

Approved American National Standard

ANSI

ANSI A108, A118, & A136
Version 2010.1

A108.01
A108.02
A108.1A
A108.1B
A108.1C
A108.4
A108.5
A108.6
A108.8
A108.9
A108.10
A108.11
A108.12
A108.13
A108.14
A108.15
A108.16
A108.17

A118.1
A118.3
A118.4
A118.5
A118.6
A118.7
A118.8
A118.9
A118.10
A118.11
A118.12

A136.1

American National Standard Specifications for the Installation of Ceramic Tile

Material & Installation Standards

NOTICE TO THE READER

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.

THE READER IS EXPRESSLY WARNED TO CONSIDER AND ADOPT ALL SAFETY PRECAUTIONS APPROPRIATE FOR THE ACTIVITIES HEREIN AND TO AVOID ALL POTENTIAL HAZARDS. SUCH PRECAUTIONS ARE GENERALLY NOT LISTED HEREIN AND ARE OUTSIDE THE SCOPE OF THIS DOCUMENT.

UNDER NO CIRCUMSTANCES WILL PUBLISHER BE LIABLE TO ANY PERSON OR BUSINESS ENTITY FOR ANY DAMAGES, INCLUDING 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.

PRODUCTION STAFF

Eric Astrachan, Executive Director, TCNA
Bill Griese, Standards Development & Green Initiative Manager, TCNA
D.J. Liefer, Design & Layout, Marketing & Communications Specialist, TCNA
Stephanie Samulski, Installation Specialist, TCNA
Katelyn Simpson, Laboratory Manager, TCNA
Kathy Snipes, ANSI ASC-A108 Committee Secretary, TCNA

COPYRIGHT © 2010 by Tile Council of North America.

ALL RIGHTS RESERVED. No part of this work covered by the copyright hereon may be reproduced or used in any form or by any means (graphic, electronic, or mechanical, including photocopying, recording, taping, internet distribution or information storage and retrieval systems) without the written permission of the publisher.

Printed in the United States of America.



100 Clemson Research Blvd.
Anderson, SC 29625
Tel: 864-646-8453 ☐ Fax: 864-646-2821
Web Site: www.tileusa.com
Product Email: literature@tileusa.com
Lab Email: testing@tileusa.com



Batallón de San Patricio #109-308. Colonia Valle Oriente
San Pedro Garza García, Nuevo León. CP 66269
Tel: 52 (81) 8625-3306 ☐ Fax: 52 (81) 8625-3333
Sitio en Internet: www.tileusa.com y www.tcna.com.mx
Correo electrónico del producto: literatura@tcna.com.mx

ANSI A108, A118, & A136
Version 2010.1
For updates, go to www.tileusa.com

American National Standards for the Installation of Ceramic Tile

Secretariat
Tile Council of North America, Inc.

Approved
American National Standards Institute, Inc. (ANSI)

Abstract

This publication is a compilation of voluntary standards for the installation of ceramic tile. American National Standard specifications A108.01, .02, .1A, .1B, .1C, .4, .5, .6, .8, .9, .10, .11, .12, .13, .14, .15, .16, and .17 define the installation of ceramic tile. A118.1, .3, .4, .5, .6, .7, .8, .9, .10, .11, .12, and A136.1 define the test methods and physical properties for ceramic tile installation materials. These standards are intended to be referenced or included in the ceramic tile sections of project specifications.

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: These American National Standards 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 these standards. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute.

Published by:



COPYRIGHT © 2010 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

Product Email: literature@tileusa.com

Lab Email: testing@tileusa.com

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

Foreword

This foreword is not part of American National Standard A108, A118, or A136.

These voluntary standards define the installation of ceramic tile as well as the test methods and physical properties for ceramic tile installation materials. They are intended to serve as a guide to the general public, manufacturers, distributors, specifiers, architects, tile contractors, testing laboratories, and other businesses and professionals in the tile industry.

While the existence of these standards does not in any respect preclude anyone, including those who have accepted them, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to this standard, producers of ceramic tile installation materials made in conformance with these standards are encouraged individually to indicate such conformance in advertising, promotion, and labeling.

