



TECHNICAL & INSTALLATION GUIDE

Note: This Guide supercedes all printed technical materials produced for Metroflor.

<u>INSTALLATION GUIDE TABLE OF CONTENTS</u>	<u>PAGES</u>
Adhesive Application & Specification	2
Solidity PSA Adhesive Product Data	3
3500Plus Adhesive Product Data	4-5
HS-2000 Adhesive Product Data	6
EX-4000 Epoxy Adhesive Product Data	7-8
Installation, Subfloor & Underlayment Requirements	9-10
Subfloor Preparations	11-13
Installation Instructions Tile	14
Installation Instructions Plank	15
Metroflor Floor Care Products	16-18
<u>Appendix</u>	
Trouble Shooting Tips	19-22

Metroflor Product Data

R- Residential, C- Commercial, I- Industrial

All Metroflor products have a Matte Finish unless specified.

* Ceramic Finish

ADHESIVE APPLICATION & SPECIFICATIONS

PRODUCT	CONCRETE & APA APPROVED PLYWOOD	RADIANT HEATED FLOORS	NON-POROUS SUBSTRATES
3" x 36" Plank 4" X 36" Plank 6" X 36" Plank 9" X 36" Plank	3500 Plus Metroflor Solidity PSA Residential or Commercial HS-2000 Wet Set Commercial	HS-2000 Wet Set Or 3500 Plus	Metroflor Solidity PSA 3500 Plus Or EX-4000 Epoxy for Heavy Commercial
12" X 12" Tile 16" X 16" Tile 18" X 18" Tile	3500 Plus Metroflor Solidity PSA Residential or Commercial HS-2000 Wet Set Commercial	HS-2000 Wet Set Or 3500 Plus	Metroflor Solidity PSA 3500 Plus Or EX-4000 Epoxy for Heavy Commercial
Solidity Tile & Plank Tru-Tile	Metroflor Solidity PSA Only	Metroflor Solidity PSA Only	Metroflor Solidity PSA Only
Tru-Woods	Metroflor Solidity PSA Only	Metroflor Solidity PSA Only	Metroflor Solidity PSA Only
Combination Tile & Plank	3500 Plus Metroflor Solidity PSA Residential or Commercial HS-2000 Wet Set Commercial	HS-2000 Wet Set Or 3500 Plus	Metroflor Solidity PSA 3500 Plus Or EX-4000 Epoxy for Heavy Commercial

IMPORTANT TIPS:

- All Concretes (old or new) should be tested for possible moisture.
- Underlayments should be APA underlayment grade. Use only Portland-Cement base patching and leveling compounds.
- Room temperature should be between 65° and 85 ° Fahrenheit. Maintain proper temperature for 48 hours before and after installation.
- Materials and Adhesive should be allowed to acclimate for a minimum of 24 to 48 hours.
- Use only the appropriate Metroflor Adhesive.
- All installations must be rolled with a minimum 100 lb roller.
- Any variance from this chart needs to be approved by Metroflor Customer Service

The same installation guidelines will apply for our Self-Stick tile, except for the adhesive.

The Self-Stick products do not need additional adhesive.

Self-Stick Tiles are not warranted for use over radiant heated floors.

If tiles and plank products are to be installed as a combination, it is imperative to make sure that these products are of the same gauge.

**METROFLOR SOLIDITY SUPER PSA
PRODUCT DATA SHEET**

SPECIFICATION:

Base	Synthetic Acrylic Latex
Color/Consistency	Creamy White / Creamy Paste
Coverage	Approximately 160 sq.ft. per gal over porous and non-porous sub-floors using a 1/16" Sq. notch trowel.
Working Time	2 Hours after adhesive turns dry to the touch.(clear)
Packaging/#	1 gallon buckets (MSS-Solidity), 4 gallon pails (MSS-Solidity G)
Shelf Life	One year unopened in original container
Solvent	Water
Storage	Freeze/thaw stable to 0° F. However, freezing can inhibit adhesive Performance. Avoid very low temperatures and frequent freeze/thaw cycles.
Weight	8½ lbs per gallon
VOC	Zero calculated. Non-photo chemically reactive

PRODUCT DESCRIPTION:

METROFLOR SOLIDITY SUPER PSA is a solvent-free pressure sensitive vinyl tile adhesive specifically manufactured and formulated to install Metroflor Solidity and all other Metroflor Luxury Vinyl Tile and Planks on both porous and non-porous floors. METROFLOR SOLIDITY SUPER PSA provides excellent water resistance, ease of Installation and extremely high bond strength with excellent resistance to plasticizer attack.

SUBFLOOR PREPARATION:

Floor must be structurally sound, dry and free from dust, dirt, wax, paint, grease, or other contaminants. If residual adhesive is present, it must be completely scraped to the bare subfloor. Follow manufacturer recommendations when using cementitious underlayments. Use a high quality Portland cement-based patching compound to fill or level any irregularities in the subfloor. A minimum of 24 hours is recommended for full curing of leveling and patching compounds.

APPLICATION:

Installation on both porous and non-porous substrates requires, that the adhesive be spread utilizing a 1/16 x 1/16 x 1/16 square notch trowel. This Adhesive should be allowed to dry to the touch (clear) with the flooring installed immediately. Time for the adhesive to dry to the touch is approximately 45 to 60 minutes but may vary based on climatic conditions. If dry time becomes a concern on non-porous applications, the trowel recommendation can be reduced to a 1/16 x 1/16 x 1/16 V notch trowel. For tile more than 1/8th in gauge, only use a square notch trowel. The tile should be placed into the adhesive within 2 hours after dry to the touch. Place carefully and accurately because tile cannot be repositioned easily after placement. Roll each section immediately, in both directions, upon completing with a minimum 100 lb., three-section flooring roller, then Re-roll entire floor, in both directions within 1 hour. A hand roller must be used in areas that cannot be reached with a big roller. Be sure to sweep floor clean prior to rolling it. Prohibit all traffic for 24 hours after installation. **DO NOT REPLACE HEAVY FURNITURE OR FIXTURES, WASH OR WAX THE FLOOR FOR A MINIMUM OF 48 HOURS AFTER INSTALLATION.**

CLEAN UP:

Remove any excess adhesive immediately with soap and water; Dried adhesive can be removed with mineral sprits.

