

Surface Preparation Requirements



North American
ADHESIVES®

Tile and Stone Installations

ENVIRONMENTAL REQUIREMENTS

- Maintain environmental conditions and protect work during and after installation. Comply with trade and industry standards and manufacturer's printed recommendations.
- Turn off all forced ventilation and radiant-heating systems, and protect the work against drafts during installation and for at least 72 hours after completion.
- When necessary, build a temporary shelter and use indirect auxiliary heaters to maintain an adequate temperature level in the working environment and surfaces.
- Exhaust temporary heaters to exterior to prevent damage to the work or injury to personnel from carbon monoxide emissions.
- Maintain substrate and ambient temperatures in tiled areas at between 50°F and 95°F (10°C and 35°C) during installation and for at least 7 days after completion, unless otherwise indicated in the product instructions and/or ANSI A108 installation standards.

JOB-SITE EXAMINATION

Before work commences, examine the areas to be covered and report any deficiency or adverse condition in writing to the general contractor, owner, developer or architect. Do not proceed with the work until surfaces and conditions comply with the requirements indicated in the manufacturer's instructions and in ANSI A108.5, A108.6 and A108.12 specifications.

For details, refer to the TCNA Handbook for Ceramic Tile Installation.

SURFACE PREPARATION

1. General

- 1.1 All supporting surfaces must be structurally sound, solid, stable, level, plumb and true with a maximum permissible variation of 1/4" in 10' (6 mm in 3,05 m) from the required plane (see TCNA Handbook or TTMAC specification guideline and ANSI guidelines for details.) They should be clean and free of dust, oil, grease, paint, tar, wax, curing agent, primer, sealer, form release agent and any other deleterious substance or debris that may prevent or reduce adhesion.
- 1.2 Completely remove all paint, loosely bonded topping, loose particles and construction debris by mechanical means (i.e., shotblasting, scarification or sanding). When preparing surfaces containing silica sand, use an approved dust mask. Surfaces containing asbestos must be handled in accordance with current federal, state, provincial and local regulations.
- 1.3 Acid etching is not recommended.
- 1.4 All substrates should be dry.
- 1.5 In all cases, the structural design of the floor should not allow a deflection greater than $L/360$ of the span ($L/720$ for installations of natural stone) when measured under a 300-lb. (136-kg) concentrated load (see ASTM C627). Floor systems, including the framing system and subfloor panels, over which tile will be installed should be in conformance with the IRC (International Residential Code) for residential applications, the IBC (International Building Code) for commercial applications, or applicable building codes.
Note: The owner should communicate in writing to the project design

professional and general contractor the "intended use" of the tile installation, in order to enable the project design professional and general contractor to make necessary allowances for the expected live load, concentrated loads, impact loads, and dead loads including the weight of the tile and setting bed. The tile installer should not be responsible for problems resulting from any floor framing or subfloor installation not compliant with applicable building codes, unless the tile installer or tile contractor designs and installs the floor framing or subfloor.

2. Concrete

- 2.1 Concrete surfaces should be dry, fully cured and free of excessive hydrostatic pressure and/or excessive moisture.
 - 2.1.1 See the respective Technical Data Sheets of individual products for moisture-vapor emissions requirements. Some products – such as crack-isolation, sound-reduction and waterproofing membranes and epoxies – require a compatible moisture-reduction barrier when vapor emissions exceed 3 lbs. per 1,000 sq. ft. (1,36 kg per 92,9 m²) per 24 hours when using the calcium chloride test kit, or greater than 75% relative humidity when using a moisture probe test.
 - 2.1.2 The quality of concrete must permit direct tensile bond of > 175 psi (1,21 MPa).
 - 2.1.3 Floors with greater than 3 lbs. per 1,000 sq. ft. (1,36 kg per 92,9 m²) per 24 hours or greater than 75% relative humidity need to be pretreated with a compatible moisture-reduction barrier.
- 2.2 On-grade and below-grade concrete slabs must be installed over an acceptable and effective vapor barrier per industry standards.
- 2.3 New concrete surfaces should be wood-floated or broom-finished. Mechanically prepare concrete substrates to a minimum ICRI CSP #3 profile for setting mortars, or a minimum ICRI CSP #5 profile for levelers and toppers. Over-troweled slabs are not acceptable.
- 2.4 For excessively dry porous concrete, keep the concrete substrate continuously moist for at least 24 hours before work begins. Remove all excess water and standing water, allowing the surface to become almost dry to provide a saturated surface-dry (SSD) condition before installing the leveling coat or setting mortar.
- 2.5 For interior self-leveling: Use NA 440 fast-setting self-leveling underlayment up to 1-1/2" (3,8 cm) thickness, or NA 400 self-leveling underlayment up to 1" (2,5 cm) thickness to level a properly prepared concrete floor. Always prime concrete substrate with appropriate primer before installing an underlayment.
- 2.6 For interior repairs: Use NA 840 fast-setting repair mix, or apply a mixture of Portland cement and sand with slurry bond coat, to screed, build up, slope or level a concrete substrate when the average thickness required is between 1/2" and 2" (12 mm and 5 cm). Refer to respective Technical Data Sheets for details.
Note: For applications less than 1-3/8" (3,5 cm), material must be bonded to concrete.

