

APAC™

40

Self-Leveling Underlayment

DESCRIPTION

APAC 40 is a regular-setting, high-strength, self-leveling cement-based underlayment and repair mix for interior concrete and engineer-approved floors that are to later receive tile, stone or other flooring-covering materials.

FEATURES & BENEFITS

- Install from 1/8" to 1" in a single lift
- Provides a smooth, level surface to receive a variety of floor-covering materials
- Ready for tile or stone in 24 hours
- Ready for carpet, vinyl sheet goods and engineered wood plank after 2 to 3 days
- Compatible with a wide variety of floor-covering adhesives, epoxy adhesives, polyurethane adhesives, and cement-based tile and stone installation mortars

USES

For leveling, smoothing and repairing interior floors before installing various floor coverings

AREAS OF USE

- Residential (apartments, condominiums and houses)
- Commercial (office buildings, hotel rooms and hallways, restaurant dining areas, and retail stores)
- Institutional (schools, libraries, government buildings, hospitals and universities)
- Heavy commercial (airports, convention centers and lobby areas)

RECOMMENDED SUBSTRATES

- Fully cured concrete (at least 28 days old and free from hydrostatic pressure); and concrete substrates must have tensile strength of at least 175 psi.
- Group 1 exterior-grade plywood, that is properly bonded, and free from dirt and dust – typically 2 layers of 11/16" to 3/4" thick – meeting a minimum deflection criteria of L/360 before installing leveler for ceramic tile versus L/720 for natural stone (both with live and dead loads considered). Always refer to the manufacturer's instructions and respect deflection requirements of the finished floor system. All such installations must be primed with a proper APAC primer, and then reinforced with well-secured diamond mesh to ensure mechanical bond (first apply primer, attach diamond mesh meeting ASTM C847-04 and then pour self-leveling underlayment). Note: In applications over wood, the user can expect hairline cracking on wood joints.
- Other recommended substrates include properly prepared: cement backer units (CBUs), gypsum-based underlayments, leveling coats,

ceramic tile, vinyl composition tile (VCT), cement or epoxy terrazzo, and concrete with thin layers of old cutback adhesive residue that are well-bonded and dimensionally stable. All surfaces must be properly primed with a compatible primer before installing *APAC 40*.

- Contact Technical Services for installation recommendations regarding substrates or conditions not listed.

LIMITATIONS

- *APAC 40* is for installation and long-term use in dry, interior areas only.
- Do not install on substrates with an MVER exceeding 5 lbs. per 1,000 sq. ft. per 24 hours using a calcium chloride test (ASTM 1869).
- Do not install *APAC 40* over particleboard, chipboard, oriented strand board (OSB), Masonite, Lauan, metal, asbestos, gypsum-based patching materials or any other dimensionally unstable materials.
- Always install several correctly located test areas to ensure compatibility, bond strength and performance of the complete flooring system.
- Do not apply primer over standing water.
- All substrates must be primed with an appropriate APAC primer – *APAC 20* or *APAC 31*, depending on substrate type (see Technical Information Sheets for more information).

SURFACE PREPARATION

All substrates must be indoor, properly prepared, structurally sound, stable, solid and free of any substance (concrete sealers, curing agents, existing adhesive, dirt, wax, tar, paint, loose toppings, etc.) that might impair bond to substrate. If such substances are present, mechanically remove them. Concrete substrate and ambient room temperatures must be between 50°F and 95°F before application. Temperatures must be maintained within this range for at least 72 hours after the installation of *APAC 40*. In cooler conditions, use indirect auxiliary heaters to maintain ambient and substrate temperatures within the required range. For temperatures above 85°F, follow ACI hot-weather application guidelines to ensure a successful installation.

1. Concrete surfaces must be mechanically profiled and prepared by shotblasting, sandblasting, waterjetting, scarifying, diamond-grinding or other engineer-approved methods (reference ICRI CSP #3 standards for acceptable profile height).
2. Any other approved surfaces to receive *APAC 40* must also have a surface profile of at least ICRI CSP #3 or greater.
3. Fill in deep areas, holes and cracks with appropriate concrete restoration materials, especially when installing on a second-story floor or above where fluid material could leak to a floor below (contact Technical Services for details).
4. After making repairs, always prime the final surface that is to receive *APAC 40* with an appropriate APAC primer first.

5. Allow appropriate APAC primer to dry completely to a semi-transparent film, with no milky-wet spots, before installing *APAC 40*.
6. Some mechanically prepared substrates may be more porous than others. For porous concrete, “double-prime” the surface with *APAC 20* (see Technical Information Sheet for details).
7. Before installation, close doors and windows, and turn off HVAC systems to prevent drafts during application and until floor is cured. Protect areas from direct sunlight.
8. After cleaning and mechanically profiling the substrate, test for moisture vapor emission rate (MVER) using calcium chloride test reference ASTM F1869. When using *APAC 40* as an underlayment with other finished floor systems (such as resilient, VCT and ceramic), always follow manufacturers’ recommendations regarding maximum allowable moisture content and retained moisture content in the substrate before installation. Refer to the “Recommended Substrates” section for details regarding MVER conditions and treatments. Note: The maximum allowable MVER is always determined by the complete system installed, including primers, underlayments/ toppings, floor coverings and sealers.

The wide variety of substrate conditions, floor coverings and adhesives available requires careful analysis of the intended final floor use, as well as compliance with each manufacturer’s recommendations for MVER, retained moisture content and adhesive selections.

MIXING

Note: Choose all appropriate safety equipment before use. Refer to Material Safety Data Sheet (MSDS) for more information.

General Mixing

1. Pour 5 to 5.28 U.S. qts. of cool, clean potable water into a clean mixing container. If water supply is not cool, chill water to 70°F.
2. Add 50 lbs. of *APAC 40* powder while slowly stirring. The water/powder ratio must remain consistent. Do not overwater material.
3. Mix using a high-speed drill mixer (at about 800 rpm) to a homogenous, lump-free consistency (about 1-1/2 to 2 minutes).

Barrel Mixing

Using the appropriate water/powder ratio above, use a high-speed mixer (about 1,100 rpm) with an “egg-beater” mixing paddle. Typically, this procedure involves 2 bags of *APAC 40* with the correct water ratio referenced above per bag. Mix to a homogenous, lump-free consistency (about 2 minutes). Do not overmix or entrap air, which will shorten the working time or cause pinholing during application and curing.

Continuous Mixer and Pump

APAC 40 can be mechanically mixed – using a mixing ratio of 5 to 5.28 U.S. qts. per 50 lbs. of powder – with a continuous mixer and pump (with at least 140 ft. of hose) or with a batch mixer and pump (with at least 110 ft. of hose). Mixer and pump must be in good working condition. Periodic cleaning of pumping equipment is required per the manufacturer’s instructions. Be sure to pressure-test the rotor and stator for proper mixing. Use a mesh screen “sock” at the end of the hose to catch any foreign material that could enter the hopper of the mixer. Apply to a small test area before general application to ensure a successful installation.

Note: Cool-weather conditions can require longer mixing or additional hose length to ensure the best product performance.

INSTALLATION

Read all installation instructions thoroughly before installation.

1. Before applying *APAC 40*, ensure that substrate is properly prepared and primed with *APAC 20* (for porous substrates) or *APAC 30* (for smooth substrates). See respective Technical Information Sheets for details.
2. Before application, test all installation materials on a small sample area to ensure desired results.
3. Application of *APAC 40* over large areas can be made easier and more efficient by using conventional piston, rotor-stator or underlayment type pumps (contact Technical Services for recommendations).
4. For best results, work as a team to provide a continuous flow of wet material to avoid trapping air or creating a cold joint.
5. Set the width of the pour at a distance that is ideal for maintaining a wet edge throughout placement. Quickly pour or pump *APAC 40* onto the properly prepared and primed surface in a ribbon pattern. If a wet edge cannot be maintained, reduce the width of the pour.
6. *APAC 40* has an approximate flow time of 15 minutes at 73°F, is self-leveling and can be applied from 1/8" to 1" in a single application. Temperature and humidity affect the working time, flowability and setting time. Apply enough material to adequately cover all high spots.
7. Immediately after placing *APAC 40*, spread with a gauge rake. After achieving desired depth, smooth surface with a smoother to obtain an even surface. Do not overwork material, which could trap air.
8. Applications of greater depths (more than 1") and in cooler temperatures may require extra curing time before installation of covering surfaces.
9. *APAC 40* may be extended with 1/4" to 3/8" of clean, saturated surface-dry (SSD) aggregate on the primed surface at no more than half of the total pour depth. Pour *APAC 40* over placed aggregate and rake aggressively to ensure full contact and bond with substrate. Immediately pour 1/4" of *APAC 40* over the raked aggregate to provide a smooth, level surface. Alternately, one may add aggregate (up to 30% by weight) directly to the *APAC 40* when mixing; in this case, add the aggregate after reaching a homogenous mix of *APAC 40* and water. Note: Use only clean, nonreactive aggregates.
10. Wash hands and tools with water promptly before material cures.

