



North American
ADHESIVES®

NA 450

LP Leveler Rapid

**Low-Preparation, High-Performance,
Rapid-Setting, Self-Leveling Underlayment**



PRODUCT DESCRIPTION

NA 450 LP Leveler Rapid is a low-preparation, rapid-setting, self-leveling underlayment that typically requires only a clean, securely bonded and properly primed substrate before application. NA 450 is quite fluid once mixed and it can be easily installed from featheredge to 2" (5 cm) in a single lift. Typically requiring reduced surface preparation, NA 450 provides lower installation costs and fast turnaround on jobsites. NA 450 is able to accept tile and stone after 3 to 4 hours of installation and moisture-sensitive floor coverings after 16 to 24 hours. It has a compressive strength of greater than 4,100 psi (28,3 MPa) after 28 days.

USES

- For leveling, smoothing and repairing of interior residential and commercial floors before the installation of flooring systems and coverings
- For interior residential (rental apartments, condominiums and homes)
- For interior commercial (office buildings, hotel rooms/hallways, restaurants and cafeterias)
- For interior heavy commercial (hotel lobbies, convention centers, airports, shopping malls, grocery stores and department stores)
- For interior institutional (hospitals, schools, universities, libraries and government buildings)
- For use over radiant-heated floors and for encapsulating hydronic and electric radiant-heated floors

SUBSTRATE REQUIREMENTS

- All substrates must be properly prepared and structurally sound, stable, solid and dry.
- Concrete surfaces must be clean and free of any substance that could interfere with the bond of the installation material, including dust, dirt, paint, tar, asphalt, wax, oil, grease, concrete sealers, curing compounds, form release agents, laitance, loosely bonded toppings, foreign substances and adhesive residues.

- For concrete substrates, fill in deep areas, holes and cracks with an appropriate patching compound or screed such as NA 840 Floor Repair Mix. Otherwise, a fluid self-leveler may leak through to a floor below or into unwanted cavities.
- For plywood substrates, fill joints with an acrylic-based caulking compound to prevent NA 450 from leaking into a floor below.
- All substrates must be primed with an appropriate North American Adhesives (NAA) primer – such as NA 310 Self-Leveler Primer or NA 240 Primer Grip™ – before applying a self-leveler.

For details on proper surface preparation, see the NAA Reference Guide "Surface-Preparation Requirements for Self-Leveling Underlayments" at www.na-adhesives.com.

Tile Council of North America (TCNA) Maximum Allowable Deflection for Floor Systems and Substrates

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.

Consult Technical Services for installation recommendations regarding substrates and conditions not listed.



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SUITABLE SUBSTRATES (properly prepared)

- Sound, dimensionally stable, fully cured concrete at least 28 days old and free from hydrostatic pressure
- Well-bonded and dimensionally stable ceramic, porcelain and quarry tile; natural stone; vinyl composition tile (VCT); cement; cement and epoxy terrazzo; and epoxy-based moisture barriers
- Properly installed cement backer units
- Durable, sound, stable and fully cured cement-based mortar beds
- Engineer-approved plywood or oriented strand board (OSB) subfloors in accordance with the most recent edition of the TCNA's F185 specification. Before a NAA underlayment is applied over plywood flooring, ASTM C847 specifications for finished flooring, load, use and/or deflection may require a synthetic lath or an appropriate diamond mesh on top of the primed surface.
- Existing nailed-down wood flooring (including plank wood subfloors, strip wood subfloors and nailed-down solid wood flooring) that has been covered over with at least one layer of 5/8" (16-mm) plywood, glued and screwed
- Gypsum-based underlayments (refer to NAA Technical Bulletin "Gypsum-Based Floors and Walls: Which NAA Products Can Be Applied?" at www.na-adhesives.com).

See NAA's "Surface Preparation Requirements" document at www.na-adhesives.com.