These standards were 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 of publication:

Chris Walker, Chairman
Nyle Wadford, Vice Chairman
Kathy Snipes, Secretary
Eric Astrachan, Co-Secretary

Committee Members

Organization Represented

Name of Representative


APA – The Engineered Wood Association.....	B.J. Yeh
ARCOM, Inc.	Eugene “Buz” Groshong
Artcraft Granite Marble and Tile	James Woelfel
Atlas Minerals and Chemicals	Mario Navarro
Bonsal American	Tom Cassutt
Bostik, Inc.	Steve Lima
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	Gray LaFortune
Chicago Tile Institute.....	Larry Bourbon
Construction Specifications Institute	Howard Pryor
Crossville, Inc.	Tim Bolby
Custom Building Products	David deBear
Dal-Tile International	James Neel
David Allen Company.....	Don Scott
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

Organization Represented continued

Organization Represented

Name of Representative

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
Malibu Art Tile & Stone.....	Lindell Lummer
MAPEI Corporation	Neil McMurdie
Marble Institute of America	Chuck Muehlbauer
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	Bart Bettiga
Neuse Tile Service, Inc.	Nyle Wadford
Noble Company	Eric Edelmayer
Oceanside Glasstile Company	Brian Fitzgerald
Portland Cement Association.....	Jamie Farny
Professional Consultants International, LLC	Richard Goldberg
Radiant Panel Association.....	Tracy Hall
Schluter Systems	Peter Nielsen
StonePeak Ceramics.....	Noah Chitty
Summitville Tiles, Inc.....	Joe Dutt
TCA Team, LLC	Stephanie Samulski
TCNA Underlayment Committee.....	Leigh Hightower
Terrazzo Tile and Marble Association of Canada	Dale Kempster
Tile and Stone Council of Northern California.....	John Wagner
Tile Contractors Association of America	Chris Walker
Tile Council of North America	Bill Griese
United Brotherhood of Carpenters.....	Steve Fuller
United States Gypsum Corporation	Steve Rausch
US TAG to ISO TC-189 WG3	Greg Schad
Wood Construction and Engineering Consultant.....	Frank Woeste



Ceramic Tile Product Quality Criteria

ANSI A137.1
American National Standard
Specifications for Ceramic Tile

Purchase yours today!
864-646-8453/www.tileusa.com

Put your Products Under the Microscope!

Antimicrobial & Photocatalytic Efficacy Testing

Put the industry's leading laboratory testing team to work for you!

Ceramic Tile • Stone • Installation Materials & Systems
Research • Product Development



Product Performance Testing Laboratory - 864-646-8453/www.tileusa.com

Table of Contents

Foreword	iii
Committee Members.....	iii
1.0 Introduction	1
2.0 Notes for tile material, accessories, and definitions.....	1
2.1 Exteriors	1
2.2 Interiors	1
2.3 Inspection	2
2.4 Tile accessories	2
2.5 Specifying organic adhesive	2
2.6 Specifying dry-set mortar	2
2.7 Specifying latex-portland cement mortar	2
2.8 Specifying EGP (exterior glue plywood) latex-portland cement mortar	2
2.9 Specifying tile-setting and -grouting epoxy and epoxy adhesive	2
2.10 Specifying chemical resistant furan mortars and grout	2
2.11 Specifying modified epoxy emulsion mortar and grout	3
2.12 Specifying grouts	3
2.13 Specifying cementitious backer units	3
2.14 Install and cure grout in accordance with appropriate ANSI Standard Specifications	3
2.15 Wet areas	3
3.0 Guide for referencing American National Standard specifications for installation of ceramic tile	3

A108 — Installation Standards

A108.01 General Requirements: Subsurfaces and Preparations by Other Trades — 2009 [Revised]

1.0 Introduction	6
2.0 General requirements for subsurfaces	6
2.1 General	6
2.2 Floor drains	6
2.3 Deflection	6
2.4 Backing surfaces	6
2.5 Backing materials for walls and ceilings	7
2.6 Backing materials for floors	8
2.7 Waterproofing	10
3.0 Related work specified in other sections	11
3.1 General	11
3.2 Requirements for concrete masonry: preparations by other trades	11
3.3 Requirements for lathing and portland cement plastering	12
3.4 Wood subfloors	14
3.5 Requirements for gypsum board: preparations by other trades	16
3.6 Requirements for plumbing: preparations by other trades	16
3.7 Requirements for movement joints: preparations by other trades	17
3.8 Damage to tilework	19
3.9 Maintenance	19