EXPANSION AND CONTROL JOINTS

- Provide for expansion and control joints where specified, including the perimeter of the room, columns, supports and equipment pedestals. If control and expansion joints do not exist in the substrate, provide for them in the system.
- Do not bridge substrate expansion and control joints. Ensure that such joints are honored completely through *APAC 40*.
- Cut joints in *APAC 40* at least 1/4" wide within 24 hours of placement.

PROTECTION

- *APAC 40* is self-curing; do not use a damp-curing method, or curing and sealing compounds.
- Protect *APAC 40* from excessive heat or draft conditions during curing. Turn off all forced ventilation and radiant-heating systems. Protect for up to 24 hours after completion. Avoid walking on installed surface for at least 24 hours after installation, depending on temperature and humidity conditions. Protect installation from traffic, dirt and dust from other trades until *APAC 40* has completely cured and the final flooring

has been installed. Do not expose APAC 40 to rolling dynamic loads, such as forklifts or scissor lifts, for at least 72 hours after installation. APAC 40 hardens and is ready to accept installation of ceramic tile and natural stone in 24 hours. Suitable floor coverings – such as carpet, vinyl sheet goods, vinyl tile, VCT, homogenous PVC, rubber and engineered wood plank – can be installed 2 to 3 days after application. Protect the surface from contaminants until the final flooring installation is complete.

TYPICAL TROWELS AND APPROXIMATE COVERAGES*

per thickness for a 50-lb. bag

1/8" = 48 sq. ft.

1/4" = 24 sq. ft.

1/2" = 12 sq. ft.

1" = 6 sq.ft.

** Coverages shown are for estimating purposes only. Actual coverage is affected by substrate condition and application method.*

TECHNICAL DATA

Physical state	Powder
Color	Gray
Shelf life	6 months in original bag, in dry, heated and covered place
Flammability	Flame spread: 0
	Fuel contribution: 0
	Smoke development: 0
Installation thickness range (single lift)	1/8" to 1"
Storage conditions	50°F to 95°F
Mixing ratio	5 to 5.28 U.S. qts. of water per 50 lbs. of powder
Application temperature range	50°F to 95°F
Working time	15 minutes
Final set	4.5 hours
Time required before installing tile or stone	24 hours
Time required before installing impervious floor covering (vinyl sheet goods, vinyl tile, VCT, rubber, etc.)	2 to 3 days
Compressive strength (ASTM C109 [CAN/CSA-A5])	
1 day	> 1,250 psi
7 days	> 2,700 psi
28 days	> 4,200 psi
Flexural strength (ASTM C348)	
1 day	> 500 psi
7 days	> 850 psi
28 days	> 1,050 psi
Pull-out strength (Direct Tensile Bond test – rupture in concrete substrate) (CAN/CSA-A23.2-6B)	
3 days	> 260 psi
7 days	> 300 psi
28 days	> 350 psi

Note: Protect containers from freezing in transit and storage. Provide for heated storage on site and deliver all materials at least 24 hours before work begins.

PACKAGING

Product Code	Size
17850221	Bag: 50 lbs. (22,7 kg)

Before using, user shall determine the suitability of the product for its intended use and user alone assumes all risks and liability whatsoever in connection therewith. **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.**

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