

APAC™

Surface Preparation Requirements

Reference Guide ARG0211

JOBSITE EXAMINATION

Before work commences, examine the areas to be repaired and/or covered and report any deficiency or adverse condition in writing to the general contractor, owner, developer, designer, architect or engineer. Do not proceed with the work until surfaces and conditions comply with the requirements indicated in the manufacturer's written instructions; applicable industry standards; federal, state, provincial and local regulations; and good work practices. By beginning work, the applicator/user acknowledges that the conditions are acceptable for installation.

JOBSITE CONDITIONS

Building owners should be advised of the flooring manufacturer's guidelines for climate control settings (temperature and humidity). These conditions must be maintained and kept constant in order to ensure the overall performance and long-term success of the installation. Refer to the written installation instructions from the flooring manufacturer as well as individual APAC product Technical Information Sheets. Do not install flooring in areas or with conditions not recommended by the flooring manufacturer or not recommended by APAC.

USE A TOTAL APAC SYSTEM

All APAC products are produced in the highest quality according to rigid quality-control standards. Because APAC has no control of changes in formulation and/or manufacturing procedures of non-APAC-brand products, we cannot assume responsibility for the suitability and/or compatibility of our products used in conjunction with these other brands. Using a total APAC installation system, including recommended APAC adhesives in conjunction with recommended APAC-brand surface preparation products, ensures compatibility that will ultimately result in a reliable, long-term, successful installation.

SURFACE PREPARATION

1. General

1.1 All substrates must be structurally sound, dry, solid and stable. The substrate should be clean and free of dust, dirt, oil, grease, wax, paint, curing compounds, concrete sealers, loosely bonded toppings, old adhesive residues (unless otherwise recommended by APAC), moss, algae growth and any other substance that may prevent or reduce adhesion.

1.1.1 Mechanically abrade and clean the substrate to completely remove any bond-inhibiting contaminants or conditions.

Note: Chemical removal methods including but not limited to acid-etching is not recommended.

1.1.2 **Warning:** Do not install over vinyl asbestos tile (VAT) or any flooring, substrate or substance that may contain asbestos. Do not install over any adhesives, including asphalt cutback residue, that may have been used to install flooring containing asbestos. Do not sand or remove any existing resilient floors or cutback

adhesive that contains asbestos fibers or crystalline silica. For removal instructions, refer to the Resilient Floor Covering Institute's Recommended Work Practices. Follow all local, state and federal regulations and industry standards when mechanical removal is required.

- 1.2 All substrates must be plumb and flat to a tolerance in plane of 1/8" (3 mm) in 10' (3,05 m) for floors and 1/8" (3 mm) in 8' (2,44 m) for walls. Refer to the flooring and/or wall-base manufacturer's guidelines.
- 1.3 Imperfections and irregularities (holes, voids, bumps, cracks, depressions, etc.) must be corrected, and surfaces must be smooth, level, flat and even before the application of APAC adhesives. Consult Technical Services for product recommendations. Refer to most current Technical Information Sheets for details.
- 1.4 Maintain environmental conditions throughout the installation process. Refer to the written installation instructions from the floor-covering manufacturer and appropriate APAC Technical Information Sheets for recommended application temperature range.
- 1.5 Turn off all forced ventilation (turbo fans and floor fans) and floor-heating systems before installation, and protect work against drafts during installation and for at least 72 hours after completion to prevent damage to substrates, installation products and flooring materials.
- 1.6 Always refer to the flooring and/or wall-base manufacturer's guidelines regarding site conditions, surface preparation requirements, acceptable underlayments and proper conditioning of flooring material. In addition, refer to the correlating industry standard(s) such as CRI #104 – Standard for Installation of Commercial Carpet, CRI #105 – Standard for Installation of Residential Carpet, RFCI (Resilient Floor Covering Institute) – Recommended Installation Practice for Vinyl Composition Tile (VCT), RFCI (Resilient Floor Covering Institute) – Recommended Installation Practice for Homogeneous Sheet-Flooring Fully Adhered, and NWFA (National Wood Flooring Association) – Installing Engineered and Solid Hardwood Flooring.
- 1.7 All recommendations and guarantees regarding any material used as a substrate for flooring are the sole responsibility of the manufacturer of said underlayment material. Suitability of any substrate to receive adhesive and flooring products should always be tested in an inconspicuous location before complete installation.

2. Concrete (General)

- 2.1 The specific composition of the concrete should be in accordance with the guidelines and practices of American Concrete Institute (ACI) standards. The concrete should have a density of at least 100 lbs. per cu. ft.
- 2.2 Concrete must be installed over an acceptable and effective vapor barrier per industry standards. (This recommendation refers to on-grade and below-grade concrete slabs.) This barrier must be resistant to deterioration as well as to puncture during construction, and must remain intact and continuous.

- 2.3 Perform several alkalinity tests; pH levels between 5 and 9 are satisfactory according to industry standards. Correct areas that are below or above the range. Consult Technical Services for product recommendations for correcting pH levels outside the range. Refer to Technical Information Sheets for details.
- 2.4 Concrete slabs with high concentrations of fly ash in the mix may not be compatible with APAC products. When the mix design of the concrete contains fly ash as filler, it is recommended to perform a jobsite mockup to confirm compatibility and bond strength before proceeding with the installation.
- 2.5 Due to the varying porosity of steel-troweled concrete, a bond test should be performed to ensure adequate bond. If an adequate bond is not achieved, the concrete floor should be scarified.
- 2.6 Consult ASTM F710 for more information about standard practice for preparing concrete floors to receive resilient flooring.
- 2.7 Concrete slabs have the tendency to expand, contract, shift and move due to curing, temperature changes, seasonal changes, ground settlement, heavy loads, vibration and the earth's natural forces. When dealing with existing cracks and joints, consult with an experienced engineer to determine appropriate substrate repair procedures and joint treatment. APAC does not warrant against concrete slab movement or against moisture coming up through cracks and joints.
- 2.8 When applying APAC self-leveling underlayments over concrete, honor all expansion and movement joints. Provide additional expansion joints where specified, including but not limited to the perimeter of the room, columns, supports and equipment pedestals. Do not bridge expansion or moving joints. Ensure that such joints are honored completely through primer and leveling system.

3. Concrete Moisture Testing

- 3.1 All concrete substrates must be fully cured and free of any hydrostatic pressure.
- 3.2 All concrete slabs should be tested for moisture. There are two industry-accepted methods used to evaluate the presence of moisture in concrete slabs: the Calcium Chloride Test Method and the RH (Relative Humidity) Moisture Probe Test Method.

Note: Pin meters commonly used to measure the moisture content of wood flooring are not acceptable tools for qualifying a concrete slab to receive any type of flooring. Also, it is recommended to survey jobsite conditions around the exterior of the building; consider whether foundation plantings, mulch beds, sprinkler systems, gutters and drainage issues may cause seasonal moisture problems or sporadic elevated moisture conditions inside the building.

- 3.2.1 Calcium Chloride Test Method (ASTM F1869) – Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride. When using the Calcium Chloride Test Method, if the concrete slab measures more than 3 lbs. per 1,000 sq. ft. per 24 hours, APAC also recommends the RH Moisture Probe Test Method. Follow the most current instruction set forth by ASTM F2170.
- 3.2.2 RH (Relative Humidity) Moisture Probe Test Method (ASTM F2170) – Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in Situ Probes. When using the RH Probe method, if the concrete slab measures more than 75% RH, APAC also recommends a calcium chloride test. Follow the most current instruction as set forth by ASTM F1869.
- 3.3 All components in the flooring system (primers, levelers, patching compounds, adhesives and the flooring itself) should be referenced for maximum allowable MVER and/or % of RH.
 - 3.3.1 Consult individual APAC product Technical Information Sheets regarding maximum allowable MVER and RH for all APAC products.

- 3.3.2 Refer to the flooring manufacturer's written instructions for moisture limits of the flooring material.

- 3.4 Use an APAC moisture treatment product or moisture reduction barrier to treat concrete slabs with moisture issues. Consult Technical Services for product recommendations. Refer to Technical Information Sheets for details.

4. Chemically Treated Concrete

Concrete slabs that have been chemically treated to aid in the removal of floor coverings and adhesives during asbestos abatement procedures may contain chemical residues. These slabs should be mechanically abraded to remove all remaining contaminants. Typically this can be achieved by ensuring that at least 1/8" thickness of the top layer of the concrete is completely removed.

5. Concrete Tilt-up Construction

- 5.1 The use of bond-breaking coatings is common in tilt-up construction. These coatings are designed to create a non-stick surface to facilitate placement of concrete panels. Even when these bond breakers are exposed to rain and water, a slick, water-resistant, non-porous residue will often remain. This residue will prevent the proper adhesion of APAC products. For this reason, all bond-breaking coatings must be thoroughly removed. Follow the coating manufacturer's written instructions for proper cleaning and removal procedures.
- 5.2 Perform a bond test to ensure total elimination of the bond breaker before proceeding with the installation.

6. Gypsum-Based Concrete, Gypsum-Based Underlayments/Levelers

- 6.1 Gypsum substrates must be clean, dry, fully cured and must meet the requirements for compressive strength according to ASTM F2419.
- 6.2 Perform thorough moisture testing for all gypsum-based substrates using an appropriate moisture meter as specified by the manufacturer of the gypsum product manufacturer. Follow all instructions of the meter manufacturer to ensure accurate readings. Test readings must fall within the acceptable range according to gypsum product manufacturer based on the type of flooring chosen for the installation. Do not proceed with the installation if test readings are beyond the guidelines stated by the gypsum-based concrete or gypsum-based underlayment/leveler manufacturer.

Note: Anhydrous Calcium Chloride Tests (ASTM F1869) will not work on gypsum-based concrete or gypsum-based underlayments/levelers.

- 6.3 Prime all gypsum substrates with *APAC V-Block™* or 2 coats of diluted *APAC 31* primer (dilute *APAC 31* at a ratio of 1 part primer to 2 parts water).

Note: Unprimed gypsum substrates may leave a dusty residue on the surface and have a slightly higher porosity factor that could affect the adhesive's open time and weaken the adhesive bond. A complete floor-installation failure may occur if the substrate is not properly primed before the floor installation.

7. Heated Floors

- 7.1 Install electric and hydronic radiant-heat systems in strict accordance with the written instructions of the radiant-heat system manufacturer.
- 7.2 Turn off radiant-heat systems 72 hours before installation of APAC products. Wait 72 hours after the installation before turning on the system.
- 7.3 To avoid damage to the installation products and floor covering, the operating temperature of the heated floor must not exceed 85°F.
- 7.4 Consult the floor-covering manufacturer for approval before installation over heated floors.

7.5 When using APAC self-leveling underlayments or concrete repair products to encapsulate radiant-heat systems, consult Technical Services for product recommendations. Refer to Technical Information Sheets for details.