A108.02 General Requirements: Materials, Environmental, and Workmanship — 2009 [Revised]

1.0 Introduction	20
1.1 Standards	20

2.0 Delivery, storage, and handling of materials at project site	22
2.1 Samples	22
2.2 Environmental conditions and protection.....	22
3.0 Materials	22
3.1 Ceramic tile	22
3.2 Cement	23
3.3 Aggregate	23
3.4 Hydrated lime	23
3.5 Water	23
3.6 Metal lath (previously A-2.1.6).....	23
3.7 Reinforcing wire fabric (previously A-2.1.7)	23
3.8 Membrane or cleavage membrane (previously A-2.1.8).....	23
3.9 Organic adhesives.....	24
3.10 Dry-set portland cement mortar	24
3.11 Latex-portland cement mortars	24
3.12 Primers	24
3.13 Chemical resistant water cleanable tile-setting and -grouting epoxy	24
3.14 Water cleanable tile-setting epoxy adhesive.....	24
3.15 Chemical resistant furan resin mortar and grout.....	24
3.16 Ceramic tile grouts	24
3.17 Modified epoxy emulsion mortar and grout	24
3.18 Cementitious backer units.....	24
3.19 Divider strips	24
3.20 Thresholds	24
3.21 Proprietary and trademarked materials	25
4.0 General requirements for tile installations	25
4.1 Inspection of surfaces and conditions	25
4.2 Portland cement mortar bed as a backing when specified.....	26
4.3 Workmanship, cutting, fitting, and grout joint size	26
4.4 Movement joints	27
4.5 Cleaning tile	28

A108.1A Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar — 2005 [Revised]

1.0 Application of metal lath and scratch-coat to walls and ceilings	29
1.1 Metal lath	29
1.2 Application of lath	29
1.3 Scratch and leveling coat mix for walls and ceilings	29
1.4 Application of scratch coat	29
2.0 Mortar mixes	30
2.1 Mortar for walls and ceilings	30
2.2 Mortar for floors	30
2.3 Mortar and special requirements for shower receptors	30
2.4 Mixing mortar	30
3.0 Bond coat mixes	30
3.1 Bond coat for walls, ceilings, floors and shower receptors	30
4.0 Spacing mix.....	31
5.0 Mortar application	31
5.1 Application of mortar to walls and ceilings	31
5.2 Application of mortar to concrete floors and deck	31
5.3 Application of mortar for floors, decks, and countertops over a cleavage membrane and for shower receptors	32

6.0 Installation of ceramic tile on walls, ceilings, floors, decks, and countertops	32
6.1 General	32
6.2 Installation of tile	32
7.0 Grouting of tile	33
8.0 Curing	33
A108.1B Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar — 1999 [Reaffirmed 2005]	
1.0 Installation of mortar setting beds on vertical and horizontal surfaces	34
2.0 Installation and grouting of tile	34
A108.1C Contractor's Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar — 1999 [Reaffirmed 2005]	
.....	35
A108.4 Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile-Setting Epoxy Adhesive — 2009 [Revised]	
1.0 Installation of ceramic tile for walls and ceilings	36
1.1 General	36
1.2 Preparation of surfaces	36
1.3 Adhesive application	36
1.4 Setting tile on walls and ceilings	36
2.0 Installation of tile for floors and countertops	36
2.1 General	36
2.2 Preparation of surfaces	37
2.3 Adhesive application	37
2.4 Setting tile floors and countertops	37
3.0 Grouting of tile	37
A108.5 Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar — 1999 [Reaffirmed 2005]	
1.0 Mixing mortars	38
1.1 Mixing dry-set portland cement mortars.....	38
1.2 Mixing latex-portland cement mortars	38
2.0 Installation of tile for walls and ceilings	38
2.1 General	38
2.2 Applying dry-set portland cement or latex-portland cement mortar	39
2.3 Setting glazed wall tile (semi-vitreous and non-vitreous)	39
2.4 Setting ceramic mosaic tile	39
2.5 Setting quarry tile, paver tile, and other unmounted vitreous and impervious tile	39
3.0 Installation of tile for floors	40
3.1 General	40
3.2 Applying dry-set portland cement mortar or latex-portland cement mortar	40
3.3 Setting floor tile	40
4.0 Grouting of tile	41
A108.6 Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy — 1999 [Reaffirmed 2005]	
1.0 Mixing chemical resistant water cleanable tile-setting and -grouting epoxy	42
2.0 Installation of tile	42
2.1 General	42

