ARDEX X 90™ OUTDOOR

MicroteC3 Rapid-Set, Flexible Tile and Stone Mortar

Maximum weatherproof protection against the harshest elements for outdoor tile and stone installations!

The new level in mortar standards

Highest levels of freeze thaw resistance - Tested at 150+ freeze thaw cycles (7 times greater than the ANSI 118.15 standard requirement of 20 cycles)

Maximum efflorescence resistance

Outstanding rapid setting properties, even at temperatures as low as 40°F / 5°C

Driving rain resistant after only 2 hours

Excellent bond strength for setting porcelain, quarry, glass, ceramic and most natural stone* tiles

Easy to apply, very creamy consistency

Extra long pot life of 60 minutes

ARDEX Americas
400 Ardex Park Drive
Aliquippa, PA 15001 USA
888-512-7339
www.ardexamericas.com

ARDEX X 90™ OUTDOOR

MicroteC3 Rapid-Set, Flexible Tile and Stone Mortar

Suitable Substrates

- Common building substrates (concrete that has cured for at least 28 days, CBU in accordance with manufacturer guidelines, etc.)
- Existing tiles (tile over tile)*[1]
- Approved waterproofing and uncoupling membranes
  - Horizontal (Floors): Interior or Exterior
  - Vertical (Walls): Interior or Exterior
- Plywood (interior, horizontal applications)
- Metal (non-aluminum; Interior Only)*[1] Contact the ARDEX Technical Service Department before proceeding further.
- Approved, properly prepared, non-water-soluble adhesive residue on concrete; Properly primed (ARDEX P 4)

*[1] Must be sound, solid and well-bonded to underlying, structurally sound substrates.

Some substrates require priming..

Suitable Applications

- Dry or damp substrates (no standing water)
- Interior areas dry or intermittently wet, such as shower floors and walls
- Exterior (not plywood)
- Pools and other submerged areas that are properly balanced in accordance with pool industry standards; not saltwater pools
- Installation of most common tile types:
  - Not for moisture-sensitive tile and stone
  - Not for glass tiles in Pools and other submerged areas
  - For highly absorbent tile and for resin-backed tile and stone: Contact the ARDEX Technical Service Department before proceeding further

Jobsite Conditions

During installation and cure, substrate and ambient temperatures must be a minimum of 40° F / 5° C. If installing over an in-floor heating system, turn the heating system off 48 hours before, during and at least 48 hours after completion of the installation.

Step 1: Substrate Preparation (Proper Prep™)

Mechanically clean substrate, if necessary, by shot blasting or similar means. Do not use acid etching, adhesive removers, solvents or sweeping compounds, as these are bond breakers. Sanding is not an effective method to remove contaminants from concrete.

Substrate must be dry and alkali free. All substrates must be sound, solid and thoroughly clean of all bond-breaking contaminants, including but not limited to: overwatered or otherwise loose or weak material; dirt, dust, wax, grease, paints and oils: unapproved curing compounds and sealers; and unsuitable adhesive residues.

Following preparation, thoroughly vacuum to remove all excess dirt and debris.

Handle and dispose of asbestos and other hazardous materials in accordance with prevailing regulations, which supersede the recommendations in this document..

For full details on Proper Prep, reference the following articles at www.ardexamericas.com/services/properprep:

- Article 1: Preparing Concrete for Bonded ARDEX or HENRY Applications
- Article 2: Preparing Wood for Bonded ARDEX Applications
- Proper Prep Brochure

Non-water-soluble adhesive residue must be wet scraped to a thin, well-bonded residue (rfci.com). For additional information, see Article 1 above.

The plane of wall surfaces must be plumb and true. Floor surfaces must have minimal variation in the plane or slope as outlined by the Tile Council of North America (TCNA). Refer to ANSI A108.01 “General Requirements: Subsurface and Preparation by Other Trades” and the most current version of the TCNA “Handbook for Ceramic Tile Installation” for detailed information on surface preparation and guidelines for substrate construction.

Honor joints and cracks as needed in accordance with TCNA EJ171, to include the incorporation of movement joints.

