NSF/ANSI 332
Resilient Floor Coverings Sustainability Requirements

Forward
This American National Standard, NSF/ANSI 332 Sustainability Assessment for Resilient Floor Coverings Standard has been developed as part of the ongoing efforts of interested parties to assess the sustainability initiatives of the resilient floor covering industry. Stakeholders involved in developing the standard included resilient floor coverings manufacturers, end users including consultants and certifiers, state environmental agencies, academics and non-governmental organizations.

The purpose of the Sustainability Assessment for Resilient Floor Coverings Standard is to provide information that is verifiable, accurate and not misleading about the Environmental Impacts, Health & Wellness Impacts and Social Impacts of resilient floor coverings. This standard addresses the key issues which are of major interest of purchasers and specifiers of resilient floor covering products. Products certified to this standard meet all of the criteria listed in each of the three categories.

The intent of this Standard is to encourage reduction in impacts by disclosing and measuring inputs with the goal of using this information to reduce environmental, health and social impacts. Measuring inputs and disclosing information provides manufacturers with a basis for establishing internal benchmarks and goals of continuously reducing impacts.

As used in this Standard “resilient floor coverings” include, but not limited to, vinyl tile, luxury vinyl tile, rigid core tile, solid vinyl tile, vinyl composition tile, heterogeneous and homogeneous sheet vinyl, rubber flooring, polymeric flooring, linoleum and cork flooring. The Standard is applicable to products manufactured in one facility or multiple facilities, one country or multiple countries.

Sustainability Assessment for Resilient Floor Coverings

1 General

1.1 Purpose

The overall purpose of this standard is a thorough communication of information that is verifiable, accurate and not misleading about the environmental impacts, health and wellness impacts and social impacts associated with the production and use of resilient floor coverings. Such communication is expected to encourage the demand for and supply of products that cause less stress on the environment, health and society, thereby stimulating the potential for market-driven continual improvement. This standard is intended to be science based, provide transparency, and offer credibility for manufacturers in making claims of environmental transparency and sustainability, and to harmonize the principles and procedures used to support such claims.

This standard provides a means for assessing the sustainability of resilient floor coverings. Sustainability-related information can inform a manufacturer’s decisions about supply chain modifications, product content changes, manufacturing process changes, performance improvements, end-of-life options and corporate governance with the goal of manufacturing more sustainable resilient flooring products.
This Standard addresses environmental performance and sustainability attributes (including health and wellness and social aspects) of products. This Standard provides twenty-three (23) specific sustainability, health and wellness, and social impact requirements which all must be met in order to certify to the Standard.

The Standard is intended to be used primarily by resilient flooring manufacturers interested in understanding the sustainability performance of their products. Independent auditors, certification bodies and environmental labeling organizations are also potential users of this Standard for its use in supporting market-based environmental and sustainability claims. This Standard may also be used by purchasers and consumers who wish to ensure that resilient flooring manufacturers are accurately declaring the sustainable nature of their products.

1.2 Scope

1.2.1 Environmental Impacts

This Standard establishes a consistent approach to the evaluation and determination of environmental transparency and more sustainable resilient floor coverings. The Standard includes relevant criteria across the product life cycle from use of raw materials, manufacturing, use and end of life management.

1.2.2. Health and Wellness Impacts

This Standard establishes a consistent approach to the evaluation of the health and wellness impact of resilient floor coverings.

1.2.3 Social Impacts

This Standard establishes a consistent approach to the evaluation of the social responsibility influences of the resilient floor covering manufacturer.

As used in this Standard “resilient floor coverings” include, but not limited, vinyl tile, luxury vinyl tile, rigid core tile, solid vinyl tile, vinyl composition tile, heterogeneous and homogeneous sheet vinyl, rubber flooring, polymeric flooring, linoleum and cork flooring.

1.3 Principles

This standard practice was developed based on the following principles.

1.3.1 Life Cycle Thinking

The life cycle of a product ranges from activities associated with the production and delivery of raw materials or generation of natural resources to the final disposal at end of life. This Standard was developed with consideration of the life cycle of resilient floor coverings to help identify the relevant characteristics and criteria to be used in evaluating a product’s sustainability attributes.

1.3.2 Health and Wellness Consideration
The evaluation of health and wellness considerations include manufacturing best practices, meeting applicable regulations and VOC emissions compliance, product use phase and product end of life.

1.3.3 Social Responsibility

The evaluation of corporate social responsibility included within manufacturing practices, supply chain considerations, and the surrounding community.

1.3.4 Relationship with legislation

A precondition for claiming conformance with this standard shall include compliance with environmental, health, and other relevant regulations.

1.3.5 International Trade Aspects

The procedures and requirements included within this Standard have not been prepared, adopted, or applied with a view to creating unnecessary obstacles to international trade.

1.3.6 Scientific Basis

The criteria contained in this Standard were developed and selected based on sound scientific and engineering principles intended to produce accurate, reproducible results.

1.3.7 Product innovation

Use of this Standard is intended to support, not inhibit, innovation that maintains or has the potential to improve environmental, health and wellness, and social responsibility.

2 Normative References

(To be added)

3 Definitions

(To be added)

4 Conformance, evaluation, and assessment criteria

4.1 Elements

This sustainability assessment standard is divided into three basic elements consisting of specific requirements in each section which must be achieved in order to certify to the Standard. The three basic elements are:

4.1.1 Environmental Impacts

4.1.1.1 Purpose
4.1.1.2 Product Design and Ingredient Disclosure

- Complete environmental considerations and criteria for the product design.
- Complete product transparency documentation and ingredient discloser.
- Provide publicly available Environmental Product Declaration.

4.1.1.3 Manufacturing Practices

- Complete company Environmental Management Policy.
- Document Environmental Management System in accordance with ISO Standards.
- Complete water resources utilization management plan.
- Complete energy utilization management plan.
- Complete waste minimization management plan.

4.1.1.4 Product Use Phase

- Complete documentation of anticipated product service life based upon intended application and use.

4.1.2 Health and Wellness Impacts

4.1.2.1 Purpose

4.1.2.2 Manufacturing Practices

- Inventory and internally report greenhouse gas emissions (CO2 equivalents).
- Utilize and document procurement best practices for PVC.

4.1.2.3 Product Use Phase

- Product testing demonstrates VOC emissions compliance.

4.1.2.3 Product End of Life

- Document impact(s) at disposal phase utilizing product service life based upon intended application and use.

4.1.3 Social Impacts

4.1.3.1 Purpose

4.1.3.2 Company Policies, Procedures, and Programs

- Document corporate social responsibility policies.

4.2 Basic Principle for labeling and reporting

The methodology for assessing whether a product conforms to the criteria for each of the three elements and for verifying ongoing conformance shall be documented be of sufficient detail to provide consumer confidence that this Standard has been correctly applied.

4.3 Frequency of Conformity Assessment

Changes to products, materials processes, facilities or the organization shall be evaluated to determine if those changes affect the conformance to any of the specific requirements throughout the Standard. Regardless, the frequency of conformity assessment shall not exceed three years.

4.4 Non-conformance and corrective and preventable action
Authority shall be assigned and supported by corporate management for identifying and investigating non-conformance and taking appropriate action. In establishing and maintaining procedures for investigating and correcting non-conformance, the manufacturer shall include the following:

1. Identify the cause of the non-conformance
2. Identify and implement the necessary corrective action
3. Implement or modify controls necessary to avoid repetition of the non-conformance
4. Record any changes in written procedures resulting from the corrective action

5.0 Environmental Impacts

5.1 Purpose

The criteria in this section are intended to encourage (1) the understanding of environmental impacts of ingredients, constituents, chemicals and products for use by product designers and developers, (2) minimization of the environmental impacts in sourcing and producing resilient flooring products and (3) evaluation of alternative formulations based upon the inclusion of carcinogenic, mutagenic or reprotoxic (CMR) chemicals.

5.2 Product Design and Ingredient Disclosure

5.2.1 Environmental Considerations in Design

Manufacturer shall implement an environmental assessment process within the product design and development system. The program shall consider the environmental attributes and impacts of its products, transparency on ingredients, constituents, and chemicals and include issues such as product service life, designing for reusability, recyclability and/or compostability, and end of life options. The environmental assessment process shall consider environmental attributes and impacts of products across the entire product life cycle.

5.2.1.1 Product Transparency and Ingredient Disclosure

1. Manufacturer shall provide a disclosure report of ingredients using Chemical Abstract Service (CAS) nomenclature, with inputs declared to a minimum 1000 ppm (0.1%). The transparency documentation does not require specific formulation information that would be considered proprietary.

2. Manufacturer shall document the classification of the raw materials in the product by chemical hazard classifications listed below. Raw material input includes only ingredients added intentionally. At a minimum, the manufacturer shall report whether the raw material input comprising of at least 1000 ppm of the product is classified as any of the following:
   a. International Agency on Research of Cancer (IARC) Group 1 - Carcinogenic to Humans and Group 2A - Probably Carcinogenic to Humans
   b. National Toxicology Program (NTP) - Known Human Carcinogen and Reasonably Anticipated Carcinogen
   c. Occupational Safety and Health Administration (OSHA) - Regulated Toxic Metal or Carcinogen
   d. California Proposition 65 - Known to cause cancer or reproductive toxicity

Commented [J1]: Evaluate the life cycle inventory (energy/mass data) – LCI - Michael

Commented [J2]: Groups / List – current standard and in other product certification standards – quite a bit of overlap.