2.2 Setting quarry tile, paver tile, and packing house tile with epoxy	42
2.3 Setting ceramic mosaic tile with epoxy	43
2.4 Setting tile with dry-set portland cement mortar or latex-portland cement mortar	43
2.5 Setting tile with portland cement mortar	43
3.0 Grouting of tile with epoxy	43
4.0 Curing	44

A108.8 Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout — 1999 [Reaffirmed 2005]

1.0 Mixing chemical resistant furan resin mortar and grout	45
2.0 Installation of tile	45
2.1 General	45
2.2 Packing house tile and corrosion resistant membrane construction	45
2.3 Setting quarry tile, paver tile, and packing house tile in epoxy and grouting with furan	46
2.4 Setting tile with dry-set portland cement mortar or latex-portland cement mortar	46
2.5 Setting tile with portland cement mortar	46
3.0 Grouting of tile with furan grout	46
3.1 Curing	47

A108.9 Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout — 1999 [Reaffirmed 2005]

1.0 Mixing modified epoxy emulsion mortar/grout	48
2.0 Installation of tile	48
2.1 General	48
2.2 Setting quarry tile, paver tile, and packing house tile	48
2.3 Setting ceramic mosaic tile	49
3.0 Grouting of tile with modified epoxy emulsion	49
4.0 Curing	49

A108.10 Installation of Grout in Tilework — 1999 [Reaffirmed 2005]

1.0 Scope	50
2.0 Environmental conditions	50
3.0 Materials	50
3.1 Aggregate	50
3.2 Portland cement	50
3.3 Water	50
3.4 Hydrated lime	50
3.5 Grout	50
4.0 Site conditions and preparation	51
5.0 Mixing grout	51
5.1 General	51
5.2 Mixing standard sanded cement grout, standard unsanded cement grout, polymer modified sanded tile grout, and polymer modified unsanded tile grout	51
5.3 Installing grout	51
6.0 Cleaning	51
7.0 Curing	51

A108.11 Interior Installation of Cementitious Backer Units — 1999 [Reaffirmed 2005]

1.0 General	52
1.1 Scope	52
1.2 Purpose	52
1.3 Standards	52

2.0 General installation requirements	53
2.1 Delivery, storage, and handling of materials at project site	53
2.2 Environmental conditions	53
3.0 Materials	53
3.1 Fasteners	53
3.2 Miscellaneous	53
4.0 General framing requirement	53
4.1 Wood framing requirements	53
4.2 Steel framing requirements	54
4.3 Walls	54
4.4 Subfloor	54
4.5 Ceilings	54
5.0 General applications	54
5.1 Walls	54
5.2 Floors	55
5.3 Countertops	55
5.4 Ceilings	56
5.5 Joint treatment: floors, walls, and ceilings	56
Appendix — Limitations and Explanations	57

A108.12 Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar — 1999 [Reaffirmed 2005]

1.0 Installation of tile for floors	58
1.1 General	58
1.2 Preparation of surface	58
1.3 Mixing EGP latex-portland cement mortar	58
1.4 Applying EGP latex-portland cement mortar	58
1.5 Setting tile.....	59
2.0 Grouting of tile	59

A108.13 Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone — 2005 [Revised]

1.0 Scope	60
2.0 Application of membrane to substrate	60
3.0 Curing of membrane and/or bonding material	60
4.0 Installation of ceramic tile over cured membrane	60
5.0 Grouting of tile	60

A108.14 Installation of Paper-Faced Glass Mosaic Tile — 2005 [New]

1.0 Scope	61
2.0 Application of metal lath and scratch-coat to walls and ceilings	61
2.1 Metal lath.....	61
2.2 Application of lath.....	61
3.0 Scratch and leveling coat mix for walls and ceilings	61
4.0 Application of scratch coat	62
5.0 Mortar mixes	62
5.1 Mortar for walls and ceilings	62
5.2 Mortar for floors	62
5.3 Mortar and special requirements for shower receptors	62
6.0 Bond coats for walls, ceilings, floors, counters, and shower receptors	63
6.2 Alternate bond coats for walls and ceilings	63
7.0 Grout	63
7.1 Non-sanded grout	63
7.2 Sanded grout.....	63