LIMITATIONS

- Not for use in exterior applications
- Do not mix with other self-leveling underlayments.
- Do not install over flooring products, over adhesives or over substrates containing asbestos.
- Do not use as a final wear surface. *NA 450* must be covered with a finished floor system.
- Install *NA 450* in temperatures between 50°F and 85°F (10°C and 29°C). If the product must be installed in temperatures above 85°F (29°C), follow American Concrete Institute (ACI) hot-weather application guidelines to ensure a successful installation.
- Do not install over moving control joints (with active cracks) or over expansion joints.
- If the substrate has a moisture vapor emission rate (MVER) exceeding 5 lbs. per 1,000 sq. ft. (2,27 kg per 92,9 m²) per 24 hours using a calcium chloride test (reference ASTM F1869), and a relative humidity (RH) reading

greater than 80% (ASTM F2170), use an epoxy moisture barrier. All components in the flooring system (primers, levelers, membranes, setting materials, adhesives and the flooring itself) should be considered regarding the maximum allowable MVER and/or RH. Consult Technical Services for product recommendations.

- Do not install *NA 450* over sheet vinyl or self-stick vinyl tile; luxury vinyl tile (LVT) or luxury vinyl plank (LVP); glue-down wood flooring; particleboard; hardboard (Masonite); Luan panels; crack-isolation or sound-control membranes; gypsum-based patching materials; or any other nondimensionally stable materials.
- Do not install if the maximum allowable deflection of the supporting surface exceeds L/360 (or L/720 for installations involving natural stone or their agglomerates) when exposed to live or dead loads.

MIXING

Consult the Safety Data Sheet for safe-handling instructions.

General mixing

1. Mix water and *NA 450* powder at a mixing ratio of 5.75 to 6 U.S. qts. (5,44 to 5,68 L) of water per 50-lb. (22,7-kg) bag of powder.
2. Measure and pour the required amount of cool, clean potable water for the number of bags to be mixed into a clean mixing vessel (mixing barrel or plastic pail measuring 5 U.S. gals. [18,9 L]). For best results, the water temperature should be at about room temperature (70°F [21°C]). The mixing ratio must remain consistent; do not overwater the *NA 450* material.
3. Slowly add the *NA 450* powder into the pre-measured water. Use a high-speed drill and an oval paddle mixer to mix the *NA 450* to a homogenous, lump-free consistency. Continue to mix accordingly for 2 to 3 minutes. Do not overmix. Overmixing or moving the mixer up and down during the mixing process could trap air or cause pinholing during the application and curing process.

Pump mixing

1. *NA 450* can be mechanically mixed with a continuous mixer and pump (and at least 140 feet [42,7 m] of hose), or with a batch mixer and pump (and at least 110 feet [33,5 m] of hose). Mix at a ratio of 5.75 to 6 U.S. qts. (5,44 to 5,68 L) of water per 50-lb. (22,7-kg) bag of powder. Periodic cleaning of pumping equipment may be required per the manufacturer's instructions. Use a mesh screen "sock" at the end of the hose to catch any foreign material that may have fallen into the hopper during mixing. To ensure a suitable mix and flow, test the mixed material from the pump hose's end in a small test area before general application.



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APPLICATION

1. Concrete substrates and ambient room temperatures should be maintained between 50°F and 85°F (10°C and 29°C) during application as well as for 72 hours before and after application.
2. Before product installation, close doors and windows and turn off HVAC systems to prevent drafts during application and until the underlayment is cured. Protect areas from direct sunlight.
3. Quickly pour or pump *NA 450* onto the properly prepared and primed surface in a ribbon pattern. Set the width of the pour at a distance that is ideal for maintaining a wet edge throughout placement. If a wet edge cannot be maintained, reduce the width of the pour. For best results, work as a team to provide a continuous flow of wet material to avoid trapping air or creating a cold joint. Apply enough material to adequately cover all high spots.
4. Shortly after placing the *NA 450*, use a gauge rake to spread the material and assist in gauging it to the desired depth. After achieving the desired depth, use a smoother to obtain an even surface.
5. *NA 450* may be extended with aggregate for pours up to 4" (10 cm) in total thickness. Note: Use only clean, washed, dry, stable aggregates. Do not use limestone or other potentially reactive aggregates for extension.

Pre-place aggregate method: Use clean, washed, dry, nonreactive aggregate or pea gravel measuring 1/8" to 3/8" (3 to 10 mm) in diameter. Pre-place the aggregate/gravel over the primed surface at no more than half of the total pour depth. Pour *NA 450* over placed aggregate, and rake aggressively to ensure full contact and bond with the substrate. If a second layer is needed, wait 24 hours, prime and pour again without aggregate. The maximum total thickness is 4" (10 cm).

