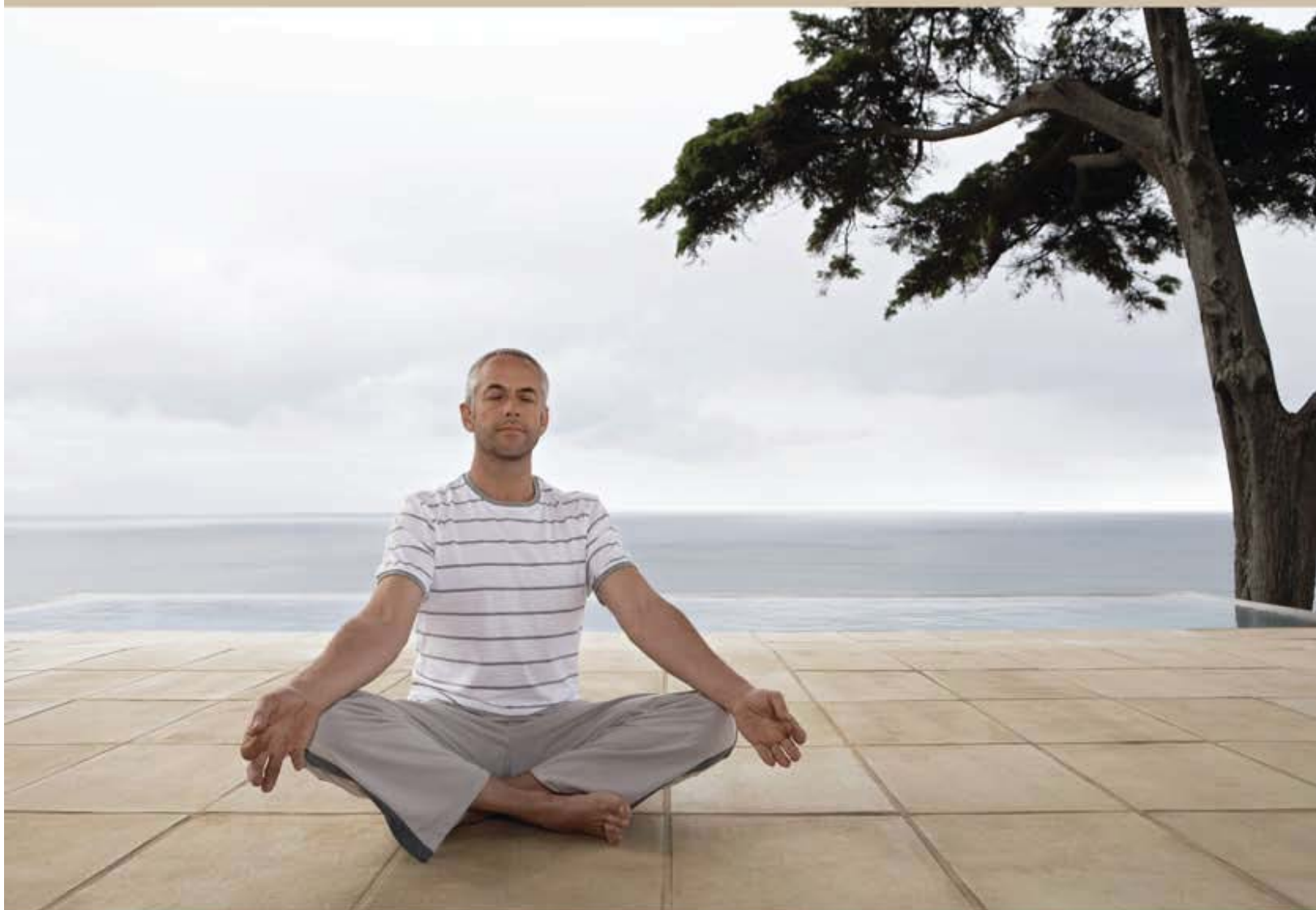




**GREEN SQUARED®  
AMERICAN NATIONAL STANDARD  
SPECIFICATIONS FOR SUSTAINABLE  
CERAMIC TILES, GLASS TILES, AND  
TILE INSTALLATION MATERIALS**