METROFLOR 3500 PLUS ADHESIVE
PRODUCT DATA & INSTALLATION SHEET

SPECIFICATION:

Base	Acrylic
Color	White
Consistency	Soft, Creamy
Shelf Life	One year at room temperature
Storage	Freeze-thaw stable for five cycles at 10° F. All Water based adhesives should be stored at above freezing temperatures. Multiple freeze-thaw cycles must be avoided. Freeze-thaw protection is intended to protect adhesives during winter shipments.
VOC	Solvent-Free, Non-Photochemical Reactive, Complies with SCAQMD 1168
Coverage	Porous 135-145 square feet per gallon using 1/16 x 1/16 x 1/16 square notch trowel Non-Porous 240-250 square feet per gallon using 1/16 x 1/32 x 1/32 U-notch trowel

CLEAN-UP

Remove any excess adhesive immediately with soapy water. Dried adhesive can best be removed with a non-flammable cleaner. Dried adhesive may be difficult to remove, therefore take care to remove adhesive from the surface before it dries.

LIMITATIONS

For interior installations only. Do NOT use when the substrate temperature is below 50°F (10° C) or above 90°F (32° C), or when relative humidity exceeds 65%. Do NOT apply directly over gypsum based Substrates. Apply an acrylic based primer-sealer prior to installation.

CAUTION: Use adequate ventilation. Avoid prolonged breathing of vapors. After using, be sure to wash your hands thoroughly, particularly before eating. May cause skin and eye irritation. Avoid contact with skin and eyes. Keep container closed. Thoroughly wash exposed area with soap and water. Eyes: flush with large amounts of water, lifting upper and lower lids occasionally; call a physician immediately. Ingestion: induce vomiting. Call a physician. **KEEP OUT OF REACH OF CHILDREN. Refer to material safety data sheet (MSDS) for further information.**

DESCRIPTION

Metroflor 3500 Plus Adhesive is a solvent-free acrylic adhesive manufactured for use with Metroflor Tile and Planks 1/8th inch gauge or less on both porous and non-porous subfloors. Metroflor 3500 Plus is an excellent water resistant adhesive, easy to install and has an extremely high bond strength with excellent resistance to plasticizer attack.

APPROVED SUBSTRATES

Plywood, hardboard, particleboard of underlayment quality only, lining felt, properly cured and dried concrete, cementitious terrazzo and a sound Wax-free resilient floor, VCT, birch and Luann underlayment, self leveling compound and gypcrete. Gypcrete must be sealed with an acrylic based primer-sealer before installation. (All concrete slabs must be thoroughly cured and free of curing agents, excessive alkali and moisture).

SURFACE PREPARATION

For proper results, the room, floor covering and adhesive should be a minimum of 65 °F for 24 hours before and 48 hours after installation. Area to be covered must be clean, sound, dry and free of dust, dirt, wax, oil or grease, concrete curing compounds, and any other foreign matter that would interfere with a good bond. No new floor covering can correct an uneven floor. Level any high spots, and fill all cracks, holes and minor depressions with a suitable underlayment or floor patch. Otherwise irregularities can “telegraph” through the new surface. Extremely porous and/or dusty surfaces should be primed by applying a single thin coat of an acrylic based primer-sealer with a short nap roller and allowed to dry before making final application with recommended trowel.

NOTE:

Test floor for vapor emissions in accordance with the anhydrous calcium chloride ASTM Test Method 1869-98. Vapor emissions should not exceed five pounds per 1,000 square feet in a 24-hour period.

Please make sure to determine that there are not any sealers or substances on the concrete that might prevent proper moisture testing.

Moisture may retard or prevent adhesive from setting. Also test for excess alkalinity, pH higher than 9.0 will require corrective measures.

WARNING

Do not sand, dry sweep, dry scrape, drill, saw, bead blast, or mechanically chip or pulverize existing resilient flooring backing, lining felt, asphaltic "cutback" adhesive, or other adhesives. These products may contain asbestos fibers and/or crystalline silica. Avoid creating dust. Inhalation of such dust is a cancer and respiratory tract hazard. Smoking by individuals exposed to asbestos fibers greatly increases the risk of serious bodily harm. Unless positively certain that the product is a non-asbestos-containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content. RFC's Recommended Workplace Practices for Removal of Resilient Floor Coverings are a defined set of instructions addressed to the task of removing all resilient floor covering structures.

APPLICATION

Metroflor 3500 Plus offers the ability to install 1/8th inch or less Metroflor Tile and Planks over porous and non-porous surfaces. Over porous surfaces spread adhesive with a 1/16 x 1/16 x 1/16 Square notch trowel and allow adhesive to remain open (flash-off) for approximately 10 minutes, and then install floor covering. **Always check for proper adhesive transfer on the back of the Tile or Plank in case more adhesive is needed for overly porous substrates.** Roll as you go on all flooring to ensure good bonding. Please use 150 pound roller.

For non-porous installations spread adhesive with a 1/16 x 1/32 x 1/32 U notch trowel. The adhesive is ready to accept material when there is little to no transfer of the adhesive to the fingers but is still tacky to the touch. **Material should be installed immediately at this point!** Adhesive tack time will vary depending on temperature, humidity, substrate and trowel size. Humidity above 65% will slow drying time. Temperature should be above 65°F. Roll as you go on all flooring to ensure good bonding. Please use a 100 pound roller.

