INSTALLATION GUIDE

AXIS PERFORMANCE SHEET VINYL — INSTALLATION GUIDE

Applies to: Axis — Performance Sheet Vinyl (closed-cell foam-backed sheet vinyl with a polyurethane surface)

SPORT PRO SURFACING

PRODUCT BASICS

- **Construction:** Sheet vinyl with a closed-cell foam backing designed specifically for gym floors, finished with a polyurethane coating that seals out dirt.
- **Overall thickness:** 6.5mm
- **Installation method:** Fully adhered glue-down, with seams heat welded

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SUBFLOOR PREPARATION

All substrates must be dry, clean, smooth, and structurally sound, and free of dust, solvent, paint, wax, oil, grease, residual adhesive, adhesive removers, curing/sealing/hardening compounds, alkaline salts, excessive carbonation/laitance, mold, mildew, and any other foreign material that could prevent the adhesive from bonding.

ALL SUBSTRATES

1. **Test for moisture.** Every substrate needs proper moisture testing before installation. Test results reflect conditions only at the time of the test. Running the tests may not be the installer's job, but confirming that they were done and that the results are acceptable is.
2. **Use compatible patching and leveling compounds.** Cementitious compounds must meet or exceed the flooring manufacturer's maximum moisture and pH requirements. Gypsum-based compounds that contain Portland or high-alumina cement and meet or exceed 3,000 psi compressive strength are also acceptable.
3. **Treat deep cracks and saw cuts.** For cracks or saw cuts deeper than 1", use a 2-part urethane treatment and follow its preparation and application instructions. It prevents moisture from reaching the slab surface and damaging adhesives or unapproved patching compounds.
4. **Bond test.** Test adhesive compatibility with the substrate before installing. A recommended pH-blocking floor primer can be used to promote adhesion.
5. **Let the other trades finish first.** Resilient flooring installation should not begin until all other trades are complete.

CONCRETE SUBFLOORS

New and existing concrete should meet the latest edition of ACI 302 and ASTM F710 (Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring).

1. **Test moisture and pH.** Test all concrete for internal relative humidity (IRH) per ASTM F2170. Maximum moisture levels: 8 lbs by calcium chloride test (ASTM F1869) and 90% in-situ relative humidity (ASTM F2170). pH must not exceed 12.0 — readings below 5.0 or above 12.0 can negatively affect the flooring and adhesive.
2. **Confirm flatness.** Concrete must be flat and smooth within 1/8" in 6 feet or 3/16" in 10 feet. Overall FF 36 / FL 20 values may be appropriate for resilient flooring.
3. **Confirm a vapor retarder.** On- or below-grade slabs must have an effective vapor retarder directly under the slab.

4. **Cure correctly.** Wet curing for 7 days is preferred for new concrete. Do not use curing compounds — they can interfere with adhesive bond. If they are present, seek help from the substrate manufacturer, and remove them 28 days after placement so the concrete can begin drying.
5. **Remove old adhesive properly.** Asphalt-based (cutback) or any other adhesive residue must be removed by industry-accepted methods such as mechanical removal or wet scraping. Solvents and citrus adhesive removers are not recommended — residue left in or on the subfloor can affect the new adhesive and flooring.
6. **After a chemical abatement,** remove residual chemicals with the recommended surface-prep cleaner, then apply one coat of the recommended protective coating.
7. **Handle joints correctly.** Never install over expansion or isolation joints — use expansion joint covers designed for resilient flooring. Control joints (saw cuts) may be patched and covered once the concrete is thoroughly cured, dry, and acclimated.

> **Warning — existing flooring and adhesives.** Do not sand, dry sweep, dry scrape, drill, saw, bead blast, or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphaltic "cutback" adhesives, or other adhesives. These products may contain asbestos fibers and/or crystalline silica, and inhaling the dust is a cancer and respiratory hazard. Unless you are positively certain a product is non-asbestos-containing, presume it contains asbestos. Regulations may require testing and govern removal and disposal. See the current Resilient Floor Covering Institute (RFCI) publication *Recommended Work Practices for Removal of Resilient Floor Coverings* (rfci.com).

LIGHTWEIGHT CONCRETE

1. **Manufacturer responsibility.** Follow the lightweight concrete manufacturer's recommendations for suitability and performance under resilient flooring. The installer of the lightweight product may be required to be manufacturer-authorized or certified. Correct on-site mixing ratios and properly functioning pumping equipment are critical, and slump testing is recommended.
2. **Density and strength.** Lightweight aggregate concretes with dry densities greater than 90 lbs per cubic foot may be acceptable. Slabs with heavy static and/or dynamic loads should be designed with higher strengths and densities.
3. **Surface condition.** The surface must be permanently dry, clean, smooth, dust-free, and structurally sound.
4. **Test.** Run a bond test, and take three internal relative humidity tests for areas up to 1,000 SF, plus one additional test for each additional 1,000 SF.

WOOD SUBFLOORS

Wood subfloors must be structurally sound and comply with local building codes.

1. **Underlayment.** Use APA underlayment-grade panels designed for installation under resilient flooring, and always follow the underlayment manufacturer's instructions.
2. **Plywood subfloors.** Double-layered APA-rated plywood subfloors should be at least 1" total thickness, with at least 18" of well-ventilated air space beneath. Insulate and protect crawl spaces with a vapor retarder covering the ground.
3. **Not recommended as-is.** Particleboard, chipboard, flake board, OSB, hardboard, and similar materials need an additional layer of 1/4" underlayment-grade panel. Fire-retardant-treated or preservative-treated plywood also needs an additional 1/4" APA-rated underlayment layer, since the treatment chemicals can interfere with adhesive bonding.
4. **Strip and plank wood floors.** Because individual boards expand and contract seasonally, install 1/4" or thicker APA-rated underlayment panels over them.
5. **Do not install** over sleeper-construction subfloors or over wood subfloors applied directly over concrete.
6. **No crumb rubber underlayments.** They are not acceptable under resilient flooring because of chemical incompatibilities.
7. **Set expectations.** Underlayment panels can only correct minor subfloor deficiencies while providing a smooth, sound surface for the flooring to adhere to.

RADIANT HEAT

Radiant-heated subfloors (concrete, wood, or a combination) are acceptable when the following are followed:

1. **Separation.** Heating system components must have at least 1/2″ of separation from the flooring.
2. **Run the system first.** The system must be on and operational for at least 2 weeks before installation to reduce residual moisture.
3. **Step down, then step up.** Lower the temperature to 65°F three days before installation. After installation, raise the temperature gradually in 5°F increments to avoid overheating.
4. **Cap the temperature.** Maximum operating temperature must never exceed 85°F. An in-floor temperature sensor is recommended. Contact the radiant system manufacturer for further recommendations.
5. **Electric systems.** When embedding cables or mats (typically in thin-set), use cementitious patching and leveling compounds that meet the flooring manufacturer's moisture and pH requirements, or gypsum-based compounds meeting the 3,000 psi requirement above.
6. **Hydronic systems.** Tubing is typically laid in channels under a wood subfloor or embedded in concrete. Follow a specific nailing pattern to avoid penetrating the heating system.

OVER EXISTING FLOOR COVERINGS

The installer/flooring contractor on site is solely responsible for determining whether existing flooring is suitable to install over. If there is any doubt, remove it or install an acceptable underlayment over it. Installations over existing resilient flooring may be more susceptible to indentation.

1. **Existing resilient flooring** must be single-layered, non-cushion-backed, fully adhered, and smooth, with no signs of moisture or alkalinity. Remove waxes, polishes, grease, grime, and oil. Repair or replace cuts, cracks, gouges, dents, and other irregularities. An embossing leveler is recommended to aid bonding and prevent telegraphing. Do not install over rubber-based substrates.
2. **Quarry tile, terrazzo, ceramic tile, and poured floors** (epoxy, polymeric, seamless) must be totally cured and well bonded to the concrete, free of residual solvents and petroleum derivatives, and free of waxes, polishes, grease, grime, and oil, with no signs of moisture or alkalinity. Repair or replace damaged areas, fill low spots, holes, chips, and seams that could telegraph, and grind highly polished or irregular surfaces. Fill grout joints and textured surfaces with an embossing leveler or substrate-manufacturer-approved material.

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ACCLIMATION & PRE-INSTALLATION INSPECTION

INSPECTION

1. **Inspect before installing.** Check all material for visual defects before installation begins.

STORAGE & HANDLING

1. **Store rolls upright.** Do not lay rolls down for long periods.
2. **Match batches.** When more than one roll of a color is being installed, all material should come from the same batch, and the rolls must be installed in consecutive order. If more than one batch is used, lay the job out so different batch numbers are not installed side by side.
3. **Keep sheets running the same direction** throughout the installation.

ACCLIMATION

1. **Acclimate for at least 48 hours.** Both the flooring and the adhesive must acclimate in the installation area for a minimum of 48 hours before installation begins.

SITE CONDITIONS

1. **Light the work area** adequately during all phases of installation.
2. **Control the environment.** Fully functional HVAC is the best way to ensure temperature and humidity control. Do not install until the work area can be temperature-controlled.

3. **Set the HVAC range.** The permanent HVAC system must be operational and set between 65°F (20°C) and 85°F for a minimum of 7 days before, during, and after installation. Once installation is complete, the temperature should not exceed 85°F.

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INSTALLATION PROCEDURE

A fully adhered installation is required. Use the recommended premium, non-staining acrylic flooring adhesive. Do not use spray adhesives, and do not use the adhesive as a pressure-sensitive adhesive — loss of adhesion can result if the flooring is not installed within the adhesive's working time.

