

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