Things to remember

- Subfloor must be inspected to determine porosity and moisture emissions and alkalinity tests must be done before floor prep begins. Determine if there are curing compounds or sealers that might prevent proper bonding.
- Subfloor preparation must meet industry standards. When in doubt, consult manufacturer.
- Site conditions must be climitized per floor covering manufacturer's recommendations
- Take care not to over-dry adhesive

METROFLOR ®
6590 West Rogers Circle Suite 11
Boca Raton, Florida 33487
1-866-687-6357
www.metroflorusa.com

**METROFLOR HS-2000
PRODUCT DATA SHEET**

SPECIFICATIONS:

Base	Latex
Color/Consistency	Creamy White / Creamy Paste
Coverage	Approximately 125-145 square feet per gallon using a 1/16" Sq. notch trowel.
Working Time	Approximately 20 minutes depending on humidity, subfloor temperature
Packaging	1 gallon buckets (VA-82351), 4 gallon pails (VA-82354)
Shelf Life	One year unopened in original container
Solvent	Water
Storage	Freeze/thaw stable to 15° F. However, freezing can inhibit adhesive performance. Avoid very low temperatures and frequent freeze/thaw
Weight	9½ lbs per gallon
VOC	Zero calculated. Non-photo chemically reactive

PRODUCT DESCRIPTION:

Metroflor HS-2000 is a hard set adhesive that is designed to install premium vinyl plank flooring only over porous subfloors such as unsealed plywood and concrete. It is a solvent free, nonflammable, wet set adhesive and is almost odor free. Metroflor HS-2000 is a wet set adhesive formulated with the bonding strength required for Metroflor vinyl planking. It can be used where other adhesives might present potential health risks. Metroflor HS-2000 is perfect for offices, hotels, hospitals, schools, restaurants and nursing homes. Metroflor HS-2000 has a quick grab, excellent water resistance and is easy spreading.

SURFACE PREPARATION:

The subfloor must be structurally sound, clean, smooth, dry, and free from dust, dirt, wax, grease, or any other foreign matter that would interfere with a good bond. **Do Not** use Metroflor HS-2000 over existing vinyl, VCT, metal or any other non-porous surface. Porous levelers used over non-porous surfaces do not make the subfloor porous. For planks over non-porous surfaces, Metroflor EX-4000 Epoxy for heavy commercial and Solidity PSA for residential and commercial. Remove any curing agents from concrete surfaces. Level any high spots and fill in all cracks, holes and minor depressions with a Portland cement-based filler, then sand smooth. Do not use Metroflor 2000 if moisture is present in concrete subfloors. Moisture will retard and prevent adhesive from setting. This adhesive can be used for on-grade or below-grade level concrete floors with moisture barriers installed under the slab where concrete is determined to be dry and not subject to water absorption. Flooring, adhesive and subfloor must be acclimated at a temperature of 65°-85° F., for 48 hours prior to, during and after installation. For installations over old adhesives, consult Metroflor Technical Guide.

APPLICATION:

USE WET: DO NOT LET ADHESIVE SKIN OVER! Spread adhesive with a 1/16" x 1/16" x 1/16" square notched trowel in small sections. Coverage is approximately 125-145 sq. ft. per gallon. Each section must be no larger than an area that can be covered in no more than 20 minutes under normal conditions. Allow one or two minutes open time for adhesive to tack up, and then install planks immediately. The adhesive must not be allowed to skin over. Position the plank firmly into the adhesive without sliding. Periodically check to assure at least 95% of the adhesive has been transferred to the back of the plank. If the adhesive starts to skin over, scrape it up and re-apply fresh adhesive. Roll each section immediately, in both directions, upon completing with a minimum 100 lb., three-section roller. Re-roll the entire floor, in both directions, within 1 hour. A hand roller must be used in areas that cannot be reached with a big roller. Be sure to sweep floor clean prior to rolling it. **DO NOT REPLACE HEAVY FURNITURE OR FIXTURES, OR WASH OR WAX THE FLOOR FOR A MINIMUM OF 48 HOURS AFTER INSTALLATION.** Tack-up and working times will vary with temperature, humidity and porosity of subfloor.

CLEAN UP:

Adhesive must be removed while still wet. Remove excess adhesive from surface and surrounding areas using a cloth with warm soapy water. Do not flood freshly laid floors. Do not allow adhesive to dry on surface of the vinyl. Dried adhesive can best be removed with a mineral sprits or a nonflammable cleaner. Dried adhesive may be difficult to remove. **TAKE CARE NOT TO DAMAGE FLOOR.**

METROFLOR EX-4000 PRODUCT DATA SHEET

Product Description:

Metroflor EX-4000 is a solvent-free, chemically curing 2-part epoxy adhesive specifically formulated for the installation of rubber and vinyl flooring coverings over porous and non-porous surfaces.

The EX-4000 is recommended over wood floors and dry concrete floors above, on or below grade where moisture is not a problem. Follow Metroflor recommendations and industry standards regarding subfloor preparation.

Sub-Floor Preparation:

We require that moisture tests be performed on all concrete sub-floors regardless of grade level or whether or not the concrete is freshly poured or is classified as an older slab. Moisture testing should be performed by ASTM F-1869 Calcium Chloride Tests with moisture levels not to exceed three (3) pounds per twenty-four (24) hours per (1000) square feet.

Application:

- All surfaces must be clean, dry, free of dust, grease, paints, oils, curing compounds, sealers or any other foreign material which may interfere with proper adhesion.
- Cracks and uneven surfaces must be filled with cement based patching compound.
- Before, during, and 48 hours after the installation a temperature of 65° - 85° F must be maintained.
- The packaged epoxy units are marked A and B.
- Mix entire contents of Part B into the Part A container with a rotary motion while at the same time lifting from the bottom.
- Mix until smooth and uniform in color (no streaking).
- Adhesive will not cure if not thoroughly mixed.
- Mixed adhesive has a pot life of 30-45 minutes.
- Higher temperatures will result in a shorter pot life.
- Immediately pour the entire mixture of the EX-4000 contents out of the can onto the subfloor.
- DO NOT let the mixed epoxy adhesive stand in the can.
- Trowel with a 16" x 1/16" X 1/16" square notched trowel.
- Spread rate is approximately 100 square feet per gallon.
- Flooring material must be installed into the wet adhesive prior to the adhesive setting.
- Check for full adhesive transfer to the back of the floor covering.
- If the adhesive is dry to the touch and does not transfer, DO NOT INSTALL the flooring material.
- Once the flooring has been installed, it immediately must be rolled diagonally in both directions with a 100 lb, 3-section roller. A hand roller must be used in areas that cannot be reached with a big roller.
- Use a steel hand roller before in areas that cannot be reached by a large roller.
- Roll a second time before the adhesive sets, generally 1-2 hours, depending on ambient room conditions.
- Direct sunlight or heat from an external source will speed up the set of the adhesive.
- NOTE: Lower temperature will result in longer cure times.
- Avoid all traffic for 24 hours after the installation.
- Wait 48 hours before allowing heavy traffic.

Clean-Up:

After the installation, remove all excessive adhesive before it cures. Use a cloth dampened with mineral spirits.

(CAUTION: If a flammable solvent is used, avoid all sources of heat, sparks or open flames and use with adequate ventilation.)

Do not allow solvent to penetrate the seams, this can destroy the adhesive bond. Once the epoxy adhesive has cured, it cannot be easily removed. Dried adhesive generally will require abrasion or scraping, possibly damaging the floor covering surface.

FOR MORE INFORMATION REFER TO MATERIAL SAFETY DATA SHEET which is available by request from Metroflor technical service department.

KEEP OUT OF REACH OF CHILDREN

WARNING:

Do not sand, dry sweep, dry scrape, drill, saw, bead blast, or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphalt :cut-back” adhesive, or other adhesive. These products may contain asbestos fibers and/or crystalline silica.

Avoid creating dust. Inhalation of such dust is a cancer and respiratory tract hazard.

Smoking by individuals exposed to asbestos fibers greatly increases the risk of serious bodily harm.

Unless positively certain that the product is a non-asbestos containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content.

RFCI's Recommended Work Practices for Removal of Resilient Floor Covering are defined set of instructions addressed to the task of removing all resilient floor covering structures.

NOTICE:

Various Federal, State and Local government agencies have regulations governing the removal of in-place asbestos-containing material. If you contemplate the removal of a resilient floor covering structure that contains (or is presumed to contain) asbestos, you must review and comply with all applicable regulations.

Resilient Floor Covering Institute
401 East Jefferson Street, Suite 102
Rockville, MD 20850
(301) 340-8580

INSTALLATION, SUBFLOOR AND UNDERLAYMENT REQUIREMENTS

Approved subfloors:

- a. **Concrete:** The concrete must be free of any curing compounds or adhesives. Even after old glued down carpet has been removed, and the subfloor has been scraped, it should NOT be assumed that the concrete is porous. Often the old adhesive has sealed the floor. A porosity test, using water, should be taken. Be aware that porous subfloors may take a different adhesive than non-porous subfloors. See adhesive instructions. If oil, grease, or other contaminants have deeply penetrated the concrete, and cannot be thoroughly removed, Metroflor cannot be installed. If latex liquid has been used to seal off old cutback adhesives, the concrete has become non-porous.
- b. **Lightweight concretes:** Concretes in the lower end of this range are generally used for thermal and sound insulation fills for roofs, walls, and floors. The higher densities are used in cast-in-place walls, floors, roofs, and for pre-cast elements. The minimum density of the concrete should be greater than 90 lbs per cubic foot. The minimum compressive strength should be 3,500 psi or greater. **Gypsum-based concretes are not recommended. If installing over gypsum or other forms of light concrete always apply an Acrylic based Primer-Sealer coat before troweling adhesive.**
- c. **Wood subfloors:** Should be standard double layer construction, with a finished thickness of at least 1" and should have 18" of well ventilated air space underneath. Crawl spaces should be insulated and protected by a vapor barrier. Do not install vinyl flooring over a sleeper type subfloor, or over plywood that is directly over a concrete slab.

Approved underlayments:

- I. **PLYWOOD:** Use only American Plywood Association (APA) underlayment grade plywood – minimum ¼" thickness. Allow expansion spacing between plywood butt joints of 1/32" – 1/16". When installing underlayment, stagger cross-joints 4' on an 8' panel (minimum 16"), lightly butt the panels, and set fasteners flush or slightly below the surface level of the underlayment. Fill underlayment seams, nail holes and any indentations with an approved Portland cement-type floor patch, allow recommended drying time, sand the patch smooth, vacuum or sweep and apply adhesive (all dust must be COMPLETELY removed to ensure a strong adhesive bond). Sand filled when patching material has cured. Manufacture-certified Poplar, Birch and Spruce plywood underlayment, with a fully sanded face and exterior glue can also be used.
 - II. **LAUAN PLYWOOD:** When used as an underlayment, it should be Type 1 (exterior grade). The best grade is BB and the next is CC. No lesser grades are acceptable. There is a wide variety of quality and species classes as lauan. Some may present severe problems such as discoloration, indentation, loss of bond and delaminating when used as an underlayment.
Note: Extremely porous underlayments such as lauan as well as any other extremely porous wood or particleboard will reduce the flash and working time of adhesives. It is best to use an Acrylic Based Primer-Sealer coat to these products. If a claim results where lauan underlayment has been used, a manufacturers certification of lauan grade must accompany the claim
- e. **Non-approved substrates include, but are not limited to:** Oriented strand board (OSB), particleboard, hardboard, treated plywood, strip wood floors, chipboard, waferboard, Masonite, knotty plywood, glass mesh tile boards, cementitious tile backer boards, fire-retardant or preservative-treated plywood, asphalt tile, rubber tile, self-stick tile. NOTE: Any appearance or performance-related problems related to the underlayment are the responsibility of the installer and/or underlayment manufacturer.

- f. **Radiant Heat:** Subfloors should have operated for at least 3 weeks prior to installation to drive out moisture and calibrate temperature settings. All radiant heat floors should be turned off 3 days prior to installation and remain off for at least 6 days after installation to allow the adhesive to fully cure. Maximum operating temperature should never exceed 85°F. Radiant heat components must be a minimum of ½” separated from adhesive and tile.
- g. **Quarry tile, terrazzo, and ceramic tile:** Properly cleanse substrate using a commercial degreasing/dewaxing solution. Grind any highly polished or irregular surfaces. Fill any low spots, holes, chips and seams that may telegraph through the new flooring.