# *Peace of Mind*

Choose Green Squared Certification to know that  
your tile products are *TRULY SUSTAINABLE!*



## *One Industry, One Standard, One Mark*

Products labeled “Green Squared Certified” have been verified through a  
stringent third party process to meet ANSI A138.1

For more information — contact TCNA at 864-646-8453 or  
visit [www.tilethenaturalchoice.com/GreenSq.html](http://www.tilethenaturalchoice.com/GreenSq.html)



Product Sustainability Certification for the Tile Industry

ANSI A138.1–2011, Version 2  
Printing reference: 2012.1  
For updates, go to [www.tileusa.com](http://www.tileusa.com)

## **GREEN SQUARED®**

# **American National Standard Specifications for Sustainable Ceramic Tiles, Glass Tiles, and Tile Installation Materials**

Secretariat  
Tile Council of North America, Inc.

Approved  
American National Standards Institute, Inc.

### **Abstract**

This voluntary product standard may be used by competent assessors to determine product conformance with the criteria defined herein for environmentally and socially sustainable ceramic tiles, glass tiles, and tile installation materials. This standard is intended to assist in the selection of tile and related installation materials that satisfy broad consumer preferences and market, government, and business procurement program demands for sustainability.



### **American National Standard**

Approval of an American National Standard requires verification by ANSI that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer.

Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made toward their resolution.

The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether he has approved the standards or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards.

The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretation should be addressed to the secretariat or sponsor whose name appears on the title page of this standard.

**CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken periodically to reaffirm, revise, or withdraw this standard. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute.**

**For information regarding the latest version of this standard, including any updates since the last printing, refer to [www.tileusa.com](http://www.tileusa.com).**

*Published by:*



**COPYRIGHT © 2012 TILE COUNCIL OF NORTH AMERICA, INC.**

Tile Council of North America, Inc.  
100 Clemson Research Boulevard  
Anderson, SC 29625  
Phone: 864-646-8453  
Fax: 864-646-2821  
Website: [www.tileusa.com](http://www.tileusa.com)  
Product E-mail: [literature@tileusa.com](mailto:literature@tileusa.com)  
Lab E-mail: [testing@tileusa.com](mailto:testing@tileusa.com)

GREEN SQUARED and the GREEN SQUARED logo are service marks of the Tile Council of North America, Inc.

GREEN SQUARED CERTIFIED and the GREEN SQUARED CERTIFIED logo are certification marks of the Tile Council of North America, Inc.

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without prior written permission of the publisher.

Printed in the United States of America

ISBN 978-0-9847424-3-1

## Foreword

This foreword is not part of American National Standard A138.1.

This voluntary standard outlines the environmental and social criteria for sustainable ceramic tiles, glass tiles, and tile installation materials. Suitable applications, installation requirements, and specific product performance criteria are not defined by this standard.

It is intended that this standard facilitate the communication of verifiable and accurate information on the environmental and social impacts of products. This practice encourages the demand for, and supply of, those products that cause less stress on the environment and society, thereby stimulating the potential for continuous market-driven environmental and quality of life improvement.

Using the environmental and social criteria herein as key benchmarks, this standard can be used by producers in reducing impacts of products and establishing sustainable operations.

This standard is necessarily restricted to tile-specific and tile installation material-specific issues, including packaging.