Step 2: Pre-Leveling / Smoothing Options

Interior or Exterior

ARDEX AM 100™ Rapid Set Pre-Tile Smoothing and Ramping Mortar

ARDEX A 38™ Rapid Set Screed

Interior Only

ARDEX Liquid BackerBoard® Self-Leveling Underlayment for Interior Wood and Concrete Subfloors
ARDEX TL 1000™ Self-Leveling Underlayment
ARDEX TL 1400™ Self-Leveling Underlayment
ARDEX TL 2000™ Fiber Reinforced, Self-Leveling Underlayment
ARDEX SKM™ Skim Finish - Skimcoat Patch & Finishing Underlayment

Observe the substrate preparation, mixing, application and drying instructions in the appropriate ARDEX technical data sheet. Per ANSI A 108 AN-3.7, expansion joints must be provided over existing moving joints and moving cracks and where substrate materials change composition or direction.

Step 3: Waterproofing / Crack Isolation / Uncoupling; Priming / Treating Certain Substrates

Note

Membrane application limits the allowable mortar thickness. See “Thickness of Application” under “Step 4” below.

Waterproofing / Crack Isolation Options

ARDEX 8+9™ Rapid Waterproofing and Crack Isolation Compound
ARDEX S 1-K™ One-Component Waterproofing and Crack Isolation Membrane
ARDEX TLT™ Waterproofing Membrane and Vapor Retarder for Tile & Stone Installations
ARDEX FLEXBONE® HEAT In-Floor Heating Systems
ARDEX UI 740™ FLEXBONE® Uncoupling Membrane

Follow the instructions in the respective technical data sheet.

Approved, properly prepared, non-water-soluble adhesive residue on concrete

Apply a coat of ARDEX P 4™ Pre-Mixed, Rapid-Drying, Multipurpose Primer, which must dry 30 - 60 minutes before proceeding with the tile installation.

Existing Tiles and Other Non-Porous Surfaces

Option 1: Apply a coat of ARDEX P 4™ Pre-Mixed, Rapid-Drying, Multipurpose Primer, which must dry 30 - 60 minutes before proceeding with the tile installation.

Option 2: (Dry areas only; Interior applications only): Mix the mortar with ARDEX E 90 ™ Admix in accordance with the technical data sheet, and install directly over the non-porous surface.

Option 3: Cover the entire surface with a scratch coat of the tile mortar. Allow the scratch coat to harden and dry completely before proceeding with the tile installation.

Metal (non-aluminum; Interior Only)

Contact the ARDEX Technical Service Department before proceeding further.

Gypsum (Interior Only)

Option 1: Apply a coat of ARDEX P 4™ Pre-Mixed, Rapid-Drying, Multipurpose Primer, which must dry 30 - 60 minutes before proceeding with the tile installation.

Option 2: ARDEX P 51 Double prime. Follow the instructions in the respective technical data sheet.

Other Highly Absorbent Substrates (plaster, etc.)

Option 1: Cover the entire surface with a scratch coat of the tile mortar. Allow the scratch coat to harden and dry completely before proceeding with the tile installation.

Option 2: Apply a coat of ARDEX P 4™ Pre-Mixed, Rapid-Drying, Multipurpose Primer, which must dry 30 - 60 minutes before proceeding with the tile installation.

Option 3: (Dry areas only; Interior applications only): ARDEX P 51 Double prime. Follow the instructions in the respective technical data sheet.

Step 4: Mixing and Application

Recommended Tools

ARDEX T-2 Mixing Paddle; Mixing Container; 1/2" (12 mm) heavy-duty drill (min. 650 rpm); appropriate measuring bucket; Margin trowel; Appropriate notched trowel

Safety and OSHA Compliance

Handle each bag with care, emptying it in a manner that avoids creating a plume of dust. While mixing, use a standard "gutter hook" vacuum attachment in combination with a heavy-duty, bucket-style vacuum (Shop-Vac or similar) and HEPA dust extraction vacuum system.

Application Data

All dry times are calculated at 70°F (21°C). Drying time is a function of jobsite temperature and humidity conditions. Low substrate temperatures and/or high ambient humidity will extend the drying time. Adequate ventilation and heat will aid drying.