Material Handling and Storage:

All Metroflor Tiles must be stored in a warm, dry area. Do not expose to very hot or cold temperatures. It is required that you adapt materials to jobsite conditions a minimum of 24 to 48 hours before scheduled installation. Metroflor Tile must be stored laying flat and cartons never on edge. Check to make sure color and lot numbers are the same on jobs requiring more than one box on tile. Mix tile from several different cartons to blend minor shade variations.

Temperature:

Flooring and subfloor room temperature should be between 65° and 85 ° Fahrenheit. Maintain proper temperature for 48 hours before and after installation. After that, maintain a minimum 55-degree temperature. The building's heating and air-conditioning system should be turned on at least one week before installation. Failure to follow these guidelines may result in an installation failure (i.e. flooring may expand or contract resulting in gapping).

Moisture:

Never install Metroflor vinyl wherever surface or subfloor moisture is present. Excessive moisture will cause failure. New concrete slabs must cure for a minimum of 90 days. Even existing concrete slabs can have moisture problems. To be sure, conduct a moisture test several days before installation. The installer is responsible for moisture testing. See adhesive buckets for details. MOISTURE GUIDELINES FOR THE FLOOR COVERING INDUSTRY available from the World Floor Covering Association, at 1-800-624-6880.

PH Levels:

Moisture can directly affect the cure, set and bond of adhesives. On well-cured adhesives, the presence of pH values has proven to be the most significant factor in adhesive failures. It is vital that moisture be present for pH to be a factor. High pH levels are due to cement, type of aggregate, cement ratio of concrete and how well cured the concrete surface is. On new or existing concrete a pH test should be taken. A pH level above 9 is unacceptable, and the floor should not be installed.

Porosity:

A non-porous substrate is one which does not absorb water. If you are not sure whether a floor is porous or non-porous, sprinkle some water on the floor over several different areas. If the water beads up, then it's a non-porous floor. If it soaks in, it's a porous floor. Use a small amount of water for the test, and allow floor to completely dry before continuing. If a bare concrete floor is not porous, a sealer or curing compound may have been used. Such treatments should be removed before installing a new floor or underlayment, and the floor re-tested for porosity at that time.

HVAC:

Air conditioning is recommended whenever possible and at comfortable levels as moisture is removed constantly and this will provide for a drier atmosphere that affects the adhesion to the subfloor favorably. However in hot and humid climates the air conditioning can cause condensation in the floors so that the subfloor must have a moisture barrier beneath the slab or in the crawl space.

SUBFLOOR PREPARATION

In general, all substrates must be free of contaminants such as dirt, weak concrete, grease, wax, oil, sealers, paints, curing compounds, and old adhesives. The surface should be leveled to within 1/8 inch in ten feet; and all construction seams, expansion joints, and holes should be filled level with the surrounding surface to eliminate telegraphing of such irregularities.

Removing Old Adhesives:

Old asphaltic "cut-back" adhesives can destroy new adhesive and stain Metroflor vinyl. These must be completely removed, encapsulated or covered with plywood underlayment. Be sure to remove adhesive in dips, joints, etc. Some previously manufactured cut-back adhesives contained asbestos fibers, which are not readily identifiable. Do not use power removal devices, which can create dust. The use of solvent-based adhesive removers is not recommended. NOTE: If d-limonene (citrus-based) cleaners/removers are used (Orange All), subfloor must be thoroughly rinsed. If complete removal of old adhesives or covering them with plywood is not possible, the use of a Portland Based Leveling or Patching Compound is acceptable. Please follow manufacturer's instructions carefully. For "Recommended Work Practices for the Removal of Resilient Floor Coverings" write to the Resilient Floor Covering Institute, 966 Hungerford Dr., Suite 12-B, Rockville, MD 20850.

Patching & Leveling:

Use only Portland-cement based patching and leveling compounds. Self-leveling underlayments can have very high moisture content and require longer curing time: up to 10 days. Check with a moisture meter before starting installation.

Note: Adding latex to levelers will normally make the floors NON-POROUS. Test for porosity and use the non-porous adhesive instructions if necessary.

Follow the manufacturer's instructions. Do not over-water underlayments! Sand underlayment smooth after it is cured. The installer is responsible for cure times, moisture content, adhesive bonding and the structural integrity of any leveling or patch compound used.

Embossing Levelers:

Embossing levelers are for sheet goods with textures that could telegraph through Metroflor products and be visible on the surface.

Note: The use of levelers on sheet goods will not create a porous subfloor.

Concrete Slabs:

NOTE: All concrete (new and old) must be tested

- The installer is responsible for moisture testing. See adhesive buckets for details.
- New concrete should cure with good ventilation at room temperatures for no less than 90 days and must be tested for moisture and pH prior to installation.
- Do not install where moisture, hydrostatic pressure, or alkaline conditions are evident. (See below)
- Concrete must be clean, dry, smooth, and structurally sound and free of paint varnish, adhesive, oil, grease, solvents and other extraneous material including curing and parting compounds, sealers and surface hardeners that will inhibit bonding.
- Lightweight concrete should be avoided because of its inherent weakness
- Whenever possible grind a concrete subfloor to tolerance rather than fill.

Installation failures due to the above issues are not the responsibility of Metroflor and warranties will not apply. Whenever questionable surfaces are involved, Metroflor recommends a bond test as described later in this section.

Properly prepare substrate by grinding or sanding. All dust must be COMPLETELY removed to ensure a strong adhesive bond. Surface irregularities will telegraph through the tile.

Allow at least 24 hours for underlayment drying before installing Metroflor flooring. If self-leveling underlayments are used they must fully cure before installing Metroflor floor tiles. Test self-leveling compound for moisture before installing. The installer is fully responsible for moisture and leveler related problems.

Sealers:

Metroflor does not endorse any concrete or floor sealers against moisture. IF MOISTURE IS PRESENT, DO NOT INSTALL FLOOR. Some sealers will protect the installation against alkalinity. Some also serve as a barrier between old and new adhesives to deaden old adhesive tack, prevent plasticizer migration and seal over dust or old cutback adhesives. Most latex- and acrylic-based sealers are compatible with Metroflor adhesives. Apply sealers to the floor according to the manufacturer's instructions. Be sure to apply the product evenly across the entire surface of the floor. There must be no gaps in the installation. Allow sealer to dry completely before applying adhesive.

