

This document is intended for professional use to provide minimum requirements for substrate preparation, adhesive application, and special installation requirements for a successful installation of these products, each unique application may require additional or further steps to ensure complete satisfaction. We rely on the expertise and professionals that are installing the products to adjust based on site conditions. Refer to product website to confirm that you have the most current revision of this document as the requirements contained within are essential to maintaining the full system warranty for the product installed. Documentation available at time of installation will be referenced regarding warranty.

RECOMMENDED ADHESIVES

This product is intended to be installed as click floating floor and adhesive is not required.

However, if determined to fully adhere this flooring product, the following adhesive would be recommended.

Adhesive	Substrate	Installation Method	Recommended Trowel
PS-525	Absorptive	Wet-Set	1/16" x 1/32" x 1/32" U Notch
PS-525	Non-Absorptive	Dry-Set	1/16" x 1/32" x 1/32" U Notch

STORAGE & HANDLING, INSTALLATION & SERVICE ENVIRONMENT, & ACCLIMATION

- All products must be stored in an indoor, climate-controlled (60° - 85° F) space and protected from the elements.
- All products must be stored on a dry, flat, level surface. Carefully stacked aligned neatly and not on edge. Do not stack pallets and protect products from damage.

The reported technical data information for these products is based on a formulation that is designed, manufactured, and evaluated to perform at constant temperatures, not fluctuating more than 10° from normal selected service temperatures from the allowable 60° F (15° C) - 85° F (26° C) range. These products are designed for service on substrate temperatures ranging from 60° F (15° C) - 85° F (26° C) unless otherwise noted in the specific installation section. These products are designed for service within ambient relative humidity between 40% and 60%.

Acclimation of the material is achieved when the following conditions are met within the installation area.

- **Service environment** is defined as the environment in which the materials will be utilized.
- **Service temperature** is defined as the normal setting of the HVAC in the environment in which the material is installed, i.e., typically 70° - 72° F in most commercial applications.
- **Temperature** must be maintained between 60° F (15° C) - 85° (26° C), preferably at the **desired service temperature**.
- **Relative Humidity** must be maintained between 35% - 65%, understand that Relative Humidity does not affect the installation of the material, but it can affect the functionality of the adhesives. Outside of the ranges, the stated information regarding open times, flash times, & dry times will vary.
- Facility must be fully enclosed, sealed and weather tight.
- Building HVAC must be up and running in permanent operation prior to installation (if temporary systems or systems other than the permanent HVAC systems are utilized it must be capable of maintaining the same conditions as the permanent HVAC and/or service conditions).
- Maintain all products and adhesives in installation area at the **desired service temperatures** for a period of 48 hours prior to installation, during the installation and for the service life of the installation.
- It is recommended to utilize a cloud-based or similar **data logging system** during installation to provide temperature & humidity data in the event of a warranty issue.

While we do our best to provide quality products and workmanship in our manufacturing facilities, quality installation is the responsibility of the installer. Inspect all material for proper type, color, and matching lot numbers if appropriate. We ask that we are notified of any inaccuracies or defects prior to installation as **we do not pay labor for or material costs on installed materials with visual defects**.

Users are advised to confirm suitability of these products by their own tests and ensure that all adhesives intended for installation meet the requirements of the end user.

By covering a substrate, underlayment, or existing surface, you have indicated acceptance of substrate and installation environment.

If there are concerns regarding this information or the service temperature, substrate temperature or installation environment will not meet these requirements, please contact Technical Services for recommendations prior to installation at solutions@rhctechnical.com, we will be happy to discuss and provide direction or confirmation of the project at that time.

SUBSTRATE PREPARATION

VaraCore is a waterproof flooring product designed as a floating installation; it should not be used as a moisture control product. It cannot inhibit the growth of mold or prevent structural problems associated with, or caused by flooding, excessive moisture, alkalis in the subfloor, or conditions arising from hydrostatic pressure.

Regardless of location, always remove standing water, urine, and other liquids promptly. Job site moisture issues should be addressed and corrected prior to installation. Fill expansion spaces around potential wet areas only with premium waterproof 100% silicone caulk.

All substrates must be prepared according to the following information (**ASTM F710 & ASTM F1482** have been used as a baseline, keep in mind our requirements are more detailed than these documents), as well as applicable ACI and RFCI guidelines. Substrates must be clean, smooth, permanently dry, flat, and structurally sound.

At the time of installation substrates must be free of visible water or moisture, dust, paint, sweeping compounds, post placement curing compound residues, residual adhesives, chemical adhesive removers, concrete hardeners or densifiers residues, solvents, wax, oil, grease, asphalt, visible alkaline salts or excessive efflorescence, mold, mildew and any other extraneous coating, film, material, or foreign matter. If not, consideration should be taken regarding the effects of these conditions and how they can affect the installation.