8. Plywood (General)

- 8.1 All wood underlayments must be recommended and guaranteed by either the wood underlayment manufacturer or the floor-covering manufacturer. Such underlayments include APA-rated Group 1 exterior-grade plywood, CC-plugged or better conforming to U.S. Product Standard PS 1-95, or COFI-classified SELECT or (SEL-TF) exterior-grade plywood conforming to the CSA-0121 standard for Douglas fir.
- 8.2 Presswood, chipboard, flakeboard and similar types of dimensionally unstable materials are not acceptable substrates for the installation of APAC's surface preparation products and adhesives. APAC products may be used over underlayment-grade particleboard, underlayment-grade Luan plywood, and oriented strand board (OSB) under specific conditions – when recommended by APAC as a substrate with particular surface preparation products and adhesives, and when approved by the floor-covering manufacturer. Follow the floor-covering manufacturer's recommendations regarding acceptable wood underlayments.
- 8.3 Plank board or stripwood subfloors must be covered over with at least one layer of plywood (at least 5/8" thick), which must be properly fastened according to industry standards.
- 8.4 Plywood surfaces must be installed with the smooth side facing up.
- 8.5 Plywood subfloors should be double-layered. The base layer should be plywood at least 5/8" thick over joist 16" on center. Follow the plywood manufacturer's recommendations regarding proper application. A second layer, a wood underlayment at least 1/4" thick, is required for all resilient sheet vinyl flooring (thicker boards may be required for commercial applications).
- 8.6 The adjacent edges of the plywood sheets should not be more than 1/32" out of plane.
- 8.7 Do not install over a subfloor that is in direct contact with the ground. The plywood must have at least 18" of cross-ventilated air space between the underside of the subfloor and the ground. Cover the ground surface of crawl spaces with a suitable vapor barrier.
- 8.8 Under no circumstances should any floor material be laid over wood underlayment or subfloors that are under conditions that might cause buckling or rotting of wood. Always replace wood subfloors or underlayments that have been subjected to water damage.
- 8.9 In any floor-covering installation, the plywood should be dry and the moisture content should not exceed the moisture content recommended by the wood and/or flooring manufacturer, generally 6% to 12% when measured with a quality wood moisture meter.

9. Self-Leveling Underlayments over Plywood

- 9.1 When applying APAC self-leveling underlayments over plywood, the plywood subfloor must consist of two layers of exterior-grade plywood (at least 5/8" or 3/4" thick per layer to equal a total thickness of at least 1-1/4").
- 9.2 The use of metal lath and an appropriate primer is also required. Consult Technical Services for primer recommendations. Refer to Technical Information Sheets for details.
- 9.3 Do not apply APAC self-leveling underlayments over plank board or stripwood subfloors, presswood, chipboard, flakeboard, Luan plywood, particleboard or OSB.

10. Cutback Adhesive Residues

- 10.1 APAC products may be used over cutback adhesive residue under specific conditions: when recommended by APAC as a substrate with particular surface preparation products, when approved by the floor-covering manufacturer, and when recommended by APAC as part of a layering system in installations of certain types of flooring with particular APAC adhesives.
- 10.2 **Warning:** All cutback adhesive should be tested for asbestos. Do not sand any cutback adhesive that contains asbestos. For removal instructions, refer to the Resilient Floor Covering Institute's Recommended Work Practices. Follow all local, state and federal regulations and industry standards when mechanical removal is required.
- 10.3 Cutback adhesive that does not contain asbestos must be fully and thoroughly scraped so that only a very thin residue remains. The top surface of the concrete or plywood should be visible through the adhesive.
- 10.4 Cutback adhesive residue by definition is the black/brown stain remaining in the concrete/plywood after all areas have been completely scraped. Consult Technical Services for surface preparation products and/or adhesive recommendations over cutback adhesive residue. Refer to Technical Information Sheets for details on APAC product suitability over properly prepared asphalt cutback residues.

11. Carpet Adhesive Residues

- 11.1 APAC products may be used over carpet adhesive residue under specific conditions: when recommended by APAC as a substrate with particular surface preparation products, and when approved by the floor-covering manufacturer.
- 11.2 Carpet adhesive must be fully and thoroughly scraped so that only a very thin residue remains. The top surface of the concrete or plywood should be visible through the adhesive.
- 11.3 Consult Technical Services for surface preparation product recommendations over carpet adhesive residue. Refer to Technical Information Sheets for details on APAC product suitability over properly prepared carpet adhesive residue.

Note: This recommendation does not apply to pressure-sensitive adhesives used for installing carpet tile such as *APAC 610*.