Efforts to create Green Squared® were initiated by the Tile Council of North America Green Initiative Committee. Subsequently, this standard was presented to, processed, and approved for submittal to ANSI by the Accredited Standards Committee (ASC) on Ceramic Tile A108. Committee approval of a standard does not necessarily imply that all committee members voted for its approval. The A108 Committee had the following members at the time it approved this standard:

## Committee Members

<b><u>Organization Represented</u></b>	<b><u>Name of Representative</u></b>
APA – The Engineered Wood Association .....	B.J. Yeh
ARCOM, Inc. ....	Eugene “Buz” Groshong
Artcraft Granite Marble and Tile .....	James Woelfel
Atlas Minerals and Chemicals .....	Steve Abernathy
Bonsal American .....	Tom Cassutt
Bostik, Inc.....	Doug Katze
Ceramic Tile and Stone Association of Arizona .....	Sam Hibbs
Ceramic Tile and Stone Consultants.....	Donato Pompo
Ceramic Tile Distributors Association .....	Sam Widener
Ceramic Tile Education Foundation .....	Scott Carothers
Ceramic Tile Institute of America, Inc. ....	Gray Lafortune
Chicago Tile Institute.....	Scott Conwell
Construction Specifications Institute .....	Howard Pryor
Crossville, Inc. ....	Tim Bolby
Custom Building Products .....	Dave deBear
Dal-Tile International .....	James Neel
David Allen Company.....	Martin Howard
Detroit Ceramic Tile Contractors Association .....	Kurt Von Koss
Forensic Tile Consultants .....	Greg Mowat
Fortifiber Building Systems Group .....	Roger Barker
Glass Tile Consultants.....	Scott Fleming
Great Lakes Ceramic Tile Council.....	Gerald Chioini
Gypsum Association .....	Robert Wessel
Institute of Inspection, Cleaning, and Restoration Certification.....	Robert Daniels
Interceramic.....	Jose Luis Lopez
International Union of Bricklayers and Allied Craftworkers.....	John Mason
ISO TC-189 Committee.....	Svend Hovmand
James Hardie Building Products.....	Chad Diercks
Laticrete International, Inc.....	Steve Fine

**Production Staff**

Eric Astrachan, Executive Director, TCNA

Bill Griese, Standards Development & Green Initiative Manager, TCNA

D.J. Liefer, Marketing & Communications Specialist, TCNA

Ryan Marino, Standards Development & Laboratory Engineer, TCNA

Katelyn Simpson, Laboratory Manager & ANSI ASC-A108 Committee Secretary, TCNA

**NOTICE OF DISCLAIMER AND LIMITATION OF LIABILITY**

THIS PUBLICATION AND ALL OF THE INFORMATION IT CONTAINS ARE PROVIDED 'AS IS' WITHOUT WARRANTY OF ANY KIND, WHETHER EXPRESS OR IMPLIED. ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT, ARE HEREBY EXPRESSLY DISCLAIMED.

PUBLISHER HAS NOT PERFORMED ANY INDEPENDENT ANALYSIS IN CONNECTION WITH ANY OF THE INFORMATION CONTAINED HEREIN, AND EXPRESSLY DISCLAIMS ANY OBLIGATION TO OBTAIN AND INCLUDE INFORMATION OTHER THAN THAT PRESENTED HEREIN RESULTING FROM THE AMERICAN NATIONAL STANDARDS INSTITUTE ACCREDITED STANDARDS COMMITTEE A108 CONSENSUS PROCESS.

THIS INFORMATION DOES NOT PURPORT TO ADDRESS SAFETY ISSUES OR APPLICABLE REGULATORY REQUIREMENTS ASSOCIATED WITH ITS USE. IT IS THE RESPONSIBILITY OF THE USER OF THIS INFORMATION TO REVIEW ANY APPLICABLE CODES AND OTHER REGULATIONS AND ANY SITE SPECIFIC CONDITIONS IN CONNECTION WITH THE USE OF THIS INFORMATION. PUBLISHER EXPRESSLY MAKES NO REPRESENTATIONS OR WARRANTIES REGARDING USE OF THIS INFORMATION AND COMPLIANCE WITH ANY APPLICABLE STATUTE, RULE OR REGULATION.

UNDER NO CIRCUMSTANCES WILL PUBLISHER BE LIABLE TO ANY PERSON OR BUSINESS ENTITY FOR ANY DAMAGES, INCLUDING WITHOUT LIMITATION ANY AND ALL DIRECT, INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES, RESULTING, IN WHOLE OR IN PART, FROM ANY USE OF, REFERENCE TO, OR RELIANCE UPON THIS PUBLICATION, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THE FOREGOING LIMITATION OF LIABILITY IS A FUNDAMENTAL ELEMENT OF THE USE OF THIS INFORMATION AND THE INFORMATION WOULD NOT BE OFFERED BY THE PUBLISHER WITHOUT SUCH LIMITATION.

