Product Handling and Site Conditions

1. Store cartons of tile and/or plank with cartons stacked one on top of the other. Do not store on end or sides, or allow cartons to bend during storage or transportation.
2. **IMPORTANT:** Acclimate product to job site conditions by delivering all materials, including adhesives and maintenance products, to the job site at least 48 hours prior to installation. Store all products at 65° to 85° Fahrenheit (18° to 29° Celsius) for 48 hours prior to installation.
3. The space where flooring is to be installed shall be fully enclosed and the permanent HVAC system shall be operational prior to installing flooring. The temperature shall be 65° to 85° Fahrenheit (18° to 29° Celsius) for 48 hours before installation, during installation and for 48 hours after installation. The temperature of the space shall be kept at a minimum of 50° Fahrenheit (10° Celsius) continually after installation.
4. To prevent damage to the newly installed flooring the installation of flooring products should be after all other trades have completed their work. To further prevent damage after install until space is occupied, use of a reinforced fiber-based temporary floor protector product is strongly recommended.
5. To prevent adhesion problems with direct-glue installations, areas to receive resilient flooring shall be permanently dry, clean, smooth, level and structurally sound. They shall be free of all contaminants, including but not limited to: dust, solvents, paint, wax, oil, grease, residual adhesive, adhesive removers, curing, sealing, hardening or parting compounds, alkaline salts, excessive carbonation or laitance, mold, mildew; any foreign material that might prevent a proper adhesive bond[1]

Approved Substrates

The following are approved substrates for installation of BIRKDALE Luxury Vinyl Flooring. See the next section for proper testing and substrate preparation prior to installing your Novalis floorcovering.

- Above, on or below grade concrete without hydrostatic pressure, excess moisture or alkalinity
- APA registered underlayment, sanded face exterior grade with minimum rating of C-C plugged face
- APA registered exterior grade plywood sanded face with ratings as follows: APA A-B, A-C, B-B, B-C, C-C plugged face
- Properly prepared and well bonded existing resilient floor covering, single layer only
- Cement Terrazzo, ceramic tile, marble – see adhesive for proper preparation
- Certain metal floors – see adhesive for proper types and preparation. May require use of a 2-part epoxy; contact Capri cork at 877-861-5292 for assistance.
- Old adhesive residue
- Radiant heated floors where heat does not exceed 85°F (29°C)

The following are not approved substrates for installing Birkdale Vinyl Flooring:

- Epoxy terrazzo
- Rubber, cork or asphalt tiles
- Textured or cushion backed resilient flooring
- "Sleeper" floor systems
- Plywood floors that have been installed directly over a concrete slab
- Luan, OSB, particle or chip boards, CCA (pressure treated), oil treated or other coated plywood
- CDX or other plywood with knots or open defects
- Underlayment made of pine or other soft woods
- Masonite™ or other hardboard underlayment
- Hardwood flooring
- Paint, wax, oil, grease, residual adhesive, mold, mildew, and other foreign materials that might prevent adhesive bond
- Other uneven or unstable substrates.

Substrate Preparation
All substrates must be properly prepared and tested according to the following guidelines.

1. Concrete Subfloors
    a. Concrete slab construction shall be in accordance to industry standards for specification related to concrete mix design, curing methods and drying times to prevent moisture problems.
    b. On-grade and below-grade slabs should be installed with a suitable vapor retarder directly underneath the concrete slab.
    c. New concrete shall be properly cured and dried prior to the installation of floor covering. Curing agents, surface hardeners and other membranes or compounds shall be mechanically removed immediately after initial cure to allow the slab to properly dry before installation. Approximately 30 days per 1" of slab thickness.
    d. All concrete substrates, regardless of grade or age of slab, must be properly tested using one of the methods outlined below for warranty to apply. Acceptable test method is ASTM F 2170 In Situ Relative Humidity. Testing shall be conducted according to the test method and instructions of the manufacturer of the testing equipment.
    e. Concrete Alkalinity / pH Test shall be performed when the test site is at the same temperature and humidity expected during normal use; or at a temperature of 65° - 80°F (18° - 26° C) and 45% - 50% humidity for minimum 48 hours prior to testing. Using distilled water, place drops of water to form a small puddle approximately 1" in diameter. Wait 60 seconds, and then dip a portion of the pH paper into the water. Acceptable pH levels of the concrete are between 5 & 9 when compared to the color chart provided in the test kit.
    f. Concrete Slab Preparation