8.0 Mortar application	63
8.1 Application of mortar to walls and ceilings	63
8.2 Application of mortar to concrete floors and decks.....	64
8.3 Application of mortar for floors, decks and countertops, over cleavage membranes and shower receptors.....	64
9.0 Installation of paper-faced glass mosaic tile on walls, ceilings, floors, decks, and countertops.	64
9.1 Installation of tile	64
10.0 Finishing	65
11.0 Curing	65

A108.15 Alternate Method: Installation of Paper-Faced Glass Mosaic Tile — 2005 [New]

1.0 Scope	66
2.0 Substrate preparation	66
2.1 Mortar beds.....	66
2.2 Cementitious backer unit (CBU).....	66
3.0 Bond coats	66
3.1 Setting bed adhesive application	66
4.0 Grout (back-butter) selection	67
4.2 Non-Sanded grout.....	67
4.3 Sanded grout.....	67
5.0 Sheet installation	67
6.0 Paper removal	67
7.0 Curing.....	68

A108.16 Installation of Paper-Faced, Back-Mounted, Edge-Mounted, or Clear Film Face-Mounted Glass Mosaic Tile — 2005 [New]

1.0 Scope	69
2.0 Substrate preparation	69
2.1 Mortar beds.....	69
2.2 Cementitious backerboard units (CBU's).....	69
3.0 Bond coats	69
4.0 Notch trowel selection matrix.....	70
5.0 Adhesive application	70
6.0 Installing mounted tile	70
7.0 Paper removal	70
8.0 Installation of back-mounted or edge-mounted glass mosaic tile.....	70
9.0 Installation of clear film face-mounted mosaic tile.....	71
10.0 Cure times prior to grouting	71
11.0 Cleaning prior to grouting.....	71
12.0 Grout	71
13.0 Installation of grout in tile work	71

A108.17 Installation of Crack Isolation Membranes for Thin-set Ceramic Tile and Dimension Stone — 2005 [New]

1.0 Scope	72
2.0 Application of membrane to substrate.....	72
3.0 Curing of membrane and/or bonding material.....	72
4.0 Installation of ceramic tile over cured membrane	72
5.0 Grouting of tile.....	72
6.0 Soft Joints	73

A118, A136.1 — Material Specifications

A118.1 American National Standard Specifications for Dry-Set Portland Cement Mortar — 1999 [Reaffirmed 2005]

Introduction	75
1.0 Scope	75
2.0 Definitions	75
2.1 Dry-set mortar	75
2.2 Ceramic tile	75
3.0 Sampling and testing procedures	76
3.1 Sample	76
3.2 Temperature	76
3.3 Recording test values	76
4.0 Test for application properties of dry-set mortars	77
4.1 Mortar preparations	77
4.2 Initial set	77
4.3 Final set	77
4.4 Open time	78
4.5 Adjustability	78
4.6 Sag on vertical surfaces (required for mortars designated for vertical applications)	79
4.7 Cohesion Immediately after application	79
5.0 Shear strength of mortars to ceramic tile	79
5.1 Shear strength of mortars to glazed wall tile	79
5.2 Shear strength of mortars to impervious ceramic mosaic tile	80
5.3 Shear strength of mortars to quarry tile	81
5.4 Support for shear specimens	81
5.5 Shear strength of fast-setting mortars	81
6.0 Additional requirements for comparison with portland cement	82
6.1 Properties of dry set mortar	82
6.2 Additional properties of dry-set mortar	82
7.0 Package labeling	82

A118.3 American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive — 2009 [Revised]

1.0 Scope	83
2.0 Definitions	83
2.1 Chemical resistant, water cleanable tile-setting and -grouting epoxy	83
2.2 Water cleanable tile-setting epoxy adhesive	83
2.3 Ceramic tile	83
3.0 Sampling and testing procedures	83
3.1 Sample	83
3.2 Temperature	83
3.3 Recording test values	84
4.0 Preparation of epoxy	84
4.1 Mixing	84
5.0 Tests for application properties	84
5.1 Water cleanability	84
5.2 Initial setting time, service strength setting time	84
5.3 Shrinkage of the mixed components during cure	84
5.4 Sag in vertical joints	84
5.5 Bond strength to quarry tile	85
5.6 Compressive strength	85