Committee Members (continued)

<b><u>Organization Represented</u></b>	<b><u>Name of Representative</u></b>
Malibu Art Tile & Stone.....	Lindell Lummer
MAPEI Corporation .....	Neil McMurdie
Marble Institute of America .....	Chuck Muelbauher
Materials and Methods Standards Association .....	Jim Whitfield
Metropolitan Ceramics/Ironrock, Inc.....	Roy Gorton, Jr.
Michael Byrne Associates .....	Michael Byrne
National Association of Home Builders.....	Gary Ehrlich
National Tile Contractors Association .....	Chris Walker
Neuse Tile Service, Inc. ....	Nyle Wadford
Noble Company .....	Eric Edelmayer
NSF International.....	Mindy Costello
Oceanside Glasstile Company .....	Brian Fitzgerald
Portland Cement Association.....	Jamie Farny
Professional Consultants International, LLC .....	Richard Goldberg
Radiant Panel Association.....	Tracy Hall
Schluter Systems .....	Sean Gerolimos
StonePeak Ceramics, Inc. ....	Noah Chitty
Summitville Tiles, Inc.....	Joe Dutt
TCA Team, LLC .....	Stephanie Samulski
TCNA Underlayment Committee.....	Mike Micalizzi
Terrazzo Tile and Marble Association of Canada .....	Dale Kempster
Tile and Stone Council of Northern California.....	Gary Rodebush, Sr.
Tile Contractors Association of America .....	Ron Schwartz
Tile Council of North America, Inc.....	Bill Griesse
UL Environment.....	Paul Firth
United Brotherhood of Carpenters.....	Greg Hefe
United States Gypsum Corporation .....	Steve Rausch
US TAG to ISO TC-189 WG3 .....	Greg Schad
Wood Construction and Engineering Consultant.....	Frank Woeste

The Tile Council of North America wishes to acknowledge the contributions of the ad hoc A138.1 drafting committee: Tim Abbott, Ramiro Alcorta, Martin Almanza, Jennifer Ariss, Eric Astrachan, Massimo Ballucchi, Warren Barber, Luis Basurto, Bart Bettiga, Mike Boenisch, Tim Bolby, Tom Cassutt, Noah Chitty, Marianne Cox, Kim Cramm, Kirby Davis, Dave DeBear, Chad Diercks, David Drummond, Ashish Dubey, Jed Durbin, Nick Duve, Eric Edelmayer, Rogelio Elizondo, David Fatula, Brian Fitzgerald, Sean Gerolimos, Bill Griesse, Michelle Griffoul, Mitch Hawkins, Leigh Hightower, Bob Hurt, Fred Jackson, Michael Kephart, Lori Kirk Rolley, Ryan Kirsch, DJ Liefer, Mitch Louch, Fernando Lozano-Assad, Laurie Lyza, Humberto Maese, Earl Maicus, Ryan Marino, Dan Marvin, Rik Master, Felipe Matan, Don Miller, Noah Montgomery, German Montoya, Hector Narvaez, Linda Pelletier, Kathleen Petron, Howard Pryor, Stefano Rabaioli, Ryan Ralph, Steve Rausch, Barry Reid, Terry Riggins, Eduardo Rios, David Santibanez, Tom Sawyer, Greg Schad, Lisa Schaffer, Brent Schick, Ephraim Senbetta, Paul Shipp, Rod Sigman, Reyna Silva, Steve Taylor, Frank Toms, Thomas Utley, Mark Wallace, Tracy West, Jim Whitfield, Andrew Whitmire, Steven Wiederwax, and Ron Williamson, and the many others who also contributed to the development of the draft version submitted to ANSI ASC-A108 for its consideration.