It is recommended that all substrates have a **flatness tolerance** of 1/8" in 6' or 3/16" in 10'. Substrates that do not meet this requirement shall have a cementitious patch or self-leveling underlayment installed to flatten the installation area.

All substrates must have all existing adhesives, materials, contaminants, or bond-breakers mechanically removed via scraping, sanding, grinding, or buffing with a 25 grit DiamoBrush Prep Plus tool prior to adhesive installation. In extreme situations, shot blasting may be required. Mechanical preparation must expose at least 90% of the original substrate. Following cleaning and removal, all substrates must be vacuumed with a HEPA approved vacuum and flat vacuum attachment to remove all surface dust. Sweeping without vacuuming may not be acceptable.

Do not use solvent/citrus based or other chemical adhesive removers or oil-based sweeping compounds prior to installation.

Regarding substrate preparation when mechanical sanding, grinding, shot blasting, and vacuuming always follow the Resilient Floor Covering Institute's (RFCI) "Recommended Work Practice for Removal of Existing Floor Covering and Adhesives," and all applicable local, state, federal and OSHA requirements regarding Asbestos and Silica containment regulations.

NON-APPROVED SUBSTRATES

Concrete substrates that have been abated or prepared with chemical adhesive removers, solvents, or chemical cleaners.

CONCRETE SUBSTRATES

- All concrete substrates, whether on-grade and/or below grade should have an intact and effective moisture vapor barrier which meets the current requirements of **ASTM E1745**.
- On-grade and/or below grade slabs not containing an intact and effective moisture vapor barrier meeting the current requirements of **ASTM E1745** should have a 100% solids moisture control system applied prior to application of patches, underlayments, adhesive and the installation of flooring products for the product warranty to remain in effect.
- All concrete substrates that have an ICRI Concrete Surface Profile (CSP) over 4 shall be smoothed with a self-leveling underlayment or a patch to prevent imperfections from telegraphing through flooring materials.
- Do not install over **expansion joints, isolation joints, or other moving joints** in the substrate. These joints must be honored and not filled with products that are not intended for that purpose.
- **Construction joints, saw cut joints, voids, and/or cracks** that are not moving may be covered. These should be prepared appropriately to ensure they do not telegraph through the flooring. Should the slab move and cause the preparation to move, the flooring will telegraph the preparation product. Any resulting visual changes or damage to the flooring resulting from this movement is not covered by the product warranty.
- All concrete substrates must be evaluated per **ASTM F2170** RH testing.
- All concrete substrates previously covered with resilient flooring must be evaluated per **ASTM F1869** MVER testing along with **ASTM F2170** RH testing. Results from MVER testing take precedence over RH testing.

For results exceeding the limitations of the adhesives, the application of a high-quality moisture mitigation system should be employed. **We do not provide warranty for any product or procedure for remediation of high moisture content.** There are several companies that manufacture products suitable for moisture remediation.

We suggest you refer to **ASTM F710** Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring and **ASTM F3010** "Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings". Although this testing information and these

recommendations are widely accepted within the resilient floor covering industry, there is currently no known exact amount of moisture vapor emission rate or exact % of RH to know exactly when a floor covering, adhesive, or coating system will fail.

- All concrete substrates must be evaluated per **ASTM F3191** to confirm **porosity (absorption rate)**, this is utilized to determine the method of adhesive application or how the adhesive will act upon the concrete and determine application method of the adhesive.
- All concrete substrates must be evaluated for **dew point** prior to installation, the substrate temperature shall be at least 5° F above the dew point.
- All concrete substrates should be evaluated per **ASTM F3441** to determine **pH** range of the concrete at time of installation.
- Concrete substrates containing **radiant heating systems** are suitable for this product.
 - Reduce the setting of the system to 65° F for the acclimation period. 48 hours after installation the temperature can be gradually increased to a maximum setting of 85° F.

We suggest performing an **ASTM F3311 Mat Bond Evaluation of Performance and Compatibility for Resilient Flooring System Components Prior to Installation** to alleviate any concerns regarding the condition of the substrate and if it is ready to receive resilient flooring.

WOOD SUBSTRATES

Wood substrates must meet local and national building codes and be prepared in accordance with **ASTM F1482** Standard Practice for Installation and Preparation of Panel Type Underlayments to receive Resilient Flooring. Prior to installation, moisture retardant sheeting with a maximum rating of 1.0 perm must be in place beneath the wood subfloor. It shall be overlapped at a minimum of 8" and the crawl space shall be well-ventilated.