Establish a task group to evaluate the section: Dave (producer), Alexandra (public), XXX (specifier/designer)
e. USEPA Toxic Release Inventory (TRI) persistent, bioaccumulative, and toxic (PBT) chemicals - Known persistent, bioaccumulative, and toxic chemicals and compounds (a subset of the USEPA TRI list of chemicals and compounds)

OR

USEPA TRI: Complete USEPA toxic chemical list (including known PBT chemicals and compounds), RCRA Waste Minimization List, the US-Canada Binational list, the Stockholm Convention POPs list, and the EC RoHS list Article 4(1).

Product transparency report or certification to be completed. If the report or certification is third party verified, this would be noted in the documentation provided.

3. The disclosure report shall include material inputs for the product undergoing assessment identifying each type of source, such as pre- or post-consumer recycled content, bio-based content, etc.)

4. The disclosure report shall include statement that the resilient flooring product does not utilize ortho-phthalates and identifies type(s) of plasticizer(s) utilized in the resilient flooring product. (evaluate how to describe or if there needs to be a threshold – unintended)

5. The disclosure report shall include statement that the resilient flooring product does not utilize intentionally added heavy metal(s); including lead, mercury, chromium (hexavalent) and/or cadmium. (add PPM to the description - unintended)

5.2.1.2 Environmental Product Declaration (EPD)
Manufacturer shall publish a product specific or provide industry average Type III Environmental Product Declaration based on ISO 14025 and EN 15804 and complies with the Flooring Product Category Rules (PCR) adopted in 2019.

5.3 Manufacturing Practices

5.3.1 Environmental Management Policy
Manufacturer shall implement an environmental management policy. The policy should include a commitment to continual improvement and pollution prevention, plus showing assurance of compliance with applicable regulations and other legal environmental requirements. Policy shall be communicated to all persons working for or on behalf of the organization, including supply chain manufacturers, and is made publicly available.

5.3.2 Environmental Management System (EMS)
Manufacturer shall document their Environmental Management System in accordance with ISO 14001 Environmental Management Systems and utilizes ISO RC14001 (American Chemistry Council Responsible Care program) or other system company-wide program that includes continuous environmental performance targets.

5.3.3 Water Resources Utilization Management Plan
If water is used in product manufacturing process, manufacturer shall complete an inventory of water use at the plant level. Sources of water shall be identified as a percentage - municipal potable, rainwater recapture, direct capture, on-site wells and reclaimed wastewater. The inventory shall include both total water consumption and total wastewater discharge. Reduction

Commented [J3]: Suppliers providing the data to the product manufacturer?
Understanding the ingredients being used in the product. Screening that is completed by manufacturer (phthalates and heavy metals).
Are the products analyzed by the manufacturer? Supplier information – depends upon the listing - some do sampling on the listing and some information comes through supplier inquiries. Are you testing the product? Each and every chemical – good judgement for information (not intentionally added compounds – derived further down the supply chain). Craft language around this – unintentional versus intentional.
Manufacturers – this is what we have – independent testing to review suppliers. Can be gaps in control / management of supply chain. Recycled content.

Commented [J4]: Task group discussion – same as the points above.

Commented [J5]: Cork Flooring EPD

Commented [J6]: How this is measured?

Commented [J7]: Note all sources – how much of each type.
goals in manufacturing process shall be documented, published internally and reviewed annually.

5.3.4 Energy Utilization Management Plan
Manufacturer shall manage a system to optimize energy performance and plan to include:

1. Manufacturer shall complete an inventory of energy use that encompasses production at the plant level.

2. Sources of energy shall be identified – renewable energy, micro-grid, local utility (fossil fuel based), and/or local utility (renewable source based).

3. Audit of use of fossil fuel and renewable energy sources to be documented and published internally and reviewed annually.

5.3.5 Waste Minimization Management Plan
Manufacturer shall have a documented and operational waste minimization program that includes:

1. Quantification of waste generation rate and diversion rate from landfilling or incineration by recycling or reuse at the plant level.

2. Waste minimization goals shall be established, published internally and reviewed annually.

5.4 Product Use Phase

5.4.1 Product Service Life
Manufacturer shall confirm that the resilient flooring product is designed and manufactured to be durable and long-lasting under conditions of intended use. Manufacturer documents that the product performs at or above the performance requirements in industry-recognized standards that are relevant to the specific product:

- Vinyl Composition Floor Tile (ASTM F 1066)
- Sheet Vinyl Flooring (ASTM F 1303 or ASTM F 1913)
- Solid Vinyl Floor Tile (ASTM F 1700)
- Polyolefin Composition Floor Tile (ASTM F 3009)
- Rigid Polymeric Core Flooring (ASTM F 3261)
- Rubber Sheet Flooring (ASTM F 1859 or F 1860)
- Rubber Tile (ASTM F 1344)
- Linoleum Sheet Flooring (ASTM F 2034)
- Linoleum Tile Flooring (ASTM F 2195)
- Bonded Rubber Crumb Floor Coverings (ASTM F 3041)
- Cork Floor Tile (ASTM F 3008)

6.2 Health and Wellness Impacts

6.2.1 Purpose
The criteria in this section are intended to demonstrate that the flooring products certified to this standard do not pose a health risk when properly used.

6.2.2 Manufacturing Practices
6.2.2.1 Greenhouse Gas Emissions
Manufacturer shall annually inventory and report internally greenhouse gas emissions (CO₂ equivalent) in accordance with Scope 1 defined in the Greenhouse Gas protocol published by World Resources Institute and the World Business Council for Sustainable Development. Reduction goals shall be established, published internally and reviewed annually.

6.2.2.2 Procurement Best Practices for PVC
If resilient flooring product contains polyvinyl chloride, manufacturer shall purchase PVC resins from suppliers that include:

(1) Meets the residual vinyl chloride limits for PVC resin and emission limits for PVC resin manufacturing facilities as outlined in the USEPA 40 CFR Part 63 requirements Subpart HHHHHHHH, or the EU Reference Document on Best Available Techniques in the Production of Polymers, August 2007.

(2) Have an established Environmental Management System such as ISO 14001, ISO RC14001 (American Chemistry Council Responsible Care program), or other company wide program with equivalent objectives.

OR

Manufacturer has demonstrated compliance with and has been third party certified to the Best Practice Guidelines for PVC from the Green Building Council of Australia.

6.2.3 Product Use Phase

6.2.3.1 Volatile Organic Compound Emissions (VOCs)
Manufacturer shall demonstrate that product has been tested and is compliant with California Department of Public Health (CDPH) Standard Method v1.2, Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers, using private office scenario.

7.0 Social Impacts

7.1 Purpose
The criteria in this section is intended to incorporate social responsibility in providing a desirable, just and fair workplace.

7.2 Company Policies, Procedures, and Programs

7.2.1 Corporate Social Responsibility Policies
Product manufacturer documents a corporate social responsibility (CSR) policy including policies, procedures, and programs that address ethics, safety, slavery and human trafficking as follows:

7.2.1.1 Community Outreach Program
Product manufacturer document community outreach program involvement policy that demonstrates positive social outreach; including but not limited to provision of local employment opportunities and involvement in civic activities that support the surrounding community.
April 20, 2020

7.2.1.2 Prevention of Discrimination Policy
Product manufacturer documents through written policy and procedures that it does not engage in or support discrimination in the entire employment process.

7.2.1.3 Prohibitions on Forced Labor Policy
Product manufacturer documents through written policy and procedures that it does not engage in or permit the use of forced labor at its facilities following ILO Conventions 29-13 and 105-13.

7.2.1.4 Prohibitions on Child Labor Policy
Product manufacturer documents through written policy and procedures that it does not operate facilities that do not follow ILO Convention 182-13.

Commented [J12]: Need to define “discrimination” – all bad. Informative appendix or in definitions.

Commented [J13]: Definition of product manufacturer. Purchasing of finished product and sold as a finished product from another location / etc.
Applied for by a company. It would apply to the applicant for the standard. Need to have committee agreement.
Summary of Requirements

5.0 Environmental Impacts
5.1 Purpose
5.2 Product Design and Ingredient Disclosure
5.2.1 Environmental Considerations in Design
5.2.1.1 Product Transparency and Ingredient Disclosure
5.2.1.2 Environmental Product Declaration (EPD)

5.3 Manufacturing Practices
5.3.1 Environmental Management Policy
5.3.2 Environmental Management System (EMS)
5.3.3 Water Resources Utilization Management Plan
5.3.4 Energy Utilization Management Plan
5.3.5 Waste Minimization Management Plan
5.4 Product Use Phase
5.4.1 Product Service life

6.2 Health and Wellness Impacts
6.2.1 Purpose
6.2.2 Manufacturing Practices
6.2.2.1 Greenhouse Gas Emissions
6.2.2.2 Procurement Best Practices for PVC*
6.2.3 Product Use Phase
6.2.3.1 Volatile Organic Compound Emissions (VOCs)

7.0 Social Impacts
7.1 Purpose
7.2 Company Policies, Procedures, and Programs
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7.2.1 Corporate Social Responsibility Policies

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7.2.1.2 Prevention of Discrimination Policy

7.2.1.3 Prohibitions on Forced Labor Policy

7.2.1.4 Prohibitions on Child Labor Policy

*Vinyl Flooring Products only