Water Ratio	5 3/4 - 6 3/4 quarts (5.4 - 6.4 L) clean water Per bag; or 2.5 parts powder: 1 part clean water by volume Do not add more water..
Pot life:	60 minutes
Open time:	Up to 30 minutes
Adjustment time:	15 - 20 minutes

Thickness of Application

Application	Maximum Thickness of Application	Maximum notch trowel Size
Over membranes	3/8" (9.5 mm)	3/4" x 3/4" (19 mm x 19 mm)
All other cases	1/2" (12 mm)	

Pour the water in the mixing container first, and then add powder while mixing with the mixing paddle and a 1/2" (12 mm) heavy-duty drill (min. 650 rpm). Mix thoroughly for approximately 2 to 3 minutes to obtain a lump-free mix. Do not overwater! Additional water will weaken the compound and lower its strength.

Small batches may be mixed by hand. Use a margin trowel, and mix vigorously. Just prior to application on the substrate, the mixture should be stirred again to ensure a creamy, smooth, lump-free consistency.

Jobsite conditions and temperature may affect pot life. If the material begins to harden within published pot life, retemper with a drill and mixing paddle.

Installation should proceed in accordance with ANSI A 108.5. After mixing, apply mortar to the substrate with the flat side of a trowel to obtain a solid mechanical bond. Apply to an area no greater than that which can be covered with tile while the mortar remains plastic. Do not set tile or stone into skinned over mortar.

Comb the mortar with a notched trowel of sufficient depth to ensure that the tile or stone is covered uniformly over the entire surface (note thickness limitation over membranes as detailed above). Follow TCNA recommendations for proper transfer of mortar from the substrate to the tile or stone. The type and size of the tile or stone will dictate the size of the notched trowel to be used to achieve proper transfer.

When setting certain types of tile or stone, it may be necessary to trowel a layer of mortar on the back of each tile or stone prior to placement on the combed mortar bed in order to achieve the required mortar-to-tile contact. Press each tile firmly into the freshly combed mortar to ensure maximum mortar contact with the tile.

Step 5: Grouting Instructions and Options

All dry times are calculated at 70°F (21°C). Drying time is a function of jobsite temperature and humidity conditions. Low substrate temperatures and/or high ambient humidity will extend the drying time. Adequate ventilation and heat will aid drying. Forced drying can dry the surface of the product prematurely and is not recommended.

Cure time prior to grouting: 2 hours

ARDEX FL™ Rapid Set, Flexible, Sanded Grout
ARDEX FH™ Sanded Floor and Wall Grout
ARDEX FG-C™ MICROTEC® Unsanded Floor & Wall Grout
ARDEX WA™ High-Performance, 100% Solids Epoxy Grout and Adhesive
ARDEX DG 1™ One Component Grout

Follow the instructions in the respective technical data sheet and ANSI A 108.

Notes

Intended for use by professional contractors who are trained in the application of this product and/or similar products. Not sold by ARDEX through home improvement centers. For information on ARDEX Academy trainings, visit: www.ardexamericas.com.

Never mix with cement or additives outside of our written recommendations. In accordance with industry standards, and to determine the suitability of the products for the intended use, always install an adequate number of properly located test areas, including the tile flooring. As tiles vary, always contact and rely upon the tile manufacturer for specific directives, such as maximum allowable moisture content, mortar selection and intended end use of the product. If the installation is not proceeding as expected, Contact the ARDEX Technical Service Department before proceeding further.

Observe the basic rules of concrete work, including the minimum surface and air temperatures detailed above. Install quickly if the substrate is warm, and follow the warm weather installation guidelines available on our website. Observe the basic rules of tile work.

Dispose of packaging and residue in accordance with prevailing regulations. Do not flush material down drains. Do not reuse packaging.