## Reference Documents and Standards

ANSI A118.1-2010	American National Standard Specifications for Dry-Set Portland Cement Mortar
ANSI A118.3-2009	American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive
ANSI A118.4-2010	American National Standard Specifications for Latex-Portland Cement Mortar
ANSI A118.5-2010	American National Standard Specifications for Chemical Resistant Furan Mortars and Grouts for Tile Installation
ANSI A118.6-2010	American National Standard Specifications for Standard Cement Grouts for Tile Installation
ANSI A118.7-2010	American National Standard Specifications for High Performance Cement Grouts for Tile Installation
ANSI A118.9-2010	American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units
ANSI A118.10-2008	American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation
ANSI A118.11-2010	American National Standard Specifications for EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar
ANSI A118.12-2008	American National Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation
ANSI A118.13-2010	American National Standard Specifications for Bonded Sound Reduction Membranes for Thin-Set Ceramic Tile Installation
ANSI A136.1-2008	American National Standard Specifications for Organic Adhesives for Installation of Ceramic Tile
ANSI A137.1-2008	American National Standard Specifications for Ceramic Tile
ANSI A137.2-2012	American National Standard Specifications for Glass Tile
ASTM C609-07	Standard Test Method for Measurement of Light Reflectance Value and Small Color Differences Between Pieces of Ceramic Tile
ASTM C738-94(2011)	Standard Test Method for Lead and Cadmium Extracted From Glazed Ceramic Surfaces
ASTM C895-87(2009)	Standard Test Method for Lead and Cadmium Extracted From Glazed Ceramic Tile
ASTM C1178/C1178M-08	Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel
ASTM C1278/C1278M-07a	Standard Specification for Fiber-Reinforced Gypsum Panel
ASTM C1288-99(2010)	Standard Specification for Discrete Non-Asbestos Fiber-Cement Interior Substrate Sheets
ASTM C1325-08b	Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units
ASTM D4068-09	Standard Specification for Chlorinated Polyethylene (CPE) Sheeting for Concealed Water-Containment Membrane
ASTM D4551-96(2008)el	Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Flexible Concealed Water-Containment Membrane



## Reference Documents and Standards (continued)

ASTM D6400-04	Standard Specification for Compostable Plastics
ASTM D6868-11	Standard Specification for Labeling of End Items that Incorporate Plastics and Polymers as Coatings or Additives with Paper and Other Substrates Designed to be Aerobically Composted in Municipal or Industrial Facilities
ASTM E1980-11	Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces
ASTM E2179-03(2009)	Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission through Concrete Floors
California Department of Public Health Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1, February 2010 (also known as Specification 01350)	
Empresa Socialmente Responsable (ESR) Mexican Center for Philanthropy (CEMEFI) and the Alliance for Corporate Social Responsibility (AliaRSE) Standards of Corporate Social Responsibility	
EPA Method 22	Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares
FTC Green Guides for the Use of Environmental Marketing Claims	
INDUSTRIA LIMPIA ("Clean Industry") Mexican Federal Environmental Protection (PROFEPA) Certification of Compliance with Regulations of the General Law of Ecological Equilibrium and Environmental Protection	
ISO 13007-1:2010	Ceramic Tiles — Grouts and Adhesives — Part 1: Terms, Definitions, and Specifications for Adhesives
ISO 13007-2:2010	Ceramic Tiles — Grouts and Adhesives — Part 2: Test Methods for Adhesives
ISO 13007-3:2010	Ceramic Tiles — Grouts and Adhesives — Part 3: Terms, Definitions, and Specifications for Grouts
ISO 13007-4:2010	Ceramic Tiles — Grouts and Adhesives — Part 4: Test Methods for Grouts
ISO 14001:2004	Environmental Management Systems — Requirements with Guidance for Use
ISO 14024:1999	Environmental Labels and Declarations — Type I Environmental Labeling — Principles and Procedures.
ISO 14025:2006	Environmental Labels and Declarations — Type III Environmental Declarations — Principles and Procedures
ISO 14040:2006	Environmental Management — Life Cycle Assessment — Principles and Frameworks
ISO 14044:2006	Environmental Management — Life Cycle Assessment — Requirements and Guidelines
ISO 26000:2010	Guidance on Social Responsibility
Mexico NOM-052-SEMARNAT	Mexican Official Standard for the Characterization, Listing, and Limitation of Hazardous and Toxic Waste
OHSAS 18001	Occupation Health and Safety Assessment Series for Health and Safety Management Systems
SCAQMD Rule 1168	South Coast Air Quality Management District — Adhesive and Sealant Applications (Adopted 1989; Amended 1990, 1991, 1992, 1993, 1997, 1998, 2000, 2002, and 2003)