i. Concrete slabs shall be clean prior to installing floor coverings. Remove all sealers, curing agents and compounds, grease, oil, adhesive removers, old adhesive residue, dirt, paint, etc. to ensure a clean bond surface for the adhesives.
ii. Concrete floors shall be smooth and level to prevent irregularities, roughness or other defects from telegraphing through the new resilient flooring. The surface of the slab shall be flat to within 3/16" in 10 feet. Uneven areas should be mechanically ground to smoothness.
iii. Cracks, depressions or other similar irregularities should be leveled using a suitable Portland cement based patching compound. Follow the patch manufacturer's instructions regarding mixing and applications.
iv. Overly porous, dusty, flaky or soft concrete surfaces are not suitable for resilient floor coverings. It may be necessary to mechanically remove the top layer concrete in such cases and/or these surfaces may need to be primed and covered with a cement based underlayment compound. Follow the patching or leveling compound manufacturer's instructions regarding preparation of the concrete surface, priming, mixing of the product, thickness of application and drying time for resilient floor covering installation.
v. Expansion joints, isolation joints, control joints or other moving joints in the concrete slab shall not be filled with patching compound or covered with resilient flooring.

2. W**ood Subfloors**
   a. A combination of wood subfloor and panel underlayment construction shall be a minimum of 1" in total thickness.
   b. There shall be at least 18" of well-ventilated air space beneath all wood subfloors. Crawl spaces shall be insulated and protected by a suitable vapor barrier.
   c. Wood subfloors installed directly on concrete or over "sleeper" joist systems are not acceptable for use under Novalis Resilient Flooring.
   d. Panels designed as suitable underlayment shall be at a minimum ¼" in thickness, dimensionally stable, fully sanded face to eliminate grain texture or show through, have a written manufacturer's warranty and installation instructions and be free of substances such as ink, fillers and resins which may lead to staining of the resilient flooring.
   e. Panels shall be installed according to manufacturer's instructions regarding stapling pattern, sanding and filling of joints, and acclimation to installed environment.
   f. Novalis will not cover or accept responsibility for the following:
      i. Telegraphing from joints (ridge or valley), grain, or texture of underlayment
      ii. Discoloration of finished flooring due to materials used for filling of voids and defects in the face of the underlayment
   g. Unacceptable substrates shall be covered using a ¼" or thicker panel underlayment recommended for commercial use.

3. Existing Resilient Flooring
    a. When installing BIRKDALE Luxury Vinyl Flooring over existing resilient floors, the existing flooring must be:
        i. Single layer only and firmly bonded to the substrate
        ii. Thoroughly stripped of all wax, floor finish, dirt and other contaminants that may affect adhesive bond
        iii. Flat and smooth with no curling edges or loose seams
        iv. Must not be of a cushion back, floating, or perimeter bonded floor
    b. Novalis is not responsible for problems leading to or from indentations, telegraphing of old floor or adhesion release of old floor after the BIRKDALE Luxury Vinyl Flooring is installed.
4. Old Adhesives
    a. Adhesive residue shall be properly prepared prior to the installation of BIRKDALE Luxury Vinyl Flooring. It is recommended that mechanical scraping or grinding be used as a primary means of removing old adhesive residue.
    b. Residues include, but are not limited to carpet, vinyl, VCT, and or wood flooring adhesives.
    c. Black cutback/asphalt adhesives shall be scraped by hand to remove any loose patches, trowel ridges and puddles so that only a thin residue layer remains. This layer shall then be properly covered using a Portland based patching compound properly mixed with the manufacturer's recommended latex/acrylic additive.
    d. If chemical/liquid adhesive removers are utilized, the manufacturer's recommended instructions for cleaning after use of the remover shall be followed fully. Novalis is not responsible for any adhesive failures, indentation, bubbling, or delamination of new flooring due to improper cleaning of residue left from liquid adhesive removers.

WARNING!
DO NOT SAND, DRY SWEEP, BEADBLAST, SHOTBLAST OR USE ANY OTHER MECHANICAL MEANS TO PULVERIZE EXISTING TILE FLOORING, BACKING, LINING FELT, ASPHALTIC "CUT-BACK" OR ANY OTHER ADHESIVES. THESE PRODUCTS MAY CONTAIN ASBESTOS FIBERS AND/OR CRYSTALLINE SILICA. AVOID CREATING DUST. INHALATION OF SUCH DUST IS A CANCER AND RESPIRATORY TRAC T 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.

5. Other substrates
    a. Cement terrazzo and metal floors may be suitable for installation and need to be properly prepared for adhesion. Most will need to be prepared with a suitable Portland-based cement patching compound, see manufacturer's recommendations

for use and preparation of subfloor. **Contact Novalis Technical Support at 866-NOVALIS or techsupport@novalis-intl.com for these installations.**

i. Ceramic, porcelain, marble and granite tiles are suitable as substrates provided the tiles are properly bonded with intact grout joints and free of cracks, and the surface of tile and grout joints is free from sealers, coatings, dirt and contaminants.

ii. Properly prepare the surface of tiles by grinding any high areas and using a suitable Portland-based leveling compound and primer to fill in all low areas. Follow leveling compound manufacturer's recommendations for surface preparation and application of product.

b. The following are not suitable substrates for installation of BIRKDALE Luxury Vinyl Flooring: rubber, cork, or asphalt tiles; epoxy terrazzo flooring; stained or painted concrete and any other material covered in the sections above and listed as unsuitable.

c. Unsuitable substrates should be covered with an approved ¼" wood underlayment or suitable Portland-based cement leveler or patching compound. Always follow the manufacturer's recommended practices when covering an existing substrate.

Installing BIRKDALE Luxury Vinyl Flooring

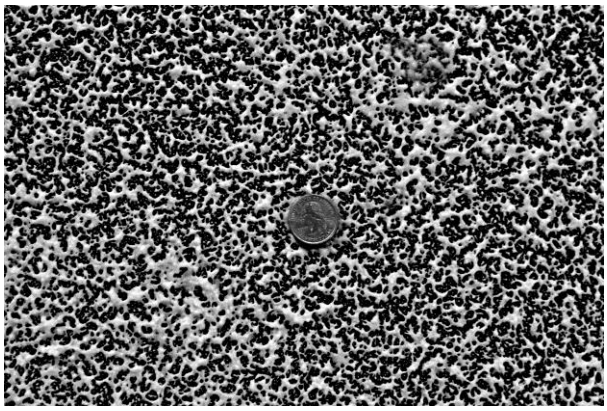
1. General
   a. When using more than one carton, make sure that the cartons are all the same run / lot number. Different lots may have a variation in color, texture or gloss so they should not be mixed in the same room. **Contact Novalis International before installing product from differing runs or lots.**
   b. Planks are best in appearance when lying parallel to the longest walls in the room.
   c. Novalis products can be cut using a tile cutter or a utility knife. Keep knife blades sharp for easy, accurate and safe cuts. Fit planks to walls, columns, door jambs, etc. using the same methods other floor tiles; overlap, pattern scribe, wall scribe and free hand.
   d. It is recommended that you not work on the freshly installed flooring. This means that you will have to start from the wall or area opposite of an exit, and work towards that exit. Only spread enough adhesive that can be utilized before the initial set or tack. See adhesive container label for approximate times and further instruction.
   e. If it is necessary to heat the planks to achieve a cut, heat slightly from the back only with minimal heat setting (a standard hair dryer will produce enough heat). Carefully make cuts with a sharp utility knife on the heated plank.
   f. **Multi-width planks**
   Birkdale MW Multi-width planking is supplied with an equal number of each sized plank in the carton. Novalis suggests a pattern using equal number of rows be used in each design layout as in a 5"-6"-7" pattern repeat. If a different pattern is chosen it is the installer/designer's responsibility to ensure sufficient flooring is obtained.

