



A NEW standard FOR single-ply

A new ANSI standard will help ensure single-ply membranes live up to sustainability claims

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In October 2009, President Obama issued Executive Order 13514, “Federal Leadership in Environmental, Energy, and Economic Performance,” which established “an integrated strategy toward sustainability in the Federal Government” to “make reduction of greenhouse gas emissions a priority for Federal agencies.”

As a result of the order, government agencies, including the General Services Administration (GSA), are looking to incorporate environmentally preferable product (EPP) requirements into their procurements. And state and municipal governments are following the federal government’s example. Now, companies are trying to meet the government’s demands for sustainable products, as well as market demand by consumers and retailers.



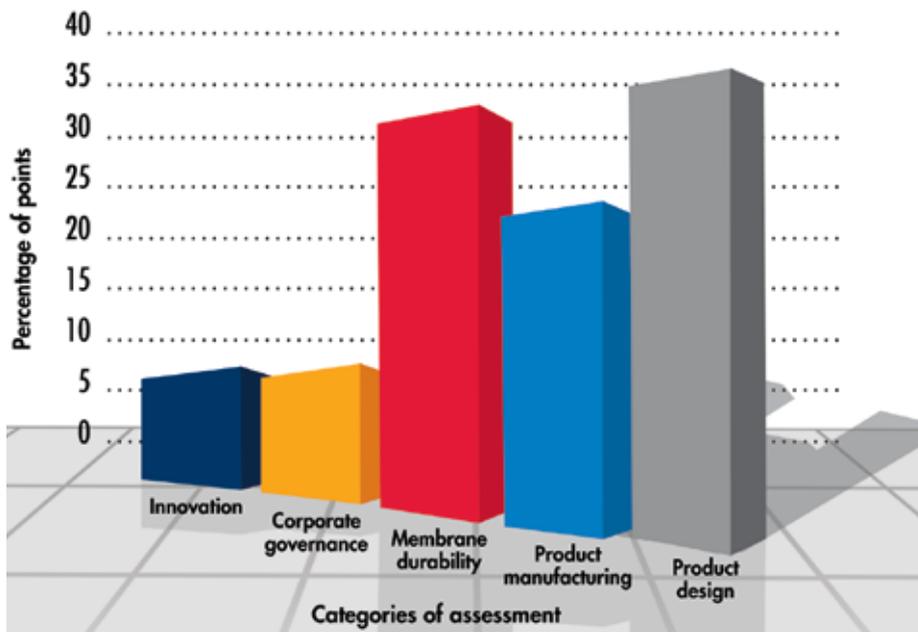
Photos courtesy of Sika Sarnafil, Canton, Mass.



Product manufacturing is one of five categories measured for single-ply membranes' sustainable attributes.

Although the executive order's policies are admirable, the challenge in complying with those policies is figuring out how to objectively define and assess a given product's sustainable attributes. In the roofing industry, as well as in many construction sectors, most sustainability standards are based on a single attribute, such as membrane reflectivity or recycled content. Additionally, a significant shortcoming of many of these metrics is they are not national standards and, therefore, have not undergone the rigorous consensus-based drafting and vetting procedures required by the American National Standards Institute (ANSI).

As the building industry turns its focus toward sustainable materials, it needs comprehensive, multi-attribute,



Sustainability points awarded per section of NSF/ANSI standard

segment-specific, national sustainability standards to integrate into policies set forth in Executive Order 13514, as well as the GSA's and other government agency's EPP purchasing requirements. Such sustainability standards for construction materials provide a simple way for architects and contractors to distinguish one product from another when choosing materials for projects and, most important, ensure materials comply with a building owner's intent and/or specifications.

Standard setting

One organization is trying to do just that. Founded in 1944, NSF International, Ann Arbor, Mich., writes standards and certifies products for food, water and consumer goods to minimize adverse health effects and protect the environment. In 2008, NSF International established the NSF Sustainability program to verify single-attribute environmental claims and certify products and services to multi-attribute sustainability assessment standards and protocols.

NSF Sustainability applies sustainability principles to help companies "green" their products, operations, systems and supply chains. In 2010, NSF Sustainability founded the National Center for Sustainability Standards, a national initiative to support the development of sustainability standard activities. The National Center for Sustainability Standards has been successful with developing sustainability standards and protocols for commercial furniture and furniture fabrics, wall covering products, carpet, resilient flooring products and service organizations.

NSF International is a program operator for the development of Product Category Rules (PCRs) and provides Environmental Product Declaration (EPD) verification services. (For more information about PCRs and EPDs, see "Comparing products"). Two PCRs, one for seating products and another for flooring products, are in the final stages of development and are expected to be published this spring.

To address the construction industry's needs, NSF International formed a multi-stakeholder committee to develop an American National Standard to assess the sustainable attributes of single-ply roof membranes. Development of NSF/ANSI 347, "Sustainability Assessment for Single Ply Roofing Membranes," began in May 2009; it is scheduled to be published this month.

NSF/ANSI 347

Because ANSI standards require a balance of industry, users and regulatory officials, NSF International formed a joint committee of stakeholders from the roof membrane manufacturing industry, roof membrane users, government agencies, consultants and environmental nongovernmental organizations.

NSF/ANSI 347's overall purpose is to facilitate communication about the environmental and social effects associated with the production and use of single-ply roof membranes. Such communication is expected to encourage the demand for and supply of products generating less stress on the environment and society, thereby stimulating the potential for market-driven continuous improvement.