# Table of Contents

Foreword .....	iv
Committee Members.....	iv
Reference Documents and Standards .....	vi
1.0 General .....	1
1.1 Scope .....	1
1.2 Purpose .....	1
1.3 Terms and Definitions .....	1
2.0 Assessment Overview .....	3
2.1 Introduction .....	3
2.2 Declaration of Product of Interest .....	3
3.0 Environmental Product Characteristics .....	3
3.1 Use of Reclaimed Manufacturing Waste or Recycled Material .....	3
Table 1: Level 1, 2, and 3 Total Recycled Content/Reclaimed Content Criteria.....	4
3.2 Indigenous Raw Materials .....	5
Table 2: Levels 1, 2, and 3 Indigenous Raw Material Criteria.....	5
3.3 Packaging — Environmentally Sustainable Packaging Practices .....	5
3.4 Durability and Performance Integrity — Optimization of Performance, Strength, and Longevity.....	6
3.5 Indoor Air Quality — Low- or Non-Emitting Products .....	6
3.6 Cleaning/Environmental Maintenance Guidelines.....	7
3.7 Additional Environmental Characteristics — Products with Situational Benefits to Enhance Surrounding Environments .....	7
3.8 Life Cycle Assessment (LCA) and Environmental Product Declaration (EPD).....	7
4.0 Environmental Product Manufacturing and Raw Material Extraction .....	8
4.1 Pollution Prevention to Reduce Particulates .....	8
4.2 Responsible Combustion and Fuel Usage .....	8
4.3 Raw Materials Sourcing .....	8
4.4 Outsourced Manufacturing and Packaging Services .....	9
4.5 Restricted Leachability of Lead and Cadmium in Glazed Ceramic Surfaces .....	9
4.6 Environmental Management Plan .....	9
4.7 Conservation/Reduction of Utility Usage .....	9
4.8 Renewable Energy Usage .....	10
4.9 Manufacturer Waste Diversion/Minimization .....	10
5.0 End of Product Life Management .....	10
5.1 Clean Fill Eligibility.....	10
5.2 End of Product Life Collection Plan .....	10
6.0 Progressive Corporate Governance.....	10
6.1 Social Responsibility Strategy.....	10
6.2 Labor Law Compliance .....	11
6.3 Prohibitions on Forced Labor .....	11
6.4 Prohibitions on Child Labor.....	11
6.5 Compliance with Environmental Regulations.....	11
6.6 Compliance with Health and Safety Regulations .....	11
6.7 Participation in Safety Programs.....	11
6.8 ANSI A138.1 Conformance Assurance Program.....	11
6.9 FTC-Compliant Marketing Claims.....	11
6.10 On-Going Community Involvement.....	11
6.11 Manufacturer Public Disclosure .....	11
6.12 Manufacturer Annual Sustainability Report.....	12
6.13 Certified “Green” Facilities .....	12

