Technical Data Sheet
Radius™ Luxury Vinyl Tile & Plank

Radius™ by Six Degrees Flooring Surfaces

Plank + Tile VINYL FLOORING

Product Description

Radius is a premium Luxury Vinyl Tile product, available in tile and planks, featuring beautiful, rich wood and stone looks that provide appealing design elements in any setting. Radius' solid construction and rugged finish provide for long lasting durability for the lifetime of the flooring installation.

Radius' precision cut materials allow for easy installation and tight seams, while nominal tile formats provide the ability to design unique patterns and designs. Radius is constructed with a durable wear layer topped and a UV-cured ceramic-reinforced polyurethane finish, which provide maximum durability while ensuring long lasting beauty without the use of an on-site finish.
Radius is 100% recyclable and manufactured in the USA from premium raw materials, making it a beautiful & sustainable flooring option for any space.

Features

- **100% Recyclable**
- **Easy To Maintain**
- **Ceramic-Reinforced, UV-Cured Uethane Finish**
- **Extremely Durable**
- **Excellent Indentation Resistance**
- **Excellent Chemical Resistance**
- **Excellent Slip Resistance**
- **Qualifies for LEED® Credits**
- **FloorScore® Certified**

Technical Data

Nominal Dimensions:	**7 1/8" x 47 1/4" x 3mm plank**
	12" x 24" x 2mm tile
Finish:	**Embossed**
Wear Layer Thickness:	**12 mil (.012")**
Quantity Per Carton:	**15 Planks (7" x 48")**
	18 Tiles (12" x 24")
LEED v2009 MR Credit 6 RRM Content:	**12%**
LEED v2009 IEQ Credit 4.1:	**Qualifies**
LEED v2009 IEQ Credit 4.3:	**Qualifies**
ASTM F 1700 – Solid Vinyl Tile:	**Class III, Type A & B**
ASTM E 648 - Critical Radiant Flux:	**Class I, >.45 W/cm2**
ASTM E 662 - Smoke Density:	**Passes, <450**
CAN/ULC-S102.2 – Surface Burning:	**50 FSR, 150 SDC**
ASTM D 2047 - Slip Resistance:	**> 0.60**
ASTM F 970 - Static Load Limit:	**Passes, > 250 PSI**
ASTM F 970 (Modified) - Maximum Weight:	**2000 PSI**
ASTM F 925 – Chemical Resistance:	**Excellent (chart available)**
ASTM F 1515 – Light Stability:	**Passes**
ASTM F 1914 Residual Indentation:	**Passes**
ASTM F2199 Dimensional Stability:	**Passes**
Acclimation Time:	**48 Hours**
Storage & Acclimation Temperature:	**65° - 85° F**

Additional Information

Approved Adhesives

Excelsior SP-500 Acrylic Aerosol
Excelsior AW-510 Acrylic Wet Set
Excelsior AP-520 Acrylic Roll-On
Excelsior MS-700 Modified Silane
Excelsior EW-710 Epoxy Wet-Set

Availability, Cost & Samples

For information regarding availability, cost and samples, please contact Customer Service at (844) 432 - 5885 or send an e-mail to support@sixdegreesflooring.com

Technical Documents & Support

Additional product resources and technical documents are available online at sixdegreesflooring.com or through the nearest sales representative. For additional technical support, send an email to technical@sixdegreesflooring.com.

1. PRE-INSTALLATION CHECKLIST

- Consult all associated product literature concerning adhesive installation, maintenance and warranty prior to installation of flooring.
- Allow all trades to complete work prior to installation.
- Deliver all materials to the installation location in its original packaging with labels intact.
- Do not stack pallets to avoid damage.
- Remove any plastic and strapping from product after delivery.
- Remove material from packaging and stack evenly on a smooth, dry surface. Do not stack higher than 18".
- Inspect all material for proper type, color and matching lot numbers or production codes if appropriate.
- Ensure that all adhesives intended for installation are approved for use with flooring material.
- Ensure installation area and material storage temperatures are between 65° F (19° C) and 85° F (30° C) for at least 48 hours before, during and after installation.
- Ensure HVAC system is operational and fully functioning at normal operating conditions.
- Protect installation area from extreme temperature changes, such as heat and freezing, as well as direct sunlight for at least 48 hours before, during and after installation.
- Ensure all substrate preparation and moisture testing requirements have been read and understood by all interested parties.
- Test substrate for porosity in order to determine the installation method necessary.
- Turn off radiant-heated flooring systems 48 hours prior to installation. 48 hours after installation, gradually increase the temperature over the course of 24 hours to a maximum temperature of 85°F (29.5° C).
- Ensure all vents, walls, moldings and/or doorways are protected with tape or plastic prior to installation.
- Do not proceed with installation until all conditions have been met.

2. PRODUCT LIMITATIONS

Do not install materials over LVT, cushioned vinyl, hardwood flooring, cork, rubber, or asphaltic materials. Do not install flooring materials in outdoor areas or in and near commercial kitchens. Do not install in areas that may be subjected to sharp, pointed objects, such as stiletto heels, cleats or spikes. Do not allow product to be directly exposed to extreme heat sources, such as radiators, ovens or other high-heat equipment. May be susceptible to staining from rubber tires, casters or rubber-backed walk-off mats, as well as harsh disinfectants, cleaning agents, dyes or other harsh chemicals – ensure all chemicals and materials that may come in contact with flooring surface will not stain, mar or otherwise damage the flooring material prior to use.

3. SUBSTRATE PREPARATION

All substrates must be prepared according to ASTM F710, as well as applicable ACI and RFCI guidelines. Substrates must clean, smooth, permanently dry, flat, and structurally sound. Substrates must be free of visible water or moisture, dust, sealers, paint, sweeping compounds, curing compounds, residual adhesives and adhesive removers, concrete hardeners or densifiers, solvents, wax, oil, grease, asphalt, visible alkaline salts or excessive efflorescence, mold, mildew and any other extraneous coating, film, material or foreign matter. All substrates must be vacuumed with a flat vacuum attachment or damp mopped with clean, potable water to remove all surface dust. Sweeping without vacuuming or damp mopping will not be acceptable.

It is recommended that all substrates have a floor flatness of FF32 and/or a flatness tolerance of 1/8" in 6' or 3/16" in 10'.

All porous substrates must be tested to confirm porosity. To determine substrate porosity, place three, .05 mL (1/4" wide) droplets of clean, potable water onto the surface of the substrate per every 2000 sq. ft., at least one test per room. If the substrate absorbs water within 60 seconds, the substrate is considered porous. All other substrates that do not meet this requirement are considered non-porous. Ensure that all non-porous substrates are not contaminated with any aforementioned contaminates.

When conducting renovations or remodeling, remove all existing adhesive residue so that 90% of the original substrate is exposed by mechanical means, such as shotblasting, grinding or buffing with a 100 grit Diamabrush Prep Plus attachment.

Do not use solvent/citrus based adhesive removers prior to installation. Follow The Resilient Floor Covering Institute's (RFCI) "Recommended Work Practice for Removal of Existing Floor Covering and Adhesive", and all applicable local, state, federal and industry regulations and guidelines. When removing asbestos and asbestos containing materials, follow all applicable OSHA standards.

CONCRETE SUBSTRATES

All concrete must have a minimum compressive strength of 3500 PSI and be prepared in accordance with ASTM F 710. When flooring is being installed directly over concrete, concrete surfaces that have an ICRI Concrete Surface Profile (CSP) over 4 should be treated with a self-leveling underlayment or a patch to prevent imperfections from telegraphing through flooring materials. On or below grade concrete must have a permanent, effective moisture vapor retarder installed below the slab.

New or existing concrete substrates on all grade levels must be tested in accordance with ASTM F 2170, using in situ Probes (such as Wagner Rapid RH), to quantitatively determine the amount of relative humidity at least one week prior to the installation.

Adhesive RH Limits

SP-500 Acrylic Aerosol: **90% RH**
AW-510 Acrylic Wet Set: **85% RH**
AP-520 Acrylic Roll-On: **75% RH**
MS-700 Modified Silane: **95% RH**
EW-710 Epoxy Wet-Set: **85% RH**

In addition to ASTM F 2170 Relative Humidity Testing, existing concrete that has previously had floor covering installed on all grade levels must be tested in accordance with ASTM F 1869, using Calcium Chloride test kits, to quantitatively determine the Moisture Vapor Emissions Rate (MVER) of the concrete.