LAYOUT & CUTTING

1. **Plan the layout.** Measure, identify, and mark a control line for the sheet installation.
2. **Keep sequence and direction.** Install all cuts and rolls in consecutive sequence, running the same direction. Never reverse sheets for seaming.
3. **Cut to length.** Cut the required length off the roll, including enough to run up the wall 2" at either end.
4. **Set the first sheet.** Push the sheet as close to the starting wall as possible, letting the extra length run up the wall at the far end, while keeping it aligned on the control line.
5. **Scribe to the wall.** Place a straight edge on top of the material along the starting wall and cut along it (a direct scribe). Pattern scribing or three-wall scribing is also acceptable. Push the fitted sheet gently to the starting wall while keeping it aligned. Then free-hand knife, pattern scribe, or direct scribe the opposite wall and the rest of the installation area. An experienced installer can typically hand-fit the material where base or trim moldings will be installed.
6. **Don't cut to full.** The material is dimensionally stable — it will not shrink or compress — so cutting to full may result in a bubble.
7. **Open sheets in width or length** as needed, but never fold them, and take care not to crease the material.

SEAMING

1. **Factory edges** may be used when seaming solid colors, provided the edges are not damaged in any way, they are laid together with uniform gaps along the entire seam length, and the gap between sheet edges is no wider than a business card is thick.
2. **Cut seams.** Seams may also be cut by straight-edging one side and under-scribing the second sheet. Never straight-edge and seam, or edge-trim and seam.
3. **Place the main seam.** Sheets can be random staggered, but the preferred layout puts one main seam at the half-court line, hidden by the center painted line. A seam line can then run perpendicular, centered off the inside-diameter center point of the basketball hoops.

ADHESIVE & BONDING

1. **Snap chalk lines.** Snap white chalk lines where adhesive will be spread to keep the adhesive line even and straight. Do not use permanent marker.
2. **Trowel correctly.** Spread adhesive with a 1/16" wide × 1/32" deep × 1/32" apart U-notched trowel only, covering the chalk line on one side and meeting up to it on the other. Adhesive spread over the chalk line must be removed.
3. **Never overlap adhesive.** Troweling new adhesive over an area already spread can telegraph through the floor. Don't leave adhesive ridges or puddles.
4. **Respect working time.** Don't let the adhesive skin over or dry — too much open time means an insufficient bond. Open and working times vary with temperature, humidity, substrate porosity, trowel size, and airflow. A bond test is recommended to determine working time for the job-site conditions and to show whether floor primer is necessary.
5. **Fold back, don't re-roll.** Do not re-roll material before gluing. Pull it back on itself instead, which makes it easier to push back into place.

6. **Lay it in carefully.** Push the flooring into the adhesive, working toward the wall. Do not flop the material in — air may be trapped, causing bubbles.
7. **Keep it clean.** Sweep or vacuum the substrate and material through the entire installation process.
8. **Flatten end joints.** Massage-curl the end joints to help them lay flat, and put weight on them while the adhesive sets up.

ROLLING

1. **Roll immediately** after the flooring is placed, using a 100 lb roller to ensure complete contact with the adhesive.
2. **Roll the seams.** Roll glued areas right away to within 6" of the seam on either side with a 3-section 100 lb roller, then roll the seam area with a hand-seam roller to bring the seam edges to equal heights.
3. **Re-roll the whole floor.** Re-roll the entire glued area with the 100 lb roller within the adhesive's working time, and continue rolling throughout the working day for a solid bond.

HEAT WELDING

Professionally heat-welded seams provide a strong, watertight, hygienic, monolithic surface. The 4 mm welding rod is designed to melt at the same temperature as the sheet flooring, thermally fusing the two together.

1. **Wait 24 hours** after installation before heat welding.
2. **Prepare the seam.** Seam edges should be slightly gapped and vertical — wide-gapped or undercut seams prevent quality welds.
3. **Cut the groove.** Use a 3.5 mm grooving tool. The groove should be 1/2 to 2/3 the thickness of the material, centered along the two edges, and not too deep. **Do not groove into the closed-cell foam backing.**
4. **Clean the groove** thoroughly of all contamination, including dust.
5. **Set up the equipment.** Use professional-quality welding equipment that maintains sufficient temperature, with a narrow 4 mm preheat tip. Preheat the gun to approximately 750°F. Long extension cords may affect the temperature setting.
6. **Practice first.** On a scrap piece, fine-tune temperature and pace. Confirm the correct welding speed by trying to pull the weld out of the groove — if the rod pulls out, adjust the temperature until it no longer does.
7. **Weld.** Keep the tip parallel to the finished floor. A small ridge must form on either side of the rod at the urethane surface. If no ridge forms, the seam has not been welded correctly.
8. **Trim in two passes.** While the rod is still warm, trim off half the excess rod with a spatula knife or Mozart skiver and trim plate in one continuous movement. Once the rod has cooled to room temperature, make the final trim pass with a razor-sharp spatula knife or Mozart skiver in one continuous movement.

If your crew isn't familiar with scribing techniques or heat welding, contact SPS for assistance (sales@spsurfacing.com, 508-816-2604).