



North American
ADHESIVES®

NA 3770

Magna Flex™ SG

**Extra Smooth,
Large-and-Heavy-Tile Mortar**



PRODUCT DESCRIPTION

NA 3770 Magna Flex SG is a versatile, standard-grade, large-and-heavy-tile mortar and thin-set mortar. Formulated as nonsag for walls and nonslump for floors, this polymer-modified mortar offers ease of application and good adhesion to substrates and tile. It can also be used as a mortar over uncoupling, crack-isolation, sound-reduction and waterproofing membranes. NA 3770 Magna Flex SG exceeds industry-standard ANSI A118.4HET and A118.11 requirements and is ISO 13007 C2TE classified.

FEATURES AND BENEFITS

- Superior mortar-wetting properties
- Extra smooth, creamy consistency for ease of application
- Easy mixing, handling and troweling properties
- Ideal for edge-leveling clip applications
- Nonsag formula for large-format and heavy tile and stone in wall applications
- Nonslump formula for large-format and heavy tile and stone in floor applications
- For bond coats up to 1/2" (12 mm) in embedded thickness
- Polymer-enriched for good performance
- For use over plywood and a variety of membranes

USES

- Most interior/exterior residential installations on floors, walls and countertops in dry and wet areas
- Most interior/exterior commercial installations on floors and countertops
- Most interior commercial installations on walls
- For use in tub surrounds and showers
- For use over exterior-grade plywood

- Installation of ceramic and porcelain tile, manufactured stone, quarry tile, pavers and Saltillo tile, as well as most types of marble, granite and natural stone

SUBSTRATE REQUIREMENTS

- All substrates should be structurally sound, stable, dry, clean and free of any substance or condition that may reduce or prevent proper adhesion. See North American Adhesives' (NAA's) "Surface Preparation for Tile and Stone Installations" document in the Document Library section at www.na-adhesives.com.

Tile Council of North America (TCNA) Statement on Deflection Criteria

Floor systems, whether wood framed or concrete, over which the tile will be installed using the appropriate TCNA method, according to the Floor Tiling Installation Guide, shall be in conformance with the International Residential Code (IRC) for residential applications, the International Building Code (IBC) for commercial applications, or applicable building codes.

The owner should communicate in writing to the project design professional and general contractor the intended uses of the tile installation, including in-service loads or information to allow a project design professional to calculate such.

The tile contractor shall not be responsible for problems resulting from any structural subfloor installation not compliant with applicable building codes, unless structural subfloor was designed and installed by tile contractor, nor for problems from overloading. Please reference the most current version of the TCNA Handbook for more complete substrate requirements.

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SUITABLE SUBSTRATES

- Concrete (cured at least 28 days)
- Masonry cement block, brick, cement mortar beds, render coats and leveling coats
- Cement backer units (CBUs) – see the manufacturer’s installation guidelines
- Gypsum wallboard and plaster – interior walls in dry areas only (priming may be required)
- Plywood underlayments must be a Group 1 exterior-grade plywood CC-plugged or better, conforming to APA classification and U.S. Product Standard PS 1-95 or a “SELECT” or (SEL-TF) CANPLY classified exterior-grade plywood conforming to CSA-0121 standard for Douglas fir for direct-bond applications (interior, residential and light commercial floors and countertops in dry conditions only).
- Uncoupling, waterproofing, crack-isolation and sound-reduction membranes (e.g., *NA 1550 Crack-Isolation Membrane* and *NA 1740 Waterproof Coating*) over recommended substrates.

LIMITATIONS

- Install only at temperatures between 40°F and 95°F (4°C and 35°C).
- Do not use for moisture-sensitive stone (green marble; some limestone and granite), agglomerate tiles or resin-backed tiles. Instead, use suitable epoxy or urethane adhesives. See the respective Technical Data Sheets for more information.
- Do not use over dimensionally unstable substrates such as hardwood flooring, oriented strand board (OSB), substrates containing asbestos, or metal. See the “Suitable Substrates” section above.
- To use directly over gypsum-based patching or leveling substrates, apply a suitable sealer/primer before use. Refer to NAA’s “Gypsum-based floors and walls: Which NAA products can be applied?” technical bulletin in the Document Library section at www.na-adhesives.com.
- For light-colored and translucent natural stone, a white mortar is recommended.
- Do not use for transparent or translucent glass tile.
- Installations of tile over nonporous surfaces, such as waterproofing membranes and existing tile, may require extended setting/curing times.
- Use with dimensionally weak stone (limestone and travertine) is limited to thin-set applications only.
- Do not use for installations subject to water immersion, such as pools and spas.

- Do not use for exterior commercial building facades, such as shopping malls, office buildings and high-rise residential buildings.
- Large-and-heavy-tile mortars are not designed to correct uneven floors. Substrates must be flat and level (according to substrate-flatness requirements in ANSI A108.02) before the installation of large-format tile.
- Use a liquid latex additive such as *NA 3000 Mortar Additive* for areas subject to severe freeze/thaw conditions, for best performance.

MIXING

Before product use, take appropriate safety precautions. Consult the Safety Data Sheet for safe-handling instructions.

1. For nonslump floor applications and nonsag wall applications, pour 5.3 to 5.9 U.S. qts. (5.02 to 5.58 L) of clean, potable water into a clean mixing container. For use with membranes, pour 5.9 to 6.4 U.S. qts. (5.58 to 6.06 L) of clean, potable water into a clean mixing container.
2. Gradually add 44 lbs. (20 kg) of powder while slowly mixing.
3. Use a low-speed mixing drill (at about 300 rpm), with an angled cross-blade mixer or a spiral mixer. Mix thoroughly until the mixture becomes a smooth, homogenous, lump-free paste. Avoid prolonged mixing.
4. Let the mixture stand (“slake”) for 5 minutes.
5. Remix.
6. If the mixture becomes heavy or stiff, remix without adding more liquid.

APPLICATION

1. Choose a notched trowel (see the “Approximate Coverage” chart below) with sufficient depth to achieve more than 80% mortar contact to both the tile and substrate for all interior applications, and more than 95% for exterior, commercial floor and wet applications. It may be necessary to back-butter the tile in order to meet these requirements. (Refer to ANSI A108.5 specifications and TCNA handbook guidelines.)
2. With pressure, apply a coat of mortar by using the trowel’s flat side to key the mortar into the substrate.
3. Apply additional mortar, using the trowel’s notched side to comb the mortar in a single direction parallel to the tile’s shortest dimension.
4. Spread only as much mortar as can be tiled before the product skins over. Open time can vary with jobsite conditions.
5. Place tiles firmly into the wet mortar. Push the tiles back and forth in a direction perpendicular to trowel lines, to collapse the mortar ridges and to help achieve maximum coverage. Ensure proper contact between the mortar, tile and substrate by periodically lifting a few tiles to check for acceptable coverage.

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6. Remove excess mortar from the joint areas so that at least 2/3 of the tile depth is available for grouting (see ANSI A108.10 guidelines).

EXPANSION AND CONTROL JOINTS

- Provide for expansion and control joints as specified per TCNA Method EJ171, or TTMAC Specification Guide 09 30 00, Detail 301MJ. Do not cover any expansion joints with mortar.
- When necessary, cut tiles along both edges of the expansion joints. Do not allow tile and mortar to overlap the joints.
- Protect tilework with metal strips (edge metal) along both edges of structural building expansion joints.
- Install the specified compressible backer rod and sealant into all expansion and control joints.

CLEANUP

- Use water only to clean tools and tile while the mortar is fresh.

PROTECTION

- Do not disturb the installation, allow light traffic or grout any tiles for at least 24 to 48 hours.
- Protect the installation from general traffic for at least 72 hours and from heavy traffic for at least 7 days.
- Protect the installation from rain for 72 hours and from freezing for 21 days.

Product Characteristics at 73°F (23°C) and 50% relative humidity	
Colors	Gray; white
Packaging	Bag: 44 lbs. (20 kg), gray Bag: 44 lbs. (20 kg), white
Shelf life	1 year when stored in original, unopened packaging
Open time*	Up to 30 minutes
Pot life*	> 2 hours
Time before grouting*	24 hours
VOCs (Rule #1168 of California's SCAQMD)	0 g per L
Application temperature range	40°F to 95°F (4°C to 35°C)





* Cold temperature or high humidity may alter these properties.

ISO 13007 Classification		
Classification Code	Classification Requirement	Test Characteristic
C2 (cementitious, improved adhesion)	≥ 145 psi (1 MPa) after standard aging, heat aging, water immersion and freeze/thaw cycles	Using porcelain tile
T (vertical slip resistance)	≤ 0.019" (0.5 mm)	Using porcelain tile
E (extended open time)	≥ 72.5 psi (0.5 MPa) after 30 minutes	Using glazed ceramic wall tile

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ANSI Specification		
Test Method	Specification Standard	Test Results
ANSI A118.4 – shear strength, impervious ceramic (porcelain) mosaics	> 200 psi (1.38 MPa) at 28 days	200 to 300 psi (1.38 to 2.07 MPa)
ANSI A118.4 – shear strength, glazed wall tile	> 300 psi (2.07 MPa) at 28 days	325 to 440 psi (2.24 to 3.03 MPa)
ANSI A118.4 – shear strength, quarry tile to quarry tile	> 150 psi (1.03 MPa) at 28 days	275 to 400 psi (1.90 to 2.76 MPa)
ANSI A118.4H – mortar for large and heavy tile	ASTM C627 Robinson Floor Test Lippage change < 1/64" (0.4 mm)	Pass
ANSI A118.4E – extended open time	≥ 72.5 psi (0.5 MPa) at 30 minutes	Pass
ANSI A118.4T – sag on vertical surfaces	< 0.02" (0.5 mm) at 20 minutes	Pass
ANSI A118.11 – shear strength, quarry tile to plywood	> 150 psi (1.03 MPa) at 28 days	Pass

Approximate Coverage* per 44 lbs. (20 kg)	
Typical Trowel	Coverage
1/4" x 1/4" x 1/4" (6 x 6 x 6 mm) 	70 to 86 sq. ft. (6.50 to 7.99 m ²)
1/4" x 3/8" x 1/4" (6 x 10 x 6 mm) 	53 to 62 sq. ft. (4.92 to 5.76 m ²)
1/2" x 1/2" x 1/2" (12 x 12 x 12 mm) 	35 to 43 sq. ft. (3.25 to 3.99 m ²)
3/4" x 9/16" x 3/8" (19 x 14 x 10 mm) 	24 to 28 sq. ft. (2.23 to 2.60 m ²)

* Trowel dimensions are width/depth/space. Actual coverage will vary according to substrate profile and tile type.

LEGAL NOTICE

The contents of this Technical Data Sheet ("TDS") may be copied into another project-related document, but the resulting document shall not supplement or replace requirements per the TDS in effect at the time of the NAA product installation. For the most up-to-date TDS and warranty information, visit our Website at www.na-adhesives.com. **ANY ALTERATIONS TO THE WORDING OR REQUIREMENTS CONTAINED IN OR DERIVED FROM THIS TDS SHALL VOID ALL RELATED NAA WARRANTIES.**

Before using, the user must determine the suitability of our products for the intended use, and the user alone assumes all risks and liability. **ANY CLAIM SHALL BE DEEMED WAIVED UNLESS MADE IN WRITING TO US WITHIN FIFTEEN (15) DAYS FROM DATE IT WAS, OR REASONABLY SHOULD HAVE BEEN, DISCOVERED.**