achieving Green Globes certification.

The FGS/PermaShine family of products can assist project teams with credits in five of the Green Globes areas of assessment, including: Site, Energy, Indoor Environment, Resources, and Emissions.



- REUSE POTENTIAL:** Green Globes encourages urban infill and brownfield rehabilitation and the FGS/PermaShine products can be used for rehabilitation of an existing foundational slab.
- RECYCLED CONTENT:** The concrete portion of the FGS/PermaShine Polished Concrete Floor System can contain fly ash, slag or other recycled content for contribution to the building's overall recycled content. Concrete floors are also recyclable at the end of a building's life span.
- THERMAL MASS:** The thermal mass of a foundational slab and intermediate floors within multi-story buildings provides a leveling of ambient interior temperature for a reduced cooling and heating loads. FGS/PermaShine System can assist project teams with meeting the energy efficiency requirements of ASHRAE 90.1-2007 and the EPA's Target Finder.
- DAYLIGHTING:** A polished concrete slab can be colored and installed to reach a Solar Reflectance Index (SRI) of 29 or better, for assistance with daylighting design strategies. A reduction of ambient lighting fixtures and long-term electrical energy savings can be realized through daylighting.
- INDOOR ENVIRONMENT:** The FGS/PermaShine is compliant with the requirements of the South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, 2004, for concrete floor finishes, sealers and stains.
- ZERO-VOCs:** The FGS System has passed the stringent laboratory testing requirements of the California Department of Health Services Standard Practices for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004, Addenda.

Following the Green Globes on-line predesign tool, the FGS/PermaShine Polished Concrete Floor System can have an impact on more than 80% of the sections within the rating system's assessment areas, which are used to determine a building's environmental and energy performance. This determination assumed a polished concrete system included a newly poured or existing concrete foundational slab, a certified installer to grind the slab, and application of one or more of the FGS/PermaShine family of products.

CATEGORY	CREDIT	POINTS	GREEN GLOBE REQUIREMENTS	FGS/PERMASHINE CONTRIBUTION
SITE	Appropriate Area for Development	30 Points	Due to the reuse potential of an existing building's foundational slab, a new construction project could potentially gain points toward the Green Globes Site Assessment Area because the FGS/PermaShine Polished Concrete Floor System can involve the grinding of an existing foundational slab.	Existing buildings can be located on a brownfield or areas targeted for urban redevelopment.
	Responsiveness to Microclimate and Ecology	30 Points	A project team can gain additional points toward certification under Green Globes by designing for the microclimate and ecology of the site.	The site must offer a favorable building orientation in order to pursue daylighting strategies that include enhancing of natural light with the reflectivity of a polished concrete floor.
ENERGY	Establish a Minimum Energy Consumption Target	100 Points	The project team must commit to minimizing the energy consumption of the building and associated activities including transportation.	The thermal mass of a foundational slab provides a leveling of heating and cooling loads and can assist project teams in meeting or exceeding the project's established energy performance benchmarks.
	Minimize Building Energy Demand	104 Points	Compared to carpets and tile floor systems that interfere with the thermal mass properties of exposed concrete, polished concrete offers a thermal mass. A polished concrete floor system helps optimize the building envelope with thermal storage capacity for a more energy-efficient design and potential compliance with ASHRAE 90.1-2007 and EPA's Target Finder.	The energy saved through building designs with thermal storage can help reduce the amount of electricity consumed and reduce the fossil fuels burned to make electricity.
RESOURCES, BUILDING MATERIALS and SOLID WASTE	Minimize Environmental Burden and Embodied Energy of Materials and Assemblies	40 Points	Selecting polished concrete reduces the environmental burden and embodied energy of a building during the life cycle of the structure.	Once a concrete foundational slab has been poured, the embodied energy of the building can be reduced for the life span of the building by installation of a polished concrete floor. Concrete surface treatments avoid the environmental burden of periodic reinstallation of carpets and tiles, and result in an overall reduction in electricity used and cleaning materials used for floor maintenance, including vacuuming carpets, and stripping and waxing of wood floors and other flooring.
	Optimize Use of Resources	45 Points	By installing a polished concrete floor, project teams can retain an existing building's elements during major renovations.	During full demolitions, concrete can be crushed to provide post-consumer aggregate for building or road construction.
	Minimize Waste from Construction, Renovation and Demolition	5 Points	Project teams committed to minimizing waste generated from construction, renovation, or demolition of buildings can reuse an existing slab to retain a significant portion of an existing building.	Installation of a polished concrete floor eliminates the waste associated with the packaging of flooring products.
INDOOR ENVIRONMENT	Pollutant Source Control	50 Points	Polished concrete, especially in net-zero energy construction, can allow project teams to maximize the amount of natural ventilation to building occupants to enhance indoor air quality. Polished concrete can be a zero-VOC alternative for the avoidance of hazardous and toxic materials within the building as wells providing a surface that does not encourage mold growth.	FGS/PermaShine complies with South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, 2004, for concrete floor finishes, sealers and stains; and has passed stringent laboratory testing requirements of the California Department of Health Services Standard Practices for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004, Addenda.
	Integration of Natural Lighting	20 Points	Polished concrete can be colored or treated to enhance its reflectivity providing lighting designers opportunities to maximize natural light entering the building.	A solar reflectance index (SRI) of 29 can be achieved during the concrete polishing process through the application of shake-on concrete coloring pigments or sprayed-on concrete dyes to further enhance daylighting design strategies.
	Thermal Comfort	20 Points	The thermal mass of concrete levels heating and cooling loads and avoids fluctuations in ambient temperatures for enhance comfort for occupants.	Both passive or radiant heating and cooling systems utilizing the thermal mass of concrete offer potentially healthier indoor environmental quality.

**DISCLAIMER**

While the Green Globes credit sections described in this paper suggest how applications of FGS/PermaShine can assist project teams with earning Green Globes points, the Green Globes applicant bears ultimate responsibility for determining the product attributes that will assist them with certification by a Green Building Initiative's (GBI) third-party assessor/professional. The final decision regarding Green Globes certification relies heavily on the GBI's judging panel. The architect, designer, contractor, or other member of the building team must document a building's sustainable design, construction, and performance data and make the data available to the third party assessor and the GBI.