Adhesive MVER Limits

SP-500 Acrylic Aerosol: **9 lbs.**
AW-510 Acrylic Transition: **6 lbs.**
AP-520 Acrylic Roll-On: **6 lbs.**
MS-700 Modified Silane: **10 lbs.**
EW-710 Epoxy Wet-Set: **6 lbs.**

If ASTM F2170 or ASTM F1869 test results exceed the above limits, a moisture mitigation product, such as the Excelsior MM-100 Moisture Mitigation must be installed prior to proceeding with installation. Do not install flooring until moisture testing has been conducted per the appropriate standard and/or moisture mitigation has been installed per product technical data and/or installation instructions and is dry to the touch. Do not install flooring in below grade areas when hydrostatic pressure is visible or suspected.

If ASTM F2170 and ASTM F1869 test results are below recommended limits, concrete substrates must be tested for elevated pH and alkalinity in accordance with ASTM F710.

Adhesive pH Limits

SP-500 Acrylic Aerosol: **7-9**
AW-510 Acrylic Transition: **7-9**
AR-520 Acrylic Roll-On: **7-9**
MS-700 Modified Silane: **7-10**
EW-710 Epoxy Wet-Set: **7-10**

If pH testing per ASTM F710 exceeds the above limits, the concrete must be sealed with a pH insensitive product, such as the Excelsior MM-100, prior to proceeding with installation. Install all sealers and/or primers per product technical data and/or installation instructions. Do not install flooring until material is dry to the touch.

MOISTURE MITIGATION SUBSTRATES

When installing directly over a resinous products, such as the Excelsior MM-100 or an epoxy coating, ensure that coating is dry to the touch and has cured for the prescribed length of time. Substrate must be clean, dry, sound and free of contaminates. Ensure to follow installation procedures and trowel sizes for non-porous substrates.

GYPSUM BASED SUBSTRATES

Gypsum-based substrates must have a minimum compressive strength of 3500 PSI. Gypsum substrates that do not meet this requirement may have one coat of the Excelsior MM-100 installed to improve the strength of the substrate. Substrate must be structurally sound and firmly bonded to subfloor. Any cracked or fractured areas must be removed and repaired with a compatible patch or repair product. Follow instructions for installation over a gypsum substrate. New or existing gypsum substrates may require a sealant or primer. Follow all manufacturer's recommendations regarding preparation for resilient flooring installation.

WOOD SUBSTRATES

Wood substrates must be prepared in accordance with ASTM F 1482. Wood subfloors should be of double layer construction with a minimum thickness of 1". Crawl spaces beneath wood subfloors shall be in compliance with local building ventilation codes and have at least 18" of cross-ventilated space between the ground and the joists. Wood joists should be spaced on not more than 16" centers.

Prior to installation, moisture retardant sheeting with a maximum rating of 1.0 perm must be installed beneath the wood subfloor, overlapped at least 8". For standard installations, use Underlayment Grade plywood with a minimum thickness of 1/4" thick and a fully sanded surface. When floors may be subjected to moisture, use an APA approved exterior grade plywood.

Other wood subfloor materials, such as OSB, lauan, particleboard, chipboard or cementitious tile backer boards, are not acceptable subfloors. Avoid preservative-treated and fire-retardant plywood, as some may be manufactured with resins or adhesives that may cause discoloration or staining of the flooring.

Wood subfloor deflection, movement, or instability will cause the flooring installations to release, buckle or become distorted. As such, do not use plastic or resin filler to patch cracks. Do not use cement or rosin coated nails and staples or solvent-based construction adhesives to adhere the plywood. Do not install on a sleeper system (wood subfloor system over concrete) or directly over Sturd-I-Floor panels.

METAL SUBSTRATES

Metal substrates must be thoroughly sanded/grinded and cleaned of any residue, oil, rust and/or oxidation. Substrate must be smooth, flat and sound prior to installation. Install flooring material within 12 hours after sanding/grinding to prevent re-oxidation. Any deflection in the metal floor can cause a bond failure between the adhesive and the metal substrate. Ensure to follow installation procedures and trowel sizes for non-porous substrates.

