

Instruction Guide: LVP Vinyl Flooring of 2.0, 4.5 & 5.0mm thickness

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Rudiger Group Inc. bears no responsibility or liability for damage(s) resulting from the contents contained within this manual. All tasks performed by the product user are at the own risk and liability of the user.

Unless otherwise specified in this manual, the most current NFCA Floor Covering Reference Manual shall dictate the installation or service requirements of resilient products.

The information pertained within this guide is for reference only and does not supersede instructions from other product manufacturers or building codes. Consult and follow manufacturer's specific installation and safety instructions.

Information may change without notice. Visit www.bergmannfloor.com for most current revision.

1.0LVP - Owner Responsibility

You must read and fully understand this entire installation manual before installing the flooring.

Refer to www.bergmannfloor.com for the most up to date instruction guide and requirements.

The most current manual available at www.bergmannfloor.com at the time of the installation is considered to be the manual in effect for installation requirements.

The installer of the flooring must carefully examine the flooring to acknowledge acceptance of the color, finish and that there are no product defects before installing. If the flooring is not acceptable at the time of installation, the flooring should not be installed, until the installer or owner are satisfied with the product quality. Once the flooring is installed, it is considered as acceptance by the installer and the owner.

The labels on each carton indicate product color, production number(s) and or date(s). The installer must confirm the product number, production number(s) and or date(s) on the cartons match PRIOR to installation. If there is a discrepancy, it must be resolved before the installation begins.

Jobsite must be have adequate lighting during the entire installation process.

Never sand, scrape, sweep, drill or agitate an existing flooring or surface which has not been yet tested or confirmed to be free of asbestos.

The installer must use & wear all necessary personal protective equipment when installing flooring to ensure they are not injured during the installation. This includes wearing an appropriate dust mask, protective eye wear, gloves, hearing protection, etc.

Per NFCA Specification Guide 09 65 00:

“... to alleviate problems resulting from the improper selection and or installation of resilient flooring, it is the consumers responsibility to be properly informed.”

2.1LVP - Operating Ranges & General Limitations

- Per NFCA specification Guide 09 65 00:

Caution: Vinyl expands and contracts based on changes in temperature and can buckle when exposed to direct and extreme sunlight.

- The product is rated to be installed INTERIOR only.

- The floorings **“service condition”** range is between +18°C to +26°C with humidity of 40-60% relative humidity for the life of the product, including during installation & acclimation.

Definition of “service condition”:

The “service condition” is the environmental conditions (temperature, humidity, etc.) the jobsite will be subjected to its entire life.

- The temperature must not be allowed to change more than 2°C per 24 hour period, never exceeding +18°C and +26°C.
- Heat must be evenly distributed to all rooms, thus isolated heat sources such as spacer heaters or fireplaces require an expansion joint of 8mm be installed to separate the flooring near the heating source from the rest of the flooring.
- Per NFCA specification Guide 09 65 00: “heating, air conditioning and humidity control facilities (must be) in operation”
- In rooms with direct sunlight, use adequate blinds or window coverings, including temporary window coverings during construction.
- Per NFCA specification Guide 09 65 00: “Exposure to direct sunlight can result in product fading and creates excessive heat directly on the finished flooring and surround structure, which may result in movement. During peak sunlight exposure, the use of drapes or other window treatments are required.”
- Product expansion and contraction (dimensional changes) are an inherent property of Thermoplastic (vinyl) and to be expected. Exposure to temperatures & humidity beyond the allowable range will result in gapping, peaking in an installed / finished floor which is not warrantied. Thus gaps forming in the winter months is normal, as long as the gaps are within the industry standard tolerance for allowable dimensional stability of this product class.
- Edge protection and or reducers must be incorporated to protect the exposed edges of flooring from damage.
- Change in gloss level, dulling, scratching, scuffing, and chipping, are considered normal wear with the intended use over time as the floor ages.
- Installing the flooring over unapproved substrates can cause plasticizer migration in the flooring, which will damage the flooring.
- The use of an approved adhesive (see “Adhesive” section of this document), applied per adhesive manufacturers requirements has potential to mitigate the effects of dimensional changes within a vinyl flooring, but cannot fully eliminate it.
- Every flooring product will undergo expansion and contraction with temperature changes, vinyl being a thermoplastic will inherently exhibit more dimensional changes than other flooring products.

- Expansion joints must be installed into the floor at a rate which is required by industry standard for this type of flooring. Expansion joint frequency, location and size based must be calculated based on the thermal loading of the flooring, which is determined based factors such as color of the flooring (ie darker colors will absorb more thermal energy from light sources) room size, room shape, room sun exposure orientation (ie north/east/south/west), etc.
- Allow an 8mm gap at the perimeters of each room.

2.2LVP – Acclimation

The goal & purpose of acclimation is to allow the flooring to acclimatize to the “service conditions” where the flooring will be installed.

Definition of “service condition”:

The “service condition” is the environmental conditions (temperature, humidity, etc.) the jobsite will be subjected to its entire life. This includes both air, surface and substrate temperatures.

The floorings “service condition” range is between +18°C to +26°C with humidity of 40-60% relative humidity for the life of the product, including during installation & acclimation.

Is acclimation really necessary? Yes, according to the NFCA specification Guide 09 65 00:

- “failure to acclimatize resilient flooring may result in dimensional changes...”
- “deliver all materials to work areas when required and a minimum of 48 hours before installation to condition materials to site temperature and humidity conditions.”
- “The heating and air condition systems in these areas shall be carefully controlled during and after installation so as to maintain the heat and humidity levels at a constant level with the ranges noted.”

The temperature and humidity must remain constant during the entire life of the flooring, including:

- acclimation period, installation period and service life, never exceeding +18°C and +26°C, with relative humidity (RH) of 40 60%.

- Consider the temperature of a slab prior to installing, as it may be colder than the environment and change during the service life of the flooring which will cause the flooring to expand and contract.
- The boxes must be stored flat and level at all times.
- Never store the boxes on their sides.
- Boxes should not be stacked over four high.

3.1LVP - Subfloor Requirements – General

Subfloor General:

Subfloor must be:

- Clean
- Level
- Smooth
- Flat, not to exceed a variