



Material + Sustainability Report

April 2011



FINE BAMBOO FLOORING, PANELS & VENEER

Teragren: Material and Sustainability Report

This report is intended to respond to material survey requests and address sustainability questions relevant to our industry. Teragren is a U.S.-based manufacturer of fine bamboo flooring, furniture-grade panels, veneer, and countertop/table tops. We are also a company on a mission. Our definition of success is to manufacture high-quality bamboo products through environmentally and socially responsible business practices. From the moment our company was founded in 1994, we have been committed to developing and manufacturing beautiful bamboo products that:

- Enhance home and business environments
- Pay farmers fair-market prices for raw materials in China
- Pay fair wages to factory workers in China
- Reduce dependence on dwindling timber resources
- Rely on rapidly renewable bamboo resources
- Adhere to stringent, environmentally conscious specifications
- Promote green building
- Help neutralize our company's environmental footprint

Category	¹ LEED® Credit	Questions	Response
Product Entry:	NA IEQ 4.3 IEQ 4.4	When were the following products introduced by Teragren? 1. Site Finished Flooring 2. Factory Finished Flooring 3. Architectural Panels 4. Architectural Veneer 5. Synergy® Flooring 6. Portfolio Flooring 7. Worktops/Countertops 8. Strand Panels 9. NAUF products 10. NAF products	Teragren LLC, founded in 1994, was among the first US-based companies to bring bamboo flooring and panels to the U.S. market. 1. Teragren introduced Site Finished Flooring in 1997. 2. Teragren introduced Factory Finished Flooring and Accessories in 2000. 3. Teragren introduced Architectural Panels in 2002. 4. Teragren introduced Architectural Veneer in 2004. 5. Teragren introduced Synergy® Strand Flooring in 2005. 6. Teragren introduced the Portfolio Collection in 2009. 7. Teragren introduced Bamboo Worktops/Countertops in 2008. 8. Teragren introduced Strand Panels in 2008. 9. Teragren introduced Flooring and Architectural Panels manufactured with No-Added-Urea-Formaldehyde (NAUF) adhesive in 2006. 10. Teragren introduced Flooring and Panels with No-Added-Formaldehyde (NAF) adhesive in 2007.

		<p>11. FloorScore® products 12. SCS IAG-certified</p>	<p>11. Teragren achieved FloorScore®-certification on all flooring products in 2009. 12. Teragren achieved SCS Indoor Advantage™ Gold-certification on all bamboo panel and 1/8” veneer products in 2009.</p>
Third Party Certifications	NA	List any Third Party Certifications	<ul style="list-style-type: none"> • ISO:9001 Certified Factory / ISO 14001 Certified Factory • Factory FSC Chain-of-Custody • Scientific Certification Systems (SCS) Factory Audit • FSC-PURE Certification on Traditional (non-strand) bamboo products and FSC Chain-of-Custody #SCS-COC-002912 • SCS Indoor Advantage™ Gold Certification (All Teragren panels and 1/8” veneer) http://www.scs-certified.com/products/ (search using the Manufacturer drop-down menu for Teragren LLC) • FloorScore® Certification (Unfinished and prefinished Teragren bamboo flooring) http://www.rfci.com/int_FS-ProdCert.htm <p>Indoor Advantage™ Gold Certification and FloorScore® certification meet the indoor air emissions criteria of California Section 01350 Specification; Collaborative for High Performance Schools (CHPS); LEED® Green Building Rating Systems; Green Guide for Health Care</p>
Materials and Content: Pre/Post Consumer Recycled Materials	MR 4.1/4.2	Do Teragren products contain any post consumer recycled materials?	<p>Product: No. Teragren products are manufactured from new bamboo fiber, adhesives, and coatings. Packaging: Yes. Teragren’s product packaging contains both pre and post-consumer recycled content.</p>
Materials and Content: Manufacturing Process	NA	Does Teragren’s manufacturing process use pre or post-consumer recycled materials?	Yes: Teragren’s factory burns pre-consumer recycled sawdust and other bamboo waste to create steam which powers the kilns, drying rooms and heats the hydraulic presses.
Materials and Content: Regional Materials – Raw Material Sourcing and Extraction	MR 5.1/5.2	Where are Teragren raw materials sourced / extracted?	<p>All Teragren flooring, panel, and veneer raw materials and finished goods are manufactured from raw materials grown and sourced in the People’s Republic of China.</p> <ol style="list-style-type: none"> 1. Bamboo Raw Material: 94-96 content: Jiangxi and Zhejiang Provinces – max distance travelled 400km (248miles) 2. Coatings: 0-1% content: Shanghai ~200km (124 miles) 3. Adhesive: 4-33% content: Shanghai ~200km (124 miles)

Materials and Content: Regional Materials - Manufacturing	MR 5.1/5.2	Where are Teragren products manufactured?	<ol style="list-style-type: none"> 1. Site finished flooring manufactured in Anji, Zhejiang Province, PRC, 30° 38' N 119° 41' E 2. Factory finished flooring manufactured in Anji, Zhejiang Province, PRC, 30° 38' N 119° 41' E 3. Architectural Panels manufactured in Anji, Zhejiang Province, PRC, 30° 38' N 119° 41' E 4. Architectural Veneer manufactured in Hangzhou, Zhejiang Province, PRC, 30° 13' 48" N 120° 10' 12" E <p>Synergy® and Portfolio Collection Strand Flooring manufactured in Longyou, Zhejiang Province, PRC, 29° 2' 7N 119° 10' 58E</p>
Materials and Content: Sustainability of Transportation	NA	Do Teragren bamboo products sequester more total CO2 than is emitted during the transportation of the products to the consumer?	Yes. The bamboo used in Teragren products sequesters (removes) carbon (C) from atmospheric carbon dioxide (CO2) and releases the oxygen (O2) into the air. No more than 25% of the sequestered carbon is emitted as CO2 during the transportation of Teragren products from Teragren’s factory to any destination in North America. The remaining 75% of the sequestered carbon is locked-up within the products themselves for the lifespan of the products.
Materials and Content: Rapidly Renewable Materials	MR 6	Does the manufacturing process use any rapidly renewable materials?	<p>Yes. All Teragren bamboo products qualify for LEED MR 6 as the specie, ‘Moso’ or Phyllostachys h. Pubescens is harvested within a 10 year cycle or shorter. Teragren harvests its bamboo between 5.5 to 6 years to ensure optimal density, performance and plant health. Teragren harvests up to 15% of the available bamboo culms per acre per year, equaling on average 175-180 mature culms. Minimum rapidly renewable content by weight of Teragren products ranges is as follows:</p> <ul style="list-style-type: none"> • Synergy (12mm) and Synergy (10mm): 66.2% • Synergy Wide Plank Floating Floor: 83.7% • Portfolio Collection: 66.2% • Studio Wide Plank Floating Floor: 92.4% • Prefinished Traditional Bamboo Flooring including Signature Naturals, Signature Colors, Craftsman, Elements: 94.5% • Unfinished Traditional Bamboo Flooring including Signature Naturals and Craftsman: 95.5% • Unfinished Strand bamboo panels/veneer(solid): 66% • Unfinished Traditional Core / Strand coated ¾” Panels: 79% • Unfinished Traditional Panels or Veneer: (No Strand): 94.5%

Materials and Content: Certified Wood	MR 7	Do Teragren products contain any FSC-certified bamboo content?	Yes, if Teragren Traditional bamboo products are special ordered as FSC-certified. Specify Certificate #SCS-COC-002912
Location of Distribution	NA	From where are Teragren products distributed?	<ul style="list-style-type: none"> • Factory: Teragren products are shipped directly from its factories in China to our distribution centers or to our customers via container ship. • Teragren’s customers distribute our products from their Distribution Centers • Teragren Distribution Centers: Plainfield, IN and Sumner, WA
Waste Management: Recyclability	MR 2.1/2.2	Does the installation of Teragren products result in waste material that must be taken to a landfill?	No: Through careful management material overage can be reduced or eliminated. Additionally, any material overage can and should be kept as a resource should the need arise in the future for selective plank replacement (in case of damage). Waste material such as sawdust and cutting scraps should be taken to construction material recycling centers for composting.
Waste Management: Recyclability	MR 2.1/2.2	Does the removal of Teragren products result in waste material that must be taken to a landfill?	No: All Products: Flooring and/or panels/veneer that have not been nailed or glued may be easily reused. Additionally, all Teragren products may be recycled at construction material recycling centers with the end material being shredded for ² composting, composite material construction, or incineration for the purpose of power generation. Consumers may refer to web sites such as http://earth911.org to determine local options for the recycling of their Teragren bamboo products. ² http://www.recycledorganics.com/publications/reports/compositewood/compwoodreview.pdf
Waste Management: Cost to Recycle	NA	Does the recycling of Teragren products result in additional costs to the consumer?	Not necessarily. The consumer may incur removal and transportation costs but these same costs will exist regardless of whether the material is being transported to a landfill or to a composting/recycling facility. In many cases, consumers will save money as landfills often request a disposal fee but many composting/recycling facilities do not.
Waste Management: Toxicity	NA	Does the disposal of Teragren products present any known environmental risks?	No, there are no known environmental risks upon disposal.
Waste Management: Biodegradability	NA	Are Teragren products biodegradable?	Yes, all Teragren products are biodegradable when properly composted. There are no heavy metals or environmentally persistent chemicals in Teragren products. Recyclers, composters, and other workers should take precautions against nuisance dust created during the removal, demolition, and shredding of Teragren products.