EXISTING FLOORING SUBSTRATES

The suitability of existing flooring as a substrate depends on the specific requirements of the adhesive being used to install the material. As such, refer to the adhesive requirements for existing flooring substrates and ensure all adhesive requirements and guidelines are followed.

4. CRACKS, JOINTS & VOIDS

Ensure All cracks, joints and voids, as well as the areas surrounding them, must be clean and free of dust, dirt, debris and contaminants. All minor cracks and voids 3/64" wide or less may be repaired with a suitable cementitious patch, such as Excelsior CP-300.

Due to the dynamic nature of concrete slabs, manufacturer cannot warranty installations to fill or cover expansion joints or dynamic cracks (such as control cuts, saw joints and moving cracks or voids) wider than 3/64". As such, do not install flooring directly over any expansion joints or dynamic cracks wider than 3/64".

To treat expansions joints and dynamic cracks that are completely through the concrete, chase joint or crack with a suitable saw or grinder and open to a

minimum width of ¼". Be sure to clean all dust, dirt and debris from crack. Install a closed-cell backer rod to make the depth equal to the width of the joint or crack (a ½" expansion joint requires a void that is no more than ½"). Joints and cracks should then be sealed with a suitable, elastomeric caulk (such as Ardex Ardiseal Rapid Plus, Mapei P1 SL or equivalent) designed for use in expansion joints.

To treat dynamic cracks (control cuts, saw-cut joints and surface cracks) over 3/64", chase joint or void with a suitable saw or grinder and clean all dust, dirt and debris from crack. Fill entire crack with a rigid crack filler (such as Ardex Ardifix, CMP CM10 or equivilent) designed for use in control or saw-cut cuts. Ensure surface is troweled flush with surface of concrete.

Consult a structural engineer prior to treating any cracks that may affect structural integrity, such as expansion joints. Review all manufacturer installation instructions and/or consult manufacturer technical staff prior to treating cracks.

5. PRODUCT INSTALLATION

Ensure substrate is suitably prepared prior to installation, as manufacturer is not responsible for substrates that have not been properly prepared and tested for moisture. Ensure adhesive is approved for use with flooring material and the proper trowel type and size is used, as manufacturer is not responsible for any and all adhesion issues related to improper adhesive selection or usage.

Prior to installation, confirm material installation pattern and direction per design specifications or work order. Inspect all tiles before installing or during installation to verify that there are no visible defects, damages or excessive shading variations. Blend materials from several cartons to ensure consistent appearance and color or shade variation. Some flooring products, colors and textures have latent and acceptable color and shade variations. If there are concerns regarding shade or color variation, do not install material and consult representative and manufacturer's technical staff.

Ensure substrate is clean, dry, flat and sound prior to installation. Ensure the room is square using the 3-4-5 squaring rule or similar method to ensure acceptable installation. Dry-lay several pieces of material in order to determine ideal room layout. Ensure material around perimeter is 1/8" from wall or less, depending on depth of wall base or trim. Ensure all end seams are a minimum of six inches apart.

Apply adhesive according to instructions for specific product in use. Be sure to follow instructions based on substrate porosity (porous or non-porous). Use below chart for reference:

Adhesive Coverage Rates *(Per Gallon)*

Adhesive	Porous	Non-Porous
SP-500	150 sq. ft. / unit	
AW-510	125-200 sq. ft.	N/A
AP-520	320 sq. ft.	400 sq. ft.
MS-700	160 sq. ft.	260 sq. ft.
EW-710	170-190 sq. ft.	135-150 sq. ft.

Replace trowels at recommended intervals to maintain proper trowel ridge and spread rate. Observe directional arrows on back of tile to ensure arrows are installed in the same direction, unless installing in a specific and pre-determined design, such as a quarter-turn or ashlar design. Use a pyramid layout when installing tiles to eliminate run-off.

When installing into adhesive using a wet-set method, avoid walking or working on material until adhesive has cured for light foot traffic. Pay close attention to open times to avoid adhesion issues. This may require installing material in smaller sections.