Mix-in aggregate method: Alternately, up to 30% by weight in aggregate can be added directly to *NA 450* during mixing. Then, immediately pour an additional 1/4" (6 mm) of *NA 450* over the raked aggregate to provide a smooth, level surface. If a second layer is needed, wait 24 hours and then prime and pour again without aggregate. The maximum total thickness is 4" (10 cm).

6. If applying a second coat of *NA 450*, wait 24 hours after the first pour to use an appropriate NAA primer.

CURING

- *NA 450* is self-curing; do not use a damp-curing method, or curing and sealing compounds.
- Cool-weather conditions may extend cure and set times. Warmer weather conditions may accelerate working, cure and set times.

CLEANUP

- Wash hands and tools with water promptly before the material hardens. Cured material must be mechanically removed.

PROTECTION

- Protect *NA 450* from direct sunlight, excessive heat and drafty conditions during curing. Turn off all forced ventilation and radiant-heating systems, and protect the installation for up to 24 hours after completion.
- Avoid walking on the installed surface for at least 2 to 3 hours after installation, depending upon temperature and humidity conditions.
- Protect the installation from traffic, dirt and dust from other trades until *NA 450* is completely cured and final flooring has been installed.
- Do not expose *NA 450* to rolling dynamic loads, such as fork lifts or scissor lifts, for at least 72 hours after installation.

Product Characteristics	
at 72°F (22°C) and 50% relative and ambient humidity	
Color	Taupe
Packaging	Film bag: 50 lbs. (22,7 kg)
Physical state	Powder
Single-lift application range	Featheredge to 2" (5 cm)
Density when cured	About 128 lbs. per cu. ft. (2,06 kg per L)
pH	11
Pot life	10 minutes
Flow time	Up to 15 minutes
Time before allowing foot traffic	2 to 3 hours
Time before installing tile and stone	3 to 4 hours
Drying time before installing moisture-sensitive (carpet, vinyl and wood flooring) floor coverings	16 to 24 hours
VOCs (Rule #1168 of California's SCAQMD)	0 g per L
Shelf life	1 year in original bag in a dry, heated and covered area

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Laboratory Tests	Results
Compressive strength – ASTM C109 (CAN/CSA-A5)	
1 day	> 2,000 psi (13,8 MPa)
7 days	> 3,100 psi (21,4 MPa)
28 days	> 4,100 psi (28,3 MPa)
Flexural strength – ASTM C348	
1 day	> 570 psi (3,93 MPa)
7 days	> 850 psi (5,86 MPa)
28 days	> 1,070 psi (7,38 MPa)
Pull-out strength (Direct Tensile Bond test – rupture in concrete substrate) (CAN/CSA-A23.2-6B)	
28 days	> 360 psi (2,48 MPa)

Approximate Coverage* per 50 lbs. (22,7 kg)	
Thickness	Coverage
1/8" (3 mm)	48 sq. ft. (4,46 m ²)
1/4" (6 mm)	24 sq. ft. (2,23 m ²)
1/2" (12 mm)	12 sq. ft. (1,11 m ²)
3/4" (19 mm)	9 sq. ft. (0,83 m ²)
1" (2,5 cm)	6 sq. ft. (0,56 m ²)
2" (5 cm)	3 sq. ft. (0,28 m ²)

* Coverage shown is for estimating purposes only. Actual jobsite coverage may vary according to substrate conditions, type of equipment, thickness applied and application methods used.

CSI Division Classification	
Cast Underlayment	03 54 00

Industry Standards and Approvals	
LEED v4 Points Contribution	LEED Points
Health Product Declaration (HPD)**	Up to 2 points

** Using this product may help contribute to LEED certification of projects in the category shown above. Points are awarded based on contributions of all project materials.

RELATED DOCUMENTS	
Reference Guide: "Surface-Preparation Requirements for Self-Leveling Underlayments"	RG1016***
Product Selection Guide: "Primers for Self-Leveling Materials"	RG1116***

*** At www.na-adhesives.com

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.**