5.7 Tensile strength of the cured material	85
5.8 Thermal shock test	85
5.9 Chemical resistance	86

A118.4 American National Standard Specifications for Latex-Portland Cement Mortar — 1999 [Reaffirmed 2005]

Introduction	88
1.0 Scope	88
2.0 Definitions	89
2.1 Latex-portland cement mortar	89
2.2 Ceramic tile	89
3.0 Sampling and testing procedures	89
3.1 Sample	89
3.2 Temperature.....	90
3.3 Recording test values	90
4.0 Tests for Application Properties	90
4.1 Mortar Preparation	90
4.2 Initial set	90
4.3 Final set	91
4.4 Open time	91
4.5 Adjustability	91
4.6 Sag on vertical surfaces (required for mortars designated for vertical applications)	92
5.0 Shear strength to ceramic tile	92
5.1 Shear strength of mortars to glazed wall tile.....	92
5.2 Shear strength of mortars to impervious ceramic mosaic tile.....	93
5.3 Shear strength of mortars to quarry tile	94
5.4 Support for shear specimens	95
5.5 Shear strength of fast-setting mortars	95
6.0 Compressive strength	95
6.1 Preparation of specimens	95
7.0 Package labeling	95
7.1 Application	95

A118.5 American National Standard Specifications for Chemical Resistant Furan Mortars and Grouts for Tile Installation — 1999 [Reaffirmed 2005]

1.0 Scope	96
2.0 Definitions	96
2.1 Chemical resistant furan mortars and grouts	96
2.2 Ceramic units	96
3.0 Sample and testing procedures	96
3.1 Sample	96
3.2 Test environment	96
3.3 Test values	96
4.0 Preparation of furan mortar and grout.....	96
5.0 Tests for application properties	96
5.1 Workability	96
5.2 Physical property requirements	97
5.3 Fillers	97
5.4 Chemical resistance	97
6.0 General requirements	97
Table 1-A118.5 — Physical Property Requirements; Minimum Values, psi. (MPa)	98

A118.6 American National Standard Specifications for Standard Cement Grouts for Tile Installation — 1999 [Reaffirmed 2005]

1.0 Scope	99
2.0 Definitions.....	99
2.1 Standard sanded cement grout.....	99
2.2 Sand-portland cement grout	99
2.3 Standard unsanded cement grout.....	99
3.0 Property requirements for standard sanded and unsanded cement grouts	99
4.0 Tests for properties of standard sanded and unsanded cement grouts	100
4.1 Sampling and testing procedures	100
4.2 Grout preparation	100
4.3 Linear shrinkage	100
4.4 Water absorption	101
4.5 Compressive strength	101
4.6 Tensile strength	101
4.7 Flexural strength	102
5.0 General requirements for all grouts	103
5.1 Package labeling	103

A118.7 American National Standard Specifications for Polymer Modified Cement Grouts for Tile Installation — 1999 [Reaffirmed 2005]

1.0 Scope	104
2.0 Definitions	104
2.1 Sand-portland cement grout	104
2.2 Polymer modified unsanded tile grout	104
2.3 Polymer modified sanded tile grout	104
3.0 Tests for properties of polymer modified cement grouts	104
3.1 Sampling and testing procedures	104
3.2 Grout preparation	105
3.3 Linear shrinkage	105
3.4 Water absorption	105
3.5 Compressive strength	106
3.6 Tensile strength	106
3.7 Flexural strength	107
4.0 General requirements for all grouts	107
4.1 Package labeling	107

A118.8 American National Standard Specifications for Modified Epoxy Emulsion Mortar/Grout — 1999 [Reaffirmed 2005]

1.0 Scope	108
2.0 Definitions	108
2.1 Modified epoxy emulsion mortars/grouts	108
2.2 Ceramic tile	108
3.0 Sampling and testing procedures	108
3.1 Sample	108
3.2 Test environment	109
3.3 Test value	109
4.0 Preparation of modified epoxy emulsion mortar/grout	109
4.1 Mixing.....	109
5.0 Tests for application properties	109
5.1 Water cleanability	109
5.2 Initial set	109
5.3 Final set	109