- Wood substrates shall be rigid and free of any movement.
- It shall be structurally sound and designed as a resilient flooring underlayment, smooth enough to prevent telegraphing through the flooring product.
- At a minimum, existing stripwood plank or any board types that are unacceptable, must be covered with appropriate underlayment grade plywood.
 - For stripwood subfloors with a face width of 3" or less and is tongue-and-groove and with a smooth surface, use minimum 1/4" thick approved panel to cover and reduce the potential of board telegraphing.
 - For stripwood subfloors with a face width of greater than 3" or not tongue-and-groove, or with a rough surface, use minimum 1/2" thick approved panel to cover and reduce the potential of board telegraphing.
- Countersink nail heads and fill depressions, joints, cracks, gouges, and chipped edges with a good quality Portland cement-based patching compound designed for this purpose.

OSB (Oriented Strand Board), particle board, chipboard, lauan, or composite underlayments must not be used under resilient flooring.

EXISTING FLOORING SUBSTRATES

With **Terrazzo or Ceramic existing flooring**, ensure existing flooring is a single layer of material and that all materials are clean, dry, sound, solid, well adhered, and free of factory and/or site-applied finishes, waxes and/or contaminants. Remove and repair all loose tiles and utilize a suitable primer and cementitious patch to fill grout lines and other depressions.

Metal substrates must be mechanically sanded/ground/abraded and cleaned of any residue, oil, rust and/or oxidation. substrate must be smooth, flat, and sound prior to installation. When installing in areas that may be subject to topical water or moisture and/or high humidity, an anti-corrosive coating must be applied to protect metal substrate. Be sure to follow installation procedures and trowel sizes for non-porous/non-absorptive substrates.

Adhesive	RH % Limit	MVER Limit	PH Range
PS-525 NS	99.9%	12 lbs.	≥ 7 - ≤ 11
PS-525 ES	90%	6 lbs.	≥ 7 - ≤ 11

NS = New Slab, ES = Existing Slab previously covered

We highly recommend the removal of all **other flooring types** to the original substrate prior to the application of new resilient flooring products. However, we know there are certain times this cannot be or should not be avoided. Please refer to additional documentation regarding existing flooring substrates and how to address them for installation of new flooring.

SOUND CONTROL UNDERLAYMENTS

Sound control underlayments are normal for the installation of LVT & LVP products, especially in multi-level projects to meet code. Refer to the TDS for the individual LVT & LVP products for information regarding sound control with our underlayments. **Excelsior CSU-400 Sound Control Underlayment** and **Excelsior FSU-410 Floating Sound Control Underlayment** require the use of an adhesive designed to be utilized over non-absorptive surfaces such as our **Excelsior PS-525 Modified Pressure Sensitive Adhesive**. We do recommend that all underlayments utilized with LVT & LVP products be 2.5 mm or thinner to ensure stated performance of LVT & LVP products is achieved.

INSTALLATION

VaraCore Waterproof Rigid Core Flooring may be installed over many additional substrates that are excluded in the above substrate guidelines, examples would be wood substrates such as **OSB** and **Particleboard** primarily used in **residential construction**.

Installation of VaraCore in a residential application over these substrates does not void the **product warranty as it does in a commercial application**.

Ceramic Tiles with less than 1/4" grout lines, Vinyl Tiles, VCT Tiles, fully adhered laminate, fully adhered luxury vinyl flooring, fully adhered hardwood and fixed wooden boards are acceptable without cementitious patching compounds. **Grout lines of greater than 1/4" should be filled with proper patching compounds prior to installation.**

VaraCore Planks are intended to be installed with directional arrows on the back of the tiles facing the same direction. It is recommended to stagger the end joints at random to achieve the best overall appearance. Other traditional layout options are ashlar or brick patterns as well as 1/3rd offset patterns.

We do not recommend stair step patterns (where end joints are offset the same distance and resulting look resembles stairs or steps) or point-to-point installation layouts. End joints should be separated by a minimum of the width of the plank.

VaraCore 12" x 24" Tiles are intended to be installed with directional arrows on the back of the tiles facing the same direction. The traditional layout recommendation is ashlar or brick pattern.

Many of the Compass visuals are high contrast visuals, it may be necessary to dry lay tiles to determine the best visual layout of the installation.

Material is lot or production number controlled and material from different lot or production control numbers should not be combined unless shade variation is deemed acceptable. Also, it is not a bad idea to blend materials from several cartons from same production number to ensure consistency. Some product colorways and textures have latent and acceptable color variations.

FLOORING INSTALLATION

Since VaraCore is a floating product, it should not be used in areas with heavy rolling or static loads and should be allowed to expand and contract freely.

It must not be glued, nailed, or fastened to the subfloor in any way.

Permanent cabinets, vanities, islands, and equivalent items should be installed first.