NOTE: Metroflor warranties its Tile and Adhesives to be free of defects. The condition of a subfloor, which causes adhesion problems due to not recommended, improper, incorrectly prepared sealers, embossing leavers, patches, concrete, gypsum based products ect, becomes the sole responsibility of the installer and/or manufacturer of the particular sub-flooring product.

Existing Resilient Floors:

When installing Metroflor floor tile where there is an existing resilient floor, it may be best to remove the present floor and prepare the structural floor for a fresh application of the Metroflor.

If existing resilient tile and sheet vinyl floors are in good condition and thoroughly bonded to the structural floor, it may be possible to install. The exception is that any tile or sheet that is a cushion construction must be removed. *Note: A layer of resilient or soft underlayments like lauan may compromise the inherent strength of Metroflor Tiles and Planks to resist indentations.* Do not install over more than one layer of existing flooring.

Note: The use of levelers on non-porous subfloors will not create a porous subfloor.

Existing tile or sheet resilient floor must be stripped using Metroflor Stripper to remove wax or other contamination and rinsed with clear water and allowed to dry. This is also the case when new sheet vinyl is used. Very smooth or high-gloss floors need to be lightly abraded to rough up the surface to allow proper adhesive bonding.

In some areas it has become common to use products like Tarkett Quiet Core® for underlayment. Call Metroflor Technical Support for special requirements for such products.

Quarry Tile, Terrazzo, Ceramic Tile:

Properly cleanse substrate using a commercial degreasing/dewaxing solution. Grind any highly polished or irregular surfaces. Fill any low spots, holes, chips and seams that may telegraph through the new flooring. Test for porosity and use the appropriate adhesive application method. Bond tests are required.

Moisture and PH Testing:

A moisture test should be done several days before installation. The installer is responsible for moisture testing. Metroflor recommends all concrete subfloors (new and old) be tested using Calcium Chloride Test ASTM F1869. Unacceptable results using this method would be over 3 lbs for 24 hours per 1000 square feet. Electronic meter testing is not considered a replacement for a Calcium Chloride Test; the following moisture readings are just an indication that a Calcium Chloride test should be performed.

Concrete subfloors must have moisture barriers installed under the slab and be determined, through testing, to be dry and not subject to water absorption.

For more information about moisture problems and moisture testing, refer to MOISTURE GUIDELINES FOR THE FLOOR COVERING INDUSTRY available from the World Floor Covering Association, at 1-800-624-6880.

Bond Test:

To determine if a subfloor is compatible to Metroflor adhesives, or to determine if the porous or non-porous adhesive application method is required, use this test: Using the flooring and adhesive suitable for the subfloor, install a 2'x2' section following the recommended installation procedures select areas next to walls, columns, or other light traffic areas. Tape the perimeter with duct tape to prevent edge drying of the adhesive. After 48 hours, the adhesive should be dry and the flooring should be difficult to remove. Note: the adhesive is dry at this point – but not cured. Full cure and maximum bond does not occur for 6-8 days. On large installations, tests should be taken every 50 feet. Bond testing may take some time to complete, but the cost and time involved in a floor failure are considerably more.

General:

For best results, the room temperature in the area of installation must be 65-85° F for 48 hours before, during, and after installation. Flooring must be acclimated in the room they are to be installed in for a minimum of 24 to 48 hours prior to installation. Be sure to use Metroflor tiles of the same color lot for best color matching. Mix tile from several different cartons to blend minor shade variations. If the Metroflor Tile or Plank has directional arrows follow accordingly if not lay tile and planks keeping the embossing of the product flowing in the same direction.

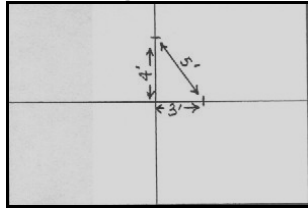
Note: *All Warranties and guarantees regarding the suitability and performance of any products, if not supplied by Metroflor, rests with the material manufacturer or the installation contractor and Not with Metroflor*

INSTALLATION FOR 12" X 12", 16" X 16", OR 18" X 18" TILE

Layout of the Room for Squarely Laid Fields

To square the area to be covered, first find the center of one end of the main rectangle. Locate the same point at the other end wall. Snap a chalk line between these points to mark the center line on the floor. Then measure along this center line to find the middle of the room.

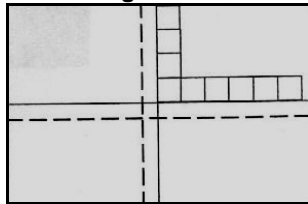
Fig. 1



At the center point, mark off a line across the room at exactly right angles to the first line. This may be accomplished by the 3-4-5- triangle method as shown in Figure 1. Then measure 4 feet toward each side wall from the center point. Then measure 3 feet from the center point along the longer line, measure exactly 5 feet from the 3 foot mark on the center line to the 4 foot mark on the crossline. If the 5 foot measurements do not come out exactly 5 feet, the center crossing lines are not at a true right angle. For large rooms, multiples of the above dimensions may be used to obtain greater accuracy. (6-8-10 or 9-12-15, etc.)

Dry-lay a row of tiles from the center line to the side wall to determine the space left for the borders. If the resulting border is too small, move the starting point over a half tile width so that it straddles the center line. Repeat the same procedure lengthwise of the room. (This can readily be figured out from the room dimensions without putting down the tiles if desired.)

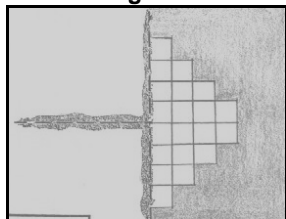
Fig. 2



If it is decided to have the center row of tiles straddle either or both of the center lines, additional guidelines should be snapped on the floor $\frac{1}{2}$ tiles width on one side of either or both center lines as required. (See Figure 2)

After the border widths have been determined and the center starting lines have been snapped spread the recommended adhesive on the center lines leaving portions of the lines at center and near each wall uncovered as shown in Figure 3.