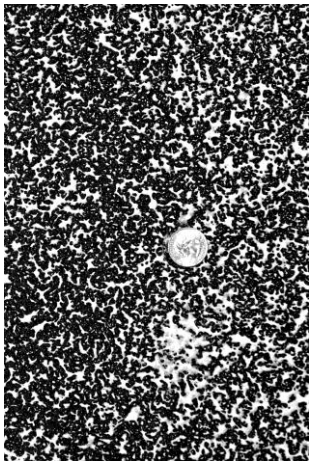
2. Novalis trowel-grade adhesive installation method
    a. NovaFloor adhesives are designed to be used on most interior installations over most concrete and wood substrates, and other approved substrates that are properly prepared and leveled. A complete guide to NovaFloor adhesives can be found at www.novalis-intl.com.
    b. Some commercial applications and special substrates a two-part epoxy or urethane adhesive is recommended. Typical applications for these types of adhesives are wet areas, floors subjected to heavy point loads and/or rolling loads, and floors that will be exposed to extreme temperature changes or extreme temperatures. **Contact Novalis Technical Support at 866-NOVALIS or techsupport@novalis-intl.com for proper adhesives and installation procedures**.
    c. If it is determined that a non-Novalis adhesive is to be used on an installation, Novalis recommends a written warranty be obtained by the adhesive manufacturer warranting this specific installation with their products.
    d. Surface porosity of the substrate needs to be determined before applying adhesives. To determine if a substrate is porous, sprinkle a few drops of water in the prepared substrate. If the water is absorbed with 2 minutes the substrate should be considered to be porous.
        i. Porous substrate installation, NFA-T226 trowelable adhesive



            1. Requires a trowel notch of 1/16” x 1/32” x 1/32” u-notch be used
            2. The adhesive should be allowed to dry to the touch sufficient to prevent slippage. Loss of adhesion can result if the flooring is not installed within the working time of the adhesive
        ii. Non-porous installation, NFA-T226 trowelable adhesive
            1. Requires a trowel notch of 1/16” x 1/32” x 1/32” U-be used.
            2. Allow the adhesive to dry to the touch with no transfer of adhesive to the finger(approximately 30 – 45 minutes) and install the LV plank within 60 minutes.
            3. Do not install flooring into wet adhesives on non-porous substrates.
3. Novalis aerosol spray grade adhesive method
    a. NFA-S300 spray adhesive can be used on porous and non-porous substrates. Non-porous substrates may require a lighter application of adhesive and should be tested in a small area before beginning installation.
    b. Spray pattern should be enough that one 22 oz. can produces a spread rate of 150 – 185 ft^2.
    c. To apply S300 adhesive, shake can well before using and point can downwards towards the floor. Press the side of the nozzle tip as you slowly walk back and forth; **do not use a sweeping motion.** Clean up all drips and be sure to achieve full coverage when installing luxury vinyl products with S300 adhesive.
    d. Allow the adhesive to dry completely to the touch with no transfer to fingers. Open time will vary according to spray pattern, substrate and ambient conditions.

e. Working time should not exceed 4 hours; be cautious as to how large of an area is sprayed.
f. Consult the instructions on the can or the NFA-S300 Technical Data Sheet which can be found at www.novafloor.us for more information.