Use a nail-down guide or equivalent along starting row to expedite wet-set installation. Periodically lift material to ensure proper adhesive transfer and ensure adhesive has not surpassed the open time – adhesive should cover 90% of tile. Clean excessive adhesive or adhesive residue from the surface of the material using a clean cloth or mop and a solution of warm water and l pH neutral cleaner, do not use abrasive or solvent based cleaners.

Roll material with a 3 section, 100 lb. roller within 30 minutes of installation, crossing in a perpendicular direction after initial roll. Use a hand roller in areas that cannot be reached with larger roller. Visually inspect installation to ensure that material has not shifted and that adhesive has not been squeezed out of joints or compressed onto surface.

6. FLOORING PROTECTION

Protect newly installed flooring with construction grade paper or protective boards, such as Masonite or Ram Board, to protect flooring from damage by other trades. Do not slide or drag pallets or heavy equipment across the new flooring. Limit usage and foot traffic according to the following adhesive requirements:

Adhesive Traffic Limits

SP-500 Acrylic Aerosol	
Foot Traffic:	Immediate
Heavy / Rolling Traffic:	Immediate
Maintenance:	48 Hours
AW-510 Acrylic Wet Set	
Light Foot Traffic:	24 Hours
Heavy / Rolling Traffic.	48 Hours
Maintenance:	72 Hours
AP-520 Acrylic Roll-On	
Foot Traffic:	Immediate
Heavy / Rolling Traffic.	Immediate
Maintenance:	72 Hours
MS-700 Modified Silane	
Foot Traffic:	Immediate
Heavy / Rolling Traffic.	Immediate
Maintenance:	72 Hours
EW-710 Epoxy Wet Set	
Foot Traffic:	8-12 Hours
Heavy / Rolling Traffic:	24-48 Hours
Maintenance:	72 Hours

When moving appliances or heavy furniture, protect flooring from scuffing and tearing using temporary floor protection. All furniture casters must be made of a soft material and must have a contact point of at least 1" in width to limit indentation and flooring damage. All rolling chairs or seating must have a resilient flooring chair pad installed over the finished floor to protect floor covering. Ensure all furniture castors are clean and

free of any and all dirt and debris. All fixed furniture legs must have permanent, felt floor protectors installed on all contract points to reduce indentation. As items increase in weight, so too should the width of the flooring protection needed. Place walk-off mats at outside entrances. Ensure mats are manufactured with non-staining backs to prevent discoloration.

7. INITIAL MAINTENANCE

Ensure that adhesive has cured for the recommended period of time prior to beginning initial cleaning and maintenance. Remove any protective coverings prior to cleaning. Sweep, dust mop and/or vacuum flooring to remove any dirt, dust or debris. Do not use vacuums with a beater bar or electric brooms with hard plastic bottoms and/or no padding, as this may cause discoloration, scratching and loss of sheen. Clean the floor with Excelsior All Purpose Cleaner or an equivalent high quality, pH neutral cleaner. Prepare cleaner according to prescribed directions. For large areas, an auto scrubber or single-disc swing machine with white pads may be used. Be sure to remove all excess cleaning solution.

The use of highly alkaline, highly acidic or solvent-base cleaning products (such as Pine-Sol, Bleach, Fabuloso, Mop & Glo, Mr. Clean, Murphy's Oil Soap, etc.) will discolor or degrade the flooring prematurely. As such, do not use these products for Do not use sweeping compounds or cleaning agents that contain oil or solvents. Do not allow cleaning solutions to stand on flooring materials for extended periods of time, as the solutions could permeate beneath the flooring and cause adhesive issues. When wet, flooring will become slippery; therefore, use the appropriate caution tape and/or warning signs on the floor to eliminate traffic in cleaning area.

For further information regarding daily or routine maintenance as well as heavy cleaning, please consult the product maintenance document.

8. WARRANTY

6 Degrees provides a 10 Year Limited Residential Warranty and a 20 Year Limited Commercial Warranty. For additional information, see associated warranty documents.

FOR PROFESSIONAL USE ONLY. PLEASE CONSULT ALL ASSOCIATED TECHNICAL DATA SHEETS, SAFETY DATA SHEETS, MAINTENANCE DOCUMENTS, WARRANTY INFORMATION PRIOR TO INSTALLATION.