Fig. 3



Spread the adhesive over one-half the area and after it is ready, start laying tile from the right angle formed in the center of the room by center lines. Lay toward the two corners of the room as shown. Always refer to your guide lines as you progress with laying so that any mistake can be corrected before it is too late. Sometimes it's necessary to compromise on the rightness of joints to make allowances for unevenness or waves of the subfloor. Take care to place tile as accurately as possible without sliding them into place.

IMPORTANT: All flooring must be rolled with a minimum 100-lb roller after installation. Use a hand roller in areas not reached with a 100-lb. roller.

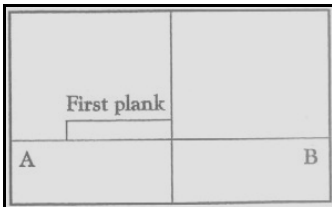
INSTALLATION FOR 3" X 36", 4" X 36", 6" X 36" AND 9" X 36" PLANK

Layout of the Room:

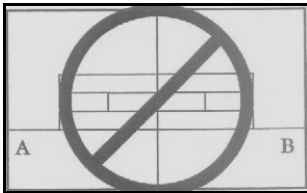


Find the center point of the room. Strike a line. Obtain a true 90' angle by using a carpenter's square. Strike a second line which will divide the room in to four equal parts. Measure the distance from the center to the wall, parallel to the direction of the plank. Divide the measurement by the width of the plank. If less than half remains as the border plank, adjust the point to compensate. This will give a larger border along the wall and reduce the chance of having to cut a small sliver of flooring to place along the wall.

LAYOUT OF THE PLANK:



Carefully place the first piece of plank at the junction of the chalk lines. Continue to lay the plank, making sure each plank flush against the chalk line and tight against the adjoining plank. Make sure the plank is well seated into the adhesive paying special attention, to the edges. Lay row by row, or in a pyramid fashion as shown below.



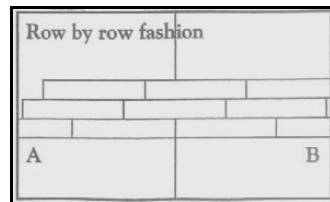
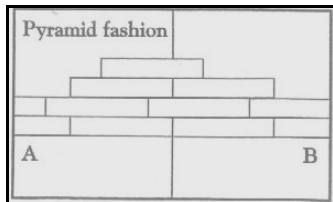
FITTING THE BORDER:

Measure the distance from the last plank in the row to the wall. Mark the plank and cut it against the mark. Lay the plank in place, making sure that the cut edge is against the wall.

Fitting Around Irregular Objects:

Make a pattern out of heavy paper to fit around pipes and other irregularities. Place the pattern on the plank, trace cutting along the trace lines.

IMPORTANT: All flooring must be rolled with a minimum 100-lb roller after installation. Use a hand roller in areas not reached with a 100-lb. roller.



METROFLOR FLOORCARE PRODUCTS

	MATTE FINISH	GLOSS FINISH
<u>Description:</u>	Metroflor Matte Finish is a tough, mar resistant, water based coating designed for use on luxury vinyl tile, plank and sheet flooring where a matte finish is desired and where the preservation of the integrity of the floor is a consideration.	Metroflor Gloss finish is a metal cross-linked floor finish which dries to a high gloss and provides a tough mar-resistant film for periodic use on vinyl floors. The metallic-acrylic polymers used produce excellent durability.
Product Codes	MSS-025 (Qts) MSS-024 (Gal)	MSS-023 (Qts) MSS-022 (Gal)
<u>Use</u>	Can be applied to all Metroflor Vinyl products as well as quarry tile, porcelain, terrazzo, slate, concrete and other masonry type surfaces. Equally effective for residential and commercial use.	This product is also recommended for finishing and maintenance of vinyl composition tile, rubber and linoleum.
Size / Packaging	12 Qts per case for MSS-025 4 Gallons per case for MSS-024	12 Qts per case for MSS-023 4 Gallons per case for MSS-022
<u>Warning:</u>	<ul style="list-style-type: none"> • Eyes and skin irritant • Do not take internally • Keep out of reach of children • Keep from freezing 	<ul style="list-style-type: none"> • • Eye and skin irritant • Do not take internally • Keep out of reach of children • Keep from freezing

METROFLOR FLOOR CARE PRODUCTS

	NEUTRAL CLEANER	FLOOR STRIPPER
Description	Specifically developed for maintaining all Metroflor Vinyl Products and Finishes	A concentrated Stripper specifically designed to remove most sophisticated detergent resistant waxes and acrylic finishes
Product Codes	MSS-034 (Qts) MSS-033 (Gal)	MSS-044
Use	<ul style="list-style-type: none"> • As a maintenance detergent for vinyl composition, no-wax finishes, rubber, terrazzo and linoleum • As an all purpose detergent for painted surfaces, walls, woodwork, desks, sinks and Venetian blinds. 	Use 16 Oz. of Metroflor Stripper per each gallon of water (use hot water if available). Apply liberally but not flood. Excessive buildups not entirely removed may show as a white film. In such cases, scrubbing with coarse brush or nylon pad should remove film. After scrubbing, pick up any solution with a mop. Rinse the floor well with clear water. Let dry thoroughly before applying a fresh coat of finish.
Size / Packaging	12 Qts per case - MSS-034 4 Gals per case – MSS-033	12 Qts per case – MSS-044
Warning	<ul style="list-style-type: none"> • Eye and skin irritant • Do not take internally • Keep out of reach of children • Keep from freezing 	<ul style="list-style-type: none"> • May cause severe eye or skin burns • Harmful if swallowed • Do not take internally • Keep out of reach of children • Keep from freezing



METROFLOR[®]

PRODUCT DATA SHEET

BLACK SCUFF & ADHESIVE REMOVER

Description

Black Scuff & Adhesive remover was developed to maximize cleaning and minimize moisture. It rapidly wets, emulsifies and removes soil. It is also effective on grease, crayon, and lipstick. Black Scuff & Adhesive Remover needs no rinsing and leaves no dulling film. This ideal maintenance detergent was especially formulated for use on vinyl flooring, but can also be safely used on ceramic tile, linoleum, rubber flooring, etc. A crisp lemon-lime fragrance makes it a pleasure to use.