Coverage patterns: 150 ft^2 185 ft^2
(A quarter is shown in the picture for reference only)

4. Layout
   a. Determine the center of the room by measuring each end wall and marking the center of the wall. Chalk a line across the points and measure to determine the center point. At a right angle to the chalk line, using the center point, chalk another line out to the other walls.
   b. Dry lay a section of tile/plank from the center line to one wall to determine that the pattern is centered and fit. Measure the border cuts along the wall and compare to the following criteria. If necessary adjust the first row at the centerline to meet either the plank.
   For patterns using the Birkdale MW multi-width planks, be sure to balance the complete pattern during the dry-lay phase. This will ensure the overall appearance of the installed floor is balanced.
   c. Planks should never be less than 9 inches long or less than half of the width of the plank. Avoid small pieces in border areas and adjust the center lines to achieve the proper pattern.
   d. Tiles should not be less than 6" in length or width. Avoid small pieces in border areas and adjust the center to achieve the proper pattern
   e. Tiles are designed to be laid in any fashion with the most popular being point-to-point and ashlar patterns. All tile sizes and patterns look best when the layout is balanced in the installed room.

5. Installation of flooring
   Spread adhesives using the proper trowel notch; more adhesive is not a good thing with LV products.
   a. **Plank installation**: Before spreading adhesive, strike a parallel chalk line to the centerline of the length of the room approximately 2' to 3' from the wall. Actual position is to be determined by the layout of the planks, ensure that the pattern is followed from your initial starting point determined in the dry layout performed earlier. If necessary, relay part of the pattern from centerline starting point to determine the exact measurement of the parallel line.
   b. **Tile installation**: Before spreading adhesive, strike lines parallel to the centerline approximately 2 tile widths from center on either side of the centerline. Tiles are best installed in a pyramid or grid by starting in the center of the room and working to the walls in sections. Keep the dry layout in mind when setting up the initial glue lines.
   c. Spread adhesive in an area that can be installed within the working time of the adhesive. Some slippage of the plank/tile may occur with a "wet" method. Be careful to follow layout lines and allow adhesive to set before rolling.
   d. After determining the starting point and spreading your adhesive; lay the flooring by tightly butting the edges of the pieces together, making sure that the runs are parallel to your centerline or layout lines. **Be sure to start with the correct sized plank when installing Birkdale MW flooring.**
   e. Be sure to stagger all end joints by at least 6" or the width of one plank. Vary the length of your planks during installation to ensure that end joints are not bunched and a randomness is achieved in the pattern.
   f. If you need to be directly on freshly laid planks, use of a kneeling board is recommended to evenly distribute weight across the planks and keep them from creeping in the wet adhesive.
   g. During installation, roll the floor with a 3-section 100 lb. roller to ensure proper transference of adhesive to the plank backing.
   h. Continue in this manner spreading only enough adhesive that can be safely installed within the working time of the adhesive.

After Installation

1. Be sure planks are set, flat and have tight edges. Re-roll the entire installation along the length and width of the planks with a 3-section 100 lb. roller to ensure all planks are properly set into the adhesive. If necessary, weigh down any loose planks overnight to ensure bond. Adhesive can be carefully reactivated using a heat gun after drying to re-install planks.
2. Clean adhesive residue from the face of the flooring following these directions:
   a. Wet adhesive residue on the surface of the planks can be cleaned with a clean, white cloth **dampened** with warm, soapy water. <u>Do not use excess water as this can seep between the seams of planks and lead to an adhesion failure!</u>