5.4 Bond strength to quarry tile	109
5.5 Shear strength of mortars to glazed wall tile.....	110
5.6 Shear strength of mortars to impervious ceramic mosaic tile.....	110
5.7 Support for Shear Specimens	111
5.8 Comprehensive strength of the cured material	111
5.9 Tensile strength of the cured material	111
5.10 Flexural strength	111
5.11 Water absorption	111

A118.9 American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units — 1999 [Reaffirmed 2005]

1.0 Scope	113
2.0 Definitions	113
2.1 Cementitious backer unit (CBU).....	113
3.0 Sampling and testing procedures	113
3.1 Sampling	113
3.2 Test environment	113
3.3 Test values.....	113
4.0 Test for physical properties	113
4.1 Physical property requirements.....	113
5.0 General requirements	113
5.1 Freeze-thaw Cycling.....	113
Table 1-A118.9 — Physical Property Requirements	114

A118.10 American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes for Thin-set Ceramic Tile and Dimension Stone Installation — October 2008 [Revised]

Introduction	115
1.0 Scope	115
2.0 Definitions	115
2.1 Latex-portland cement mortar	115
2.2 Ceramic tile	115
3.0 Sampling and testing procedures	116
3.1 Sampling	116
3.2 Temperature.....	116
3.3 Recording test values.....	116
4.0 Tests for material properties	116
4.1 Fungus and micro-organism resistance.....	116
4.2 Seam strength	117
4.3 Breaking strength	117
4.4 Dimensional stability.....	117
4.5 Waterproofness	117
5.0 Shear strength to ceramic tile and cement mortar	117
5.1 Preparation of mortar blocks.....	118
5.2 Preparation of shear bond assemblies.....	118
5.3 Seven day shear strength.....	118
5.4 Seven day water immersion shear strength	118
5.5 Four week shear strength.....	118
5.6 Twelve week shear strength	118
5.7 One-Hundred day water immersion shear strength	118
6.0 System performance	118

A118.11 American National Standard Specifications for EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar — 1999 [Reaffirmed 2005]

Introduction	119
1.0 Scope	119
1.1 Standards	119
2.0 Definitions	120
2.1 EGP (exterior glue plywood) latex-portland cement mortar	120
2.2 Ceramic tile	120
2.3 Plywood.....	120
3.0 Sampling and testing procedures	120
4.0 Shear strength to quarry tile	120
4.1 Preparation of specimens	120
4.2 Shear strength of fast-setting EGP (Exterior Glue Plywood) mortars	121
4.3 Support for shear specimens.....	121
5.0 Package labeling	121
5.1 Application.....	121

A118.12 American National Standard Specification for Crack Isolation Membranes for Thin-set Ceramic Tile and Dimension Stone Installation — October 2008 [Revised]

Introduction	123
1.0 Scope	123
2.0 Definitions.....	123
2.1 Latex portland cement mortar.....	123
2.2 Movement joints.....	124
2.3 Ceramic tile	124
2.4 Concrete test substrate.....	124
3.0 Sampling and testing procedures	125
3.1 Sample	125
3.2 Temperature.....	125
3.3 Recording test values.....	125
4.0 Tests for material properties.....	125
4.1 Fungus and microorganism resistance	125
5.0 Tests for system performance.....	126
5.1 Shear strength to ceramic tile and cement mortar.....	126
5.3 Robinson floor test	127
5.4 System crack resistance test	127

A136.1 American National Standard Specifications for Organic Adhesives for Installation of Ceramic Tile — 2008 [Revised]

1.0 Purpose	129
2.0 Scope	129
3.0 Classification	129
4.0 Definitions	130
4.1 Ceramic tile	130
4.2 Organic adhesive.....	130
4.3 Commercial construction; dry or limited water exposure walls	130
4.4 Light construction; dry or limited water exposure walls.....	130
4.5 Light construction; wet walls.....	130
4.6 Residential construction floors.....	130