Ensure substrate is clean, dry, flat, and sound prior to installation. Ensure the layout is squared appropriately within the area. Determine lay out for the area if not provided by dry laying the material with the area. Cut borders and other specialty pieces to leave a **1/4" (6mm) expansion gap** against or around walls, thresholds, transition strips, fixtures and other protrusions or accessories.

- When cutting square ends the use of a **laminate cutter, chop saw, or the scribe and snap method** can be used.
- Use a **jigsaw when curved or detailed cuts** are required.
- Avoid forcing material tightly against vertical surfaces, as material may buckle.
- When necessary, use a jamb saw or multi-tool to undercut door jambs or moldings to allow material to slide underneath for a seamless installation.

- Ensure all end seams are a minimum of the width of the plank and it is best that flooring seams do not directly align with seams in the substrate.
- It is recommended to install the planks parallel to the longest wall.
- Starting at one corner of the installation area, install the first plank with the longer tongue facing towards the wall.
- Install the next plank adjacent to the first plank, overlap the interlocking tab ensuring edges are aligned, utilize a full plank to ensure planks are aligned properly. Make sure seams are tight without any size (large or small) gaps.
- Use a hand roller or non-marking rubber mallet to firmly secure the end seams.
- End seams shall be level and flush when secured and not overly compressed.
- Use a new plank to start a new row, staggering the end seams in a random or pre-determined pattern.
- Start by holding the plank at a slight angle while interlocking the length of the planks together.
- Once completely engaged lower the plank flat ensuring there are no gaps.
- After installing the first row of planks, align and interlock length of next by lightly butting corner of first plank.
- Do not over compress to first plank.
- Drop into place and hand roll all seams for a tight and level fit.
- Proceed with rest of installation. End cuts from one row at finishing wall can be used to start next row.
- Once the installation has reached the center line, shift or adjust entire installed flooring section if needed.
- Proceed with installation of the remainder of the room.
- Once the adjacent wall is reached cut perimeter planks to fit remaining gap.
- When cutting planks lengthwise the use of a **table saw would be recommended**.
- When installing plank flooring in rooms with more complicated layouts, greater mindfulness will need to be observed to eliminate smaller fill pieces at ending walls.
- Visually inspect installation to ensure that material has not shifted and that all seams are tight.

POST INSTALLATION FLOORING PROTECTION

We recommend that the installation of new flooring material be performed after all other trades have completed their work. If this is not possible, properly protecting the new flooring material is essential to prevent damage. So, the following should be considered immediately following the installation process.

- Sweep or vacuum flooring to remove loose dirt, debris, and grit so that it does not become trapped under flooring protection.
- Protect newly installed flooring with construction grade undyed kraft paper or protective boards, such as Ram Board, ThermoPLY, 1/8" Masonite panels, or other materials to prevent damage by other trades.
- Restrict traffic for a minimum of 24 hours unless utilizing a dry-set application method that allows immediate foot traffic.
- Restrict heavy traffic, rolling loads, pallet jacks, furniture, and appliance placement for a minimum of 72 hours.
- After 72 hours heavy rolling loads, pallet jacks, furniture and appliance placement can take place with proper protection with 1/4" Masonite panels or similar protective measures. Do not slide or drag pallets or heavy equipment across the installed flooring.
- Post Installation, Prior to Service Maintenance requirements can take place after a minimum of 72 hours after the installation is completed.

SUPPORT & ADDITIONAL RESOURCES

Product Support Phone & Email	(844) 432 – 5885 / support@sixdegreesflooring.com
Technical Support Phone & Email	(844) 393 – 4044 / solutions@rhctechnical.com
Product Technical Documentation	www.sixdegreesflooring.com
Associated or Related Documentation	Excelsior AW-510 Wet-Set Acrylic Adhesive Excelsior PS-525 Modified Pressure Sensitive Adhesive Excelsior U-705 Urethane Adhesive Excelsior EW-710 Urethane Enhanced Two-Part Epoxy Adhesive Understanding Excelsior Adhesive Products Technical Bulletin Understanding Installation Substrate Requirements Technical Bulletin Referenced Standards within Technical Documents Technical Bulletin Radius, Radius 2.0, DeGradus, Compass, QuickShip, VaraCore, & Impression Stair Tread Care & Maintenance, Commercial Applications Radius, Radius 2.0, DeGradus, Compass, QuickShip, VaraCore, & Impression Stair Tread Care & Maintenance, Residential Applications

The contents contained within this Installation Sheet may be utilized or copied into another projected related document, but this original document will remain in effect at the time of product installation, this TDS shall not be supplemented or replaced by the resulting project documentation. **Any alterations to the wording or requirements contained in or derived from this document shall void all related warranties.**

Prior to acceptance of this document refer to the product website to confirm that you have the most current revision.

These products are intended for installation by professionals, prior to use the user must determine the suitability of our products for the intended use, and the user alone assumes all risks and liability.