The standard addresses EPDM, ketone ethylene ester (KEE), PVC, TPO and polyisobutylene (PIB) products. However, the standard's principles may be applied to other single-ply membrane types to assess their environmental and social attributes.

The standard incorporates scientific principles, provides transparency and offers a credible basis for environmental preferability and sustainability claims. It also harmonizes the principles and procedures used to support such claims.

The standard provides a practice for assessing the sustainability of single-ply roof membranes. Sustainability-related information could prompt a manufacturer's decisions about supply chain modifications, product content changes, manufacturing adjustments, performance improvements, end-of-life options and corporate governance with the goal of producing more sustainable products.

Additionally, it addresses products' environmental performance and sustainability attributes and provides a means to track incremental changes to products' sustainability profiles. The standard is intended to provide a framework by which roofing professionals can compare and assess the sustainable nature of different products performing similar functions.

NSF/ANSI 347 users include building owners, building regulators, roof membrane manufacturers, membrane suppliers, architects, roofing contractors, construction material specifiers and procurement specialists, independent auditors, certification bodies and environmental labeling organizations.

The standard includes criteria for the finished membrane, covering the entire product life cycle from raw

material extraction through manufacturing, use and end-of-life management. A product's life cycle includes activities associated with the sourcing or extraction of natural resources; material transportation to a manufacturing facility; manufacture of a product from its raw material components; use of the finished product; and the disposal, reuse or recycling of the product at the end of its useful life.

Certifying a product

NSF/ANSI 347 uses a point system to grade a product's achievement of prerequisite and optional credits in five

COMPARING PRODUCTS

In a marketplace wary of green product hype, Environmental Product Declarations (EPDs) offer an international standard of communication to objectively compare and describe a product's environmental impact throughout its entire life cycle. EPDs are recognized globally and by the LEED® Green Building Rating System as a preferred reporting tool.

An EPD is the summary document of data collected through a life cycle assessment (LCA) as specified by a Product Category Rule (PCR). An LCA measures input, output and environmental impact of a product across its lifespan. PCRs define which data is used in an LCA and how the data is collected and reported.

A PCR is a set of specific rules, requirements and guidelines for developing Type III environmental declarations for one or more product categories. PCRs include instructions for gathering data about the consumption of resources, including energy, water and renewable resources and emissions to air, water and soil. The following categories are investigated:

- Climate change
- Depletion of stratospheric ozone layer
- Acidification of land and water sources
- Eutrophication
- Formation of photochemical oxidants
- Depletion of fossil energy resources
- Depletion of mineral resources
- Hazardous and nonhazardous waste

Because data collection methods are standardized, a PCR allows for comparison of different environmental product attributes among products in a defined category.

Through PCRs and EPDs, manufacturers can assess their products' positions in the marketplace and respond to increasing demands for environmentally sustainable products and transparency in environmental claims. LCA data collection helps identify areas for improvement of their environmental attributes and adoption of more sustainable operational practices and business approaches. Customers can more easily compare products based on their environmental attributes using objective, neutral and transparent data.



The standard measures recyclability and reclamation of single-ply membranes.

categories. The prerequisite credits are the performance minimum level to claim any conformance level to the standard. Higher achievement levels are obtained by achieving a combination of optional points from each category. Silver, gold and platinum ratings are awarded based on the total number of points achieved.

The five categories for assessing single-ply roof membranes' sustainable attributes are:

- Product design
- Product manufacturing
- Membrane durability
- Corporate governance
- Innovation

The criteria are grouped in general conformance with a product's life cycle, from design and raw material selection to manufacturing, use and end-of-service life. Additionally, criteria related to corporate governance are included to address issues of social responsibility. This life cycle approach will guide manufacturers to gather life cycle data that may be used in other programs, such as Type III EPDs through a product-specific PCR.

Product design covers prerequisites and optional requirements for demonstrating an enlightened design process, environmentally sustainable material inputs, identifying and reducing the use of chemicals of concern, informed supplier selection, recyclability of the final product into other durable products, and reclamation of pre- and post-consumer single-ply roof membranes.

The product manufacturing section contains requirements for a manufacturer's environmental policy and management, energy conservation, water resources management, optimization of material resources and protection of air resources.

Membrane durability addresses durability in terms of service life in the field; membrane surface contribution; and process-based requirements, including maintenance program and recommendations, quality-management systems and field performance evaluations.

The intent of the corporate governance section is for manufacturers to demonstrate corporate or organizational leadership in public disclosure and transparency of key environmental and social accountability objectives and data. To comply with this section's requirements, a company must have a public corporate governance policy confirming it does not use forced or child labor to manufacture its membranes. In addition, there are requirements about employee relations, development, safety, outreach and education targeted to design professionals who specify roof membranes. Community responsibility also is considered in this section. For example, there is a prerequisite for a company to invest in the communities where its products are manufactured. This can be demonstrated by donating materials for community projects.

The intent of the criteria in the innovation section is to encourage manufacturers to implement new, innovative and quantifiable ideas that promote environmental benefits in the development, manufacture, end use and reclamation of sustainable single-ply roof membranes. To earn innovation points, manufacturers must document measurable data demonstrating exceptional sustainability and performance beyond the requirements in the standard's previous sections.

Hope for the future

The standard is the first of its kind in the building envelope industry in North America. In addition to being a useful tool for policymakers, designers and users, the standard is expected to be used as the basis for other construction material standards. The standard can be purchased through the NSF Bookstore at www.techstreet.com/nsfgate.html. 🌱

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