5.0 Requirements	130
5.1 Stability in storage.....	130
5.2 Shear strength	130
5.3 Heat resistance.....	131
5.4 Impact test	131
5.5 Stain test	131
5.6 Resistance to mold growth	131
6.0 Sampling and testing procedures	131
6.1 Stability in storage.....	131
6.2 Shear strength	131
6.3 Stain test	134
6.4 Test for mold growth.....	135
7.0 Manufacturer's instructions	135
7.1 Application.....	135
7.2 Storage.....	135
8.0 Toxicity and flammability	136
8.1 Labels	136

List of Figures

Figure 1.0 Support Jig for Bond Strength Test.....	87
Figure 2.0 Ceramic Tile Test Assembly Plate	137
Figure 3.0 Ceramic Tile Test Assembly Lower Portion.....	137
Figure 4.0 Oven	137
Figure 5.0 Open Time Adjustability Tool.....	138
Figure 6.0 Tile Application Jig	139
Figure 7.0 Application Pattern.....	139
Figure 8.0 Sag Measuring Jig.....	139
Figure 9.0 T-Bar Spacer	140
Figure 10.0 Shear Bond Test Jig	140
Figure 11.0 Tile Setting Pattern for System Crack Resistance Test.....	141
Figure 12.0 System Crack Resistance Test Apparatus	142

LEED® the Way

Get your "Green" Products
Tested at TCNA



Need to know if a product can be used on a LEED, CHPS, or ICC 700 project?

Put the industry's leading laboratory testing team to work for you!

Ceramic Tile ■ Stone ■ Research ■ Product Development ■ Installation Materials & Installation Systems



TCNA Product Performance Testing Laboratory - 864/646/8453/www.tileusa.com

American National Standard Specifications for Installation of Ceramic Tile ANSI A108.01, .02, .1A, .1B, .1C, .4, .5, .6, .8, .9, .10, .11, .12, .13, .14, .15, .16, and .17

NOTE: The following Introduction and Notes are not part of American National Standards A108, A118, or A136.1 which are included herein – 2005.

1.0 Introduction

1.1 The applicable ANSI specifications for ceramic tile installed with portland cement mortar, dry-set or latex-portland cement mortar, organic adhesive, epoxy adhesive, chemical resistant water cleanable tile-setting and -grouting epoxy, chemical resistant furan mortar and grout, modified epoxy emulsion mortar, and the ANSI specifications for the installation of ceramic tile grouts should be made a part of a project specification by reference or by copying the applicable parts of the ANSI specification and including into the ceramic tile sections of a project specification. In either case, augment the ANSI specifications and modify the specific project conditions.

NOTE – If ceramic tiles irregular in size and/or thickness (not conforming to ANSI A137.1) are specified and specialized methods are required for installation, labor and material costs will be increased.

1.2 American National Standard specifications A118.1, .3, .4, .5, .6, .7, .8, .9, .10, .11, and .12, and A136.1 for ceramic tile installation materials are included with these ANSI specifications as separate documents and should also be referenced or included in project specifications.

1.3 The term “thin-set” is not specific. “Thin-set” describes a family of products manufactured to be used as setting and/or bonding coats. When a thin-set method is desired for which there is a specification, the appropriate ANSI specification should be referenced by both number and title.

2.0 Notes for tile material, accessories, and definitions

2.0.1 Include a full description of each type of tile to be used in project specification. Refer to A108.02 Paragraph 3.1.1 of the standard specifications herein in addition to grade markings on tile containers. When specified by the architect, Master Grade Certificates will be issued at the time of shipment. The covering order is required to show the names of the architect and owner and the name and location of the project. Specimens of the Master Grade Certificate and applicable labels are shown in ANSI A137.1.

2.0.2 For each specialty tile being chosen, review installation guidelines supplied by the manufacturer/distributor of the specialty tiles and/or adhesive manufacturer. Specialty tiles include but are not limited to tiles made from non-ceramic materials.

2.1 Exteriors

On exteriors, use only tile recommended by the manufacturer as suitable for the climatic conditions of the locality.

2.2 Interiors

Use only tile types recommended by the manufacturer as suitable for walls and/or floors (traffic areas).

2.2.1 CAUTION — Although organic adhesives provide a good bond for floor tile to substrate, they may provide insufficient support under nonresidential loads, resulting in the cracking of tile. ANSI A118.1 Dry-set Portland Cement Mortars, ANSI A118.4 Latex-portland Cement Mortars, ANSI A118.3 Epoxy