Indoor Environmental Quality; Low-Emitting Flooring Systems	IEQ 4.3 Version 3	Do Teragren's flooring products contribute to LEED v3 IEQ 4.3: Low-Emitting Flooring Systems?	Yes. All Teragren's unfinished and prefinished bamboo flooring is FloorScore®-certified and is automatically eligible for an IEQ 4.3 credit. Teragren's Synergy® and Portfolio Collection of strand bamboo flooring is manufactured using a Phenol-Formaldehyde Adhesive Teragren's Studio and Traditional bamboo flooring is manufactured using an ultra-low emitting Urea-Formaldehyde adhesive. Teragren's Synergy® Wide Plank Flooring is manufactured using a combination of ultra-low emitting urea-formaldehyde and phenol-formaldehyde resins. (http://www.rfci.com/int_FloorScore.htm). To receive this certification, our factories have been physically audited and our products tested for emissions of 78 VOC's by Scientific Certification Systems to the California 01350 standard for VOC emissions.
Indoor Environmental Quality: Low-Emitting Materials, Composite Wood & Agrifiber Products	IEQ 4.4 LEED Version 3	Do Teragren's panel and veneer products contribute to LEED v3 IEQ 4.4: Low-Emitting Materials, Composite Wood + Agrifiber Products?	Select panel and veneer products comply with IEQ 4.4 as follows: <ul style="list-style-type: none"> • Parquet Butcher Block: NAF Adhesive • Traditional Bamboo Worktops: Combination of NAF and NAUF Adhesives • Strand Bamboo Worktops: Combination of NAF and NAUF Adhesives • Strand Bamboo Panels: NAUF • Strand Bamboo 1/8" Veneer: NAUF • Traditional 1/42" veneer: NAF • Select panel and veneer products may be special ordered manufactured with a NAF adhesive. Product may also be purchased with a proprietary urea-formaldehyde adhesive which emits less than .03ppm formaldehyde, less than allowed by any global standard.
Indoor Environmental Quality: CARB	NA	Do Teragren products meet the California Air Resources Board (CARB) Formaldehyde Emission requirements?	Yes. Current as of November 2008, bamboo products are exempt from CARB regulations. Additionally, were they not exempt, Teragren product would be compliant with CARB 2009 and 2012 regulations as all Teragren products emit a maximum of .03ppm formaldehyde. CARB regulations mandate the following maximum emissions for any regulated wood product by 2012: .05 ppm FAQ Defining Bamboo Exemption:

			http://www.arb.ca.gov/toxics/compwood/implementation/faq.htm#E.%20Exemptions
Packaging Recyclability	NA	Is Teragren's packaging recyclable?	Yes. Prior to 2008, only the cardboard surrounding Teragren's packaging was easily recyclable. Beginning in 2008, all Teragren packaging is recyclable due to packaging redesign to eliminate certain components and to replace difficult to recycle components with unbleached paper and LDPE4 plastic.
Packaging Toxicity	NA	Does Teragren's packaging comply with California's Toxics in Packaging Prevention Act?	Yes. All Teragren's packaging complies with California's Health and Safety Code (Health & Saf. Code), division 20, chapter 6.5, article 10.4 (beginning with §25214.11), also known as the Toxics in Packaging Prevention Act. Teragren packaging has been independently tested in the U.S. to confirm that it contains less than 100ppm of cadmium, hexavalent chromium, lead, and mercury.
Energy	NA	Do Teragren's manufacturing processes reduce energy consumption compared to the manufacture of similar products?	Yes. Teragren's factory burns all of its bamboo milling waste to create steam which is used to heat its kilns, drying rooms, and hydraulic presses. Other manufacturers may require fossil fuels or electricity to power the aforementioned systems. The amount of energy saved by the burning of our material waste has not yet been determined.
Water	NA	Do Teragren's manufacturing processes reduce water consumption compared to the manufacture of similar products?	Unknown. Our factory recognizes that water is a precious commodity and seeks to conserve this resource whenever possible. Water consumption and conservation goals have not yet been determined.
Life Cycle Assessment	NA	Has a life cycle assessment been done on Teragren's product line?	No. We are currently in the process of an assessment to be followed by the publication of an authoritative LCA.
Performance: Antimicrobial Protection	NA	Do Teragren products have microbial protection?	Yes. Teragren raw materials are treated with a natural borate and hydrogen peroxide solution to help protect against microbial incursion.
Performance: COF/ADA	NA	Do Teragren products conform to COF/ADA requirements?	Yes. Many of Teragren's products comply with ADA requirements. Specific environments must be individually evaluated to ensure compliance. Product specifications are posted on Teragren's web site www.teragren.com Teragren's flooring products have COF (coefficient of friction) ratios averaging .464 Static and .452 Sliding by ASTM D2394.