3. Cement Backer Units (CBUs)

The CBU should conform to the quality standard requirements of ANSI A118.9. It must be installed according to the CBU manufacturer's instructions and in strict accordance with ANSI A108.11 standards for interior installation of CBUs.

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4. Exterior Wall Surfaces

The Uniform Building Code requires mechanical fasteners for individual tiles larger than 720 sq. in. (0,46 m²) or weighing more than 15 lbs. (6,80 kg) per square foot (0,09 m²). Other restrictions may apply; consult state/provincial and local building codes. When surface waterproofing is not required, trowel a 1/8" (3 mm) skimcoat of NA 3120 Dual Set thin-set mortar mixed with NA 3000 latex additive for mortar to cover the entire concrete, masonry or CBU substrate before installing tiles. Allow at least 24 hours to dry before the tile installation. See the respective Technical Data Sheets for details.

5. Gypsum Wall Surfaces (for interior dry areas only)

To enhance the substrate performance, prime all drywall and plaster wall surfaces with NA 200 acrylic primer for self-levelers (diluted 4 parts water to 1 part primer) and let dry completely before applying the mortar.

Note: Gypsum levelers and gypsum patching compounds are not acceptable substrates for direct bonding.

6. Resurfacing Old Finishes (for interior installations only)

Old cement terrazzo; quarry tile; ceramic and porcelain tile that are mechanically profiled; pavers; vinyl composition tile (VCT); and vinyl floor coverings other than cushion vinyl must be sound, well-bonded with nonreemulsifiable nonwater-sensitive adhesive, flawless, stripped clean and free of dust, wax, grease, sealer, soap residue and all other deleterious substances that may reduce or prevent adhesion.

(See the most recent TCNA Handbook's Details TR-712 and TR 713.)

7. Plywood Underlayments (for interior residential floors and countertops in dry areas only)

- 7.1 Plywood underlayments must be a Group 1 exterior-grade plywood, CC-plugged or better, conforming to A.P.A. classification and U.S Product Standard PS 1-95 or a "SELECT" or (SEL-TF) COFI classified exterior-grade plywood conforming to CSA-0121 standard for Douglas fir for direct bond applications.
- 7.2 Presswood, particleboard, chipboard, Masonite, Lauan, solid wood planks, pressure-treated plywood, engineered hardwood flooring, oriented strand board (OSB), asbestos board and other dimensionally unstable materials are not acceptable substrates.
- 7.3 Plywood surfaces should be installed smooth face-up with the face grain running perpendicular to the framing. Offset joints of subfloor and underlayment per industry standards.
- 7.4 Use exclusively new first-quality plywood that has not been subject to rain or water damage and has been properly climatized per the manufacturer's instructions.
- 7.5 Plywood subfloors and underlayments should consist of at least 2 layers for a combined total thickness of at least 1-1/4" (3,2 cm), or 1-1/2" (3,8 cm) for installations of natural stone. Both panels should be fastened per the manufacturer's recommendations over a joist span of 16" (41 cm) on center. (See product Technical Data Sheets for any alternatives.) Leave a space 1/8" (3 mm) wide between panels. Leave a 1/4" (6 mm) gap around drain pipes, conduits, posts and columns, and along wall and curb bases. (See TCNA Handbook or TTMAC specification guide and ANSI guidelines for details.) The plywood should be screwed 6" (15 cm) O.C. around the perimeter and 8" (20 cm) O.C. in each direction throughout the body of the panel. Consult the Technical Services Department when joints are spaced greater than 16" (41 cm) O.C.
- 7.6 Plank or board floors should be covered over with at least one layer of 3/4" (19 mm) thick exterior-grade plywood, each sheet to be fastened with screws 8" (20 cm) O.C. in all directions and around the perimeter. Leave proper spacing between the plywood sheets and between all materials that they abut. (See Section 7.5 above.)
- 7.7 Adjacent edges of the plywood underlayment sheets should not deviate more than 1/32" (1 mm) out of plane.
- 7.8 All wood subfloors should be properly ventilated and acceptable to local codes and requirements.

For additional details, please refer to the latest edition of the TCNA Handbook for Ceramic Tile Installation and to product Technical Data Sheets. For further information about product application or installation, contact Technical Services.



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