7.0 Innovation .....	12
7.1 Exceptional Conformance 1 .....	12
7.2 Exceptional Conformance 2 .....	12
7.3 Innovative Attribute, Process, or Corporate Governance Strategy .....	12
7.4 Greenhouse Gas Awareness .....	12
8.0 Determination of Conformance .....	12
8.1 Conformance Overview .....	12
8.2 Conformance Declaration Mechanisms .....	13
8.3 Ceramic Tile — Requirements for Conformance Declaration .....	13
8.4 Glass Tile — Requirements for Conformance Declaration .....	13
8.5 Dry Powder Installation Goods (Cementitious Mortar Adhesives and Grouts, etc.) — Requirements for Conformance Declaration .....	13
8.6 Liquid/Paste Installation Goods (Mastic Adhesives and Reactive Resin Adhesives, Reactive Resin Grouts, Pourable or Trowelable Membranes, Liquid Latex Additives, etc.) — Requirements for Conformance Declaration .....	13
8.7 Rolled Sheet Installation Goods (Sheet-Applied Membranes and Underlayments, etc.) — Requirements for Conformance Declaration .....	13
8.8 Panel Installation Goods (Backerboards and Panel Underlayments, etc.) — Requirements for Conformance Declaration .....	13
Appendix A: ANSI A138.1 Scoring Tool .....	14
Appendix B: Conformance Declaration Template .....	16
Appendix C: Guidance on Innovation .....	17

This is a preview of "ANSI A138.1:2012". [Click here to purchase the full version from the ANSI store.](#)

# American National Standard Specifications for Sustainable Ceramic Tiles, Glass Tiles, and Tile Installation Materials

## ANSI A138.1—2011

### 1.0 General

#### 1.1 Scope

This standard establishes a consistent approach to the evaluation and identification of environmentally preferable and sustainable ceramic tiles, glass tiles, and tile installation materials. The standard includes relevant criteria across product life cycle from raw material extraction through manufacturing, use, and end-of-life management.

As used in this standard, the term “ceramic tiles” includes, but is not limited to, mosaic, quarry, pressed floor, glazed wall, porcelain, and specialty tiles. The term “glass tiles” includes, but is not limited to, cast glass, fused glass, and low-temperature coated glass tiles. The term “tile installation materials” includes, but is not limited to, mortar adhesives, mastic adhesives, reactive resin adhesives, grouts, tile backer units, crack isolation membranes, waterproofing membranes, water containment membranes, and sound reduction membranes. The standard is applicable to products manufactured in one facility or multiple facilities, one country or multiple countries.

#### 1.2 Purpose

The criteria of this standard and all associated product labeling efforts serve to:

- Enable the development and use of sustainably manufactured tile and installation materials;
- Guide all stakeholders in environmental and social responsibility throughout the supply chain for tiles and installation materials; and
- Provide a verifiable resource for tile product specification and for design professionals, contractors, and consumers to identify sustainable tiles and installation materials.

#### 1.3 Terms and Definitions

**1.3.1 Cementitious grout:** Typically, a standard or polymer modified cementitious mixture used to fill the joints between tiles. See ANSI A118.6, ANSI A118.7, and ISO 13007 for classifications and specifications.

**1.3.2 Cementitious mortar adhesive:** Typically, a dry-set Portland cement mortar, either standard or polymer modified, used for the bonding of tiles. See ANSI A118.1, ANSI A118.4, ANSI A118.11, and ISO 13007 for classifications and specifications.

**1.3.3 Ceramic tile:** A ceramic surfacing unit, usually relatively thin in relation to facial area, having either a glazed or unglazed face and fired above red heat in the course of manufacture to a temperature sufficiently high to produce specific physical properties and characteristic. See ANSI A137.1 for classifications and specifications.

**1.3.4 Crack isolation membrane:** A sheet applied or pourable/trowelable material that is installed underneath tile and intended to isolate tile from minor in-plane substrate cracking. See ANSI A118.12 for classifications and specifications.

**1.3.5 Environmental Management Plan (EMP):** A manufacturer’s documented procedures for continual environmental improvement and pollution prevention.

**1.3.6 Environmental Management System (EMS):** A manufacturer’s implemented system for continual environmental improvement and pollution prevention which has been registered and certified to ISO 14001 and/or INDUSTRIA LIMPIA (“Clean Industry”).

**1.3.7 Environmental Product Declaration (EPD):** A standardized (ISO 14025/TR) and LCA based tool to communicate the environmental performance of a product or system.