12. Existing Flooring

- 12.1 APAC products may be used over certain types of existing flooring under specific conditions: when recommended by APAC as a substrate with particular surface preparation products, when approved by the floor-covering manufacturer, and when recommended by APAC as part of a layering system in installations of certain types of flooring with particular APAC adhesives. Consult Technical Services for product recommendations. Refer to Technical Information Sheets for details on APAC product suitability over existing floor covering.
- 12.2 Consult the floor-covering manufacturer for approval before installation over existing flooring.
- 12.3 Existing noncushioned sheet vinyl, VCT, ceramic tile and cement terrazzo must be firmly bonded, clean, and free of dust, dirt, oil, grease, paint, wax, sealer, soap and any other substance that may prevent or reduce adhesion.
- 12.3.1 **Warning:** Do not sand or remove any existing resilient floors or cutback adhesive that contains asbestos fibers or crystalline silica. For removal instructions, refer to the Resilient Floor Covering Institute's Recommended Work Practices. Follow all local, state and federal regulations and industry standards when mechanical removal is required.

12.4 Noncushioned sheet vinyl with a vinyl or urethane wear layer must be fully adhered (not perimeter-glued) and limited to one layer only. New vinyl and vinyl with a urethane wear layer must be slightly roughened to dull the finish (60-grit sandpaper is recommended). The wear layer must remain intact, and the underlying sheet-vinyl paper should not become exposed. The area must then be vacuumed, mopped and allowed to dry completely.

12.4.1 **Warning:** Do not install over VAT or any flooring, substrate or substance that may contain asbestos. VCT must be limited to one layer only. A commercial-grade wax stripper must be used to remove any dirt, oil, grease, wax or sealer. The area must be neutralized, rinsed well with clean water and allowed to dry completely.

12.5 In cases where the existing floor covering has any type of texture (such as raised patterned residential sheet vinyl and tile/grout lines in ceramic), all indentations must be completely leveled with an APAC embossing leveler such as *APAC 50* with *APAC 51* additive in a two-coat application. Contact Technical Services for more information. Refer to Technical Information Sheets for details. It is required that the grout lines receive a thorough brush cleaning before application of an embossing leveler.

12.6 Ceramic tile and cement terrazzo must be roughened by sanding or shotblasting. The area must then be vacuumed, mopped and allowed to dry completely.

12.6.1 Remove terrazzo strips and fill with appropriate joint filler as specified by the architect or engineer. Failure to do so may result in the terrazzo strips showing through the finished flooring. Such a condition will not be acknowledged as APAC's responsibility.

12.7 Existing floor coverings not acceptable for the installation of APAC surface preparation products and adhesives include the following: self-stick tile, glass tile, linoleum, laminate, fiberglass, poured epoxy floors and other dimensionally unstable and/or nonporous materials.

13. Steel

13.1 Steel may be used under specific conditions: when recommended by APAC as a substrate for use with specific adhesives, and when approved by the floor-covering manufacturer.

13.2 Steel substrates must be rigid, solidly fixed in place, and free of paint, primer, oil and corrosion.

13.3 Consult Technical Services for adhesive recommendations over steel. Refer to Technical Information Sheets for details on APAC product suitability over steel.

14. Gypsum Wallboard (Wall-Based Installation)

14.1 Gypsum wallboard must be undamaged with paper intact.

14.2 Nonporous paints, wallpaper, vinyl wall coverings, laminates and similar nonporous surfaces must be removed. Carefully sand latex paint surfaces to remove as much of the paint as possible, without damaging the board.

14.3 Replace gypsum wallboards if they are damaged, if the gypsum core is exposed or if the paint is not latex-based.

15. Asphalt Paving

15.1 Asphalt paving may be used under specific conditions: when recommended by APAC as a substrate, when approved by the floor-covering manufacturer, and when recommended by APAC in installations of certain types of flooring with particular APAC adhesives.

15.2 Asphalt paving must be in good condition, clean and free of oil, dirt, and coatings.

15.3 Consult Technical Services for adhesive recommendations over asphalt paving. Refer to Technical Information Sheets on APAC product suitability over asphalt paving.

Contact Technical Services regarding installation of APAC adhesives and/or APAC surface preparation products over special substrates or membranes, and/or for any condition not listed above.

Refer to individual APAC product Material Safety Data Sheets (MSDSs) for additional information related to product use and safety.

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Edition Date: February 3, 2011
ARG_B11Evp
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