Floor Prep

Sweep or vacuum thoroughly.

Application

Spray onto a cloth, sponge mop or directly onto floor.

Clean a small area at a time.

Allow to dry. No rinsing is necessary.

NOTE: Do not *pour* product onto surface. Excess liquid can seep through and loosen adhesive.

CAUTION: Eye Irritant. Contains Organic Surfactants and Glycol Ether. Avoid getting product in eyes or on skin.

FIRST AID: For eyes, rinse with plenty of water for at least 15 minutes. If irritation persists see a doctor. For skin, rinse thoroughly with water. If swallowed, drink large quantities of water or milk. Get medical attention immediately. Do not take internally. Keep Out Of Reach Of Children.

DISPOSAL: Do not reuse container. Dispose of any contents in accordance with federal, state and local disposal regulations.

Specifications

Type product	Floor cleaner
Appearance	Clear blue
Bottle size	22 Ounce spray
Packaged	12 per Case
Case Weight	20 LBS.
Odor	Lemon-lime

TROUBLE SHOOTING TIPS

Although Metroflor has one of the highest rates of successful installations in the luxury vinyl market (99.3) according to a recent study), problems can arise during installation or during the life of the floor.

The following information has been compiled as a way to prevent failures from occurring. More than seventy-five (75) % of installation related failures are due to improper use of adhesives.

Problem:

1. Tiles not adhering to subfloor with little to no adhesive transfer.
2. Tiles curling up or releasing at the edges.
3. Product is well bonded in some areas but not in others.
4. Trowel marks telegraphing through the tile.
5. Gapping between the tiles after installation.
6. Adhesives not drying or curing properly.
7. Adhesive becoming "wet" or "gummy" some time after installation.
8. Gaps between tiles which are corresponding with underlayment joints.
9. Tiles coming loose with adhesive dry and powdering.
10. Bumpy, dimpled or wavy surface of product.
11. Self-leveling underlayment.

Problem:

Tiles not adhering to subfloor with little to no adhesive transfer:

Causes:

- Most of the time this problem will occur with wet-set adhesives such as the Metroflor HS-2000 and HS-3500.
- Allowing adhesive to set or skin over prior to laying tiles.
- Improper rolling or not rolling at all.
- Not monitoring the amount of open time allowed over very porous subfloors (some underlayments and levelers can cause this).
- Spreading more glue than can be covered with product in the allowed amount of time.
- Moisture content in subfloors.

Problem:

Tiles curling up or releasing at the edges of the product:

Causes:

- Wrong trowel size used (too little adhesive) causing tile movement.
- Allowing a wet-set adhesive to over dry.
- Tiles not acclimated to job site causing expansion or contraction.
- Improper rolling or not rolled at all.

Problem:

Product is well bonded in some areas but not in others:

Causes:

- Since adhesives do not fail selectively, you must look elsewhere for the cause.
- Spreading more glue than can be covered with product in the allowed amount of time (this will occur mostly with wet-set adhesives).
- Improper rolling in areas or rolling too late.
- Some underlayment panels may absorb adhesive liquids faster than others.
- Areas most recently laid will bond well into fresh adhesive application. While initially laid areas will not bond as well in dried adhesive, even if rolled.
- Moisture present; Moisture can be present in only one part of a subfloor resulting in initial failure of adhesive to cure properly, or later problems related to hydrostatic pressure.
- Wrong or worn trowels, varying spread angles can cause inconsistent adhesive applications and often inadequate spread rates.

Problem:

Trowel marks telegraphing through the tile:

Causes:

- Adhesive was allowed to dry or skin over prior to laying tiles. In many cases this will take place with wet-set adhesive.
- Improper rolling, rolling too late or not rolling at all.

Problem:

Gapping between the tiles after installation:

Causes:

- Tiles were not acclimated to job site. Tiles were installed while warm and began contracting as they cooled and before adhesive was able to set up.
- Tile was installed at warm room temperature. Tiles began to contract as air conditioner comes on and adhesive was not allowed to set up properly.
- Installation was not properly rolled or not rolled at all. This will result in a poor bond between product and substrate.

Problem:

Adhesive not drying and curing properly:

Causes:

- Moisture present in subfloor
- Subfloor and/or ambient temperature too low
- Using a wet-set adhesive over a non-porous subfloor
- Old cutback or other adhesive residues from prior installations leaching through subfloor and breaking down adhesive.
- Contaminants on the subfloor (waxes, oils, solvents, etc.) attacking adhesive and breaking it down.

Problem:

Adhesive becoming “wet” or “gummy” some time after installation:

Causes:

- Moisture present in subfloor
- Old cutback adhesive from prior installations or contaminants breaking down the adhesive.

Problem:

Gaps between tiles which are corresponding with underlayment joints.

Causes:

- Shrinkage or separation of the underlayment panels

Problem:

Tiles coming loose with adhesive dry and powdering:

Causes:

- High alkalinity in subfloor. This will usually take place within 3 to 6 weeks after installation.

Problem:

Bumpy, dimpled or wavy surface of product:

Causes:

- Irregularities in the subfloor or underlayment telegraphing through the product. Often occurs with unapproved underlayment such as waferboard, OSB, particle board etc. Poorly prepared concrete subfloors will also cause this.
- All installations adhered will conform to any subfloor irregularities.

Problem:

Self leveling underlayment:

Causes:

- Separating from itself (still stuck to tile and substrate). Poor quality product or bad mix of a good product or moisture problems.
- Separating from subfloor (still stuck to tile). Improper preparation of substrate surface, or moisture problems.
- Separating from tile (adhesive stuck to underlayment). Adhesive was allowed to dry.
- Denting from heels, rollers, chairs, etc. Density of underlayment too low, too little resistance to point loading.