   b. Dry adhesive residue can be cleaned with mineral spirits or denatured alcohol and a clean cloth in a sparingly manner. Carefully follow the directions on the mineral spirits container. Please note: improper use of any chemical can harm the finish of the Birkdale Luxury Vinyl Flooring product.
   c. Aerosol spray adhesives can be cleaned up when wet with soap and water on a clean cloth. Dried spray adhesive may require use of a solvent.
   d. Do not pour soapy water, mineral spirits or denatured alcohol directly on the Birkdale Luxury Vinyl Flooring.
   e. If working with epoxy or urethane adhesives you must clean these up while wet according to the adhesive manufacturer's instructions, which can be generally found on the container label.
3. NovaFloor adhesives should be cured according to the following guidelines:
   a. For a wet-set installation
      i. It is important to allow the adhesive to set before accepting **any** foot traffic for a minimum of 12 to 24 hours. Failure to adhere to this guideline may result in shifting of planks, oozing of adhesive through seams or permanent indentations.
      ii. Do not allow heavy loads, rolling traffic, furniture or fixtures on the floor for 24-48 hours after installation.
      iii. Novalis is not responsible nor will warrant our products in the event that this is not properly followed.
   b. For a dry-set or pressure sensitive application do not allow foot traffic on the floor for 12 hours.
   c. Proper rolling of floors during and after installation is a must on Luxury Vinyl products. Use a 3-section, 100 pound roller to set flooring into the adhesives.
4. In the event that the Birkdale Luxury Vinyl Flooring is not the last portion of the construction project, the floor must be protected from construction traffic and damage. Wait 24 hours and utilize a reinforced fiber protective board or a heavy kraft paper (min. 60 lbs.) and cover the floor. Failure to wait 24 hours before covering can impact adhesive curing.
5. Initial maintenance
   a. Wait 7 days after installation is completed and thoroughly clean the floor using a neutral pH cleaner.
   b. If necessary, a slow (275-350rpm) buffer can be utilized with a white, non-abrasive pad to remove heavier deposits.
   c. Rinse the floor thoroughly and allow to dry.
6. Daily and weekly maintenance
   a. Sweep, vacuum or dust mop the floor as needed to remove dust loose dirt and grit. In high traffic areas this may be a daily or twice daily procedure. Use only a vacuums that do not have bristle beater bars.
   b. Clean liquid spills immediately to prevent the possibility of stains, slips or falls.

c. Damp mop the floor as needed to remove dirt and stains. Use a neutral pH cleaner and a red pad if needed to remove ground in dirt. Soft bristle brushes can also be used on flooring with embossed surfaces.

7. Preventative steps
   a. Use mats at all entry areas to keep dirt, sand and water off of the floor. Clean the mats on a regular basis. If mats are placed directly on top of the Novalis floor, be sure the mats have a non-staining back. Rubber mats are also not recommended over Novalis flooring products.
   b. Furniture shall have protective glides of at least 1" in diameter to minimize the chance of indentations or scratching to the surface of the floor. Do not use narrow chair glides! Felt pads are also excellent protection for the floor for furniture that will be frequently moved directly across the floor.
   c. Do not move heavy furniture, appliances or fixtures directly across the floor. Use protective boards or appropriate furniture movers designed for use over hard surface flooring.
   d. Protect the floor from direct sunlight by using appropriate window coverings.
   e. Use chair mats at desks to protect the floor from damage due to chair legs or casters.
   f. Periodically clean caster wheels and check for wheels that may be broken or no longer rotating. Replace damaged wheels immediately.
   g. Avoid use of metal or razor scrapers to remove dirt, residues or other marks from flooring. This will damage the protective wear layer of the vinyl flooring.

Footnotes

[1] ASTM F 710 Standard Practice for Preparing Concrete Floors to receive Resilient Flooring

Standards for Installation

ASTM	F 710	Standard Practice for preparing Concrete floors to receive resilient flooring
ASTM	F 1482	Standard Practice for Installation and Preparation of Panel Type Underlayment's to Receive Resilient Flooring
ASTM	F 2170	Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs using In Situ Probes
ACI	302	Guide for Concrete Floor and Slab Construction
RFCI		Recommended Work Practices for Removal of Resilient Floor Coverings

Accredited Organizations for Standard Practices

American Concrete Institute (ACI)
P.O. Box 9094
Farmington Hills, MI 48333
www.concrete.org

ASTM International
100 Barr Harbor Drive
West Conshohocken, PA, 19428-2959
www.astm.org

APA – The Engineered Wood Association (APA)
7011 S. 19th Street
Tacoma, WA 98466-5333
www.apawood.org

Resilient Floor Covering Institute (RFCI)
115 Broad Street, Suite 201
La Grange GA 30240
www.rfci.org