ARDEX Tile and Stone Mortar Usage Guide

Moisture-sensitive natural stone or agglomerate tile (interior, dry applications only):

- ARDEX X 32™ MICROTEC® Universal Rapid Setting and Drying Thin-to-Thick Bed Mortar
- ARDEX S 28™ MICROTEC® Rapid-Set, Rapid-Dry, Super-Format Tile and Uncoupling Membrane Mortar
- ARDEX N 23™ MICROTEC® Rapid Set Natural Stone and Tile Mortar

Saltwater pools; glass tiles in swimming pools and other submerged areas:

ARDEX 100% Solids Epoxy Adhesive

Glass tiles in non-submerged areas:

- ARDEX X 77™ MICROTEC® Fiber Reinforced Tile and Stone Mortar (Interior or Exterior)
- ARDEX X 65 Lightweight Universal Tile and Stone Mortar (Interior or Exterior)
- ARDEX S 48™ Rapid-Set Thin Set Mortar/ Mastic Hybrid (Interior Only)

Balconies, terraces and building facades that experience a great deal of movement due to temperature changes:

- ARDEX X 90 OUTDOOR™ MicroteC3 Rapid-Set, Flexible Tile and Stone Mortar
- ARDEX X 77™ MICROTEC® Fiber Reinforced Tile and Stone Mortar
- ARDEX X 78™ MICROTEC® Fiber Reinforced, Semi-Pourable, Polymer Modified Thin Set Mortar

ISO 13007 Classification	Classification Requirements
C2 (cementitious, improved adhesion)	≥ 145 psi (1 MPa; 10.2 kg/ cm^2) after standard aging, heat aging, water immersion and freeze/thaw cycles
T ((vertical slip resistance)	≤ 0.019" (0.5 mm)
E (extended open time)	≥ 72.5 psi (0.5 MPa; 5 kg/cm^2) after 20 - 30 minutes
F fast setting	≥ 72.5 psi (0.5 MPa; 5 kg/cm^2) At 6 hours
S1 (normal deformation of mortar)	≥ 0.1" (2.5 mm) <0.2" (< 5 mm)

28-days Test	Test Method	ANSI Specification
Impervious ceramic (porcelain) mosaics shear strength	ANSI A118.15 F	≥ 50 psi (0.35 MPa; 3.5 kg/cm^2)
Impervious ceramic (porcelain) mosaics shear strength	ANSI A118.15	>400 psi (2.76 MPa; 28 kg/cm^2)
Impervious ceramic (porcelain) mosaics shear strength with freeze-thaw cycling	ANSI A118.15	>250 psi (1.73 MPa; 17.5 kg/cm^2)
Impervious ceramic (porcelain) mosaics shear strength with heat aging	ANSI A118.15	>400 psi (2.76 MPa; 28 kg/cm^2)
Glazed wall tile shear strength	ANSI A118.15	>450 psi (3.11 MPa; 31.5 kg/cm^2)
Quarry tile shear strength	ANSI A118.15	>150 psi (1.04 MPa; 10.5 kg/cm^2)
Quarry tile to plywood shear strength	ANSI A118.11	>150 psi (1.04 MPa; 10.5 kg/cm^2)

7-days Test	Test Method	ANSI Specification
Impervious ceramic (porcelain) mosaics shear strength with water immersion	ANSI A118.15 F	≥200 psi (1.38 MPa; 14 kg/cm^2)

Technical Data According to Manufacturer Quality Standards

All data based on a partial, in-lab mix. Mixing and Testing completed at 70°F / 21°C. Physical properties are typical values and not specifications.

Coverage:	1/4" x 1/4" (6 mm) sq. notch trowel = 95 sq. ft. (8.8 m^2) Per bag 1/4" x 3/8" (6 mm x 9 mm) sq. notch trowel = 75 sq. ft. (7 m^2) Per bag 1/2" x 1/2" (12 mm) sq. notch trowel = 55 sq. ft. (5 m^2) Per bag Dependent on surface profile, density and porosity.
Colors:	Gray and White
Packaging:	40 lb (13.6 kg) bag
Storage:	Store in a cool, dry area. Do not leave units exposed to sun. Protect unused material by removing air from container and sealing tightly.
Shelf Life:	12 months, if unopened and properly stored
Warranty:	ARDEX Standard Limited Warranty applies. Also eligible for ARDEX Tile and Stone SystemOne™ Warranty When used as a system. For full warranty details: www.ardexamericas.com/services/warranties.

Precautions

Carefully read and follow all precautions and warnings on the product label. For complete safety information, please refer to the Safety Data Sheet (SDS) available at: www.ardexamericas.com.

Made in the USA

ARDEX Americas
400 Ardex Park Drive
Aliquippa, PA 15001 USA
888-512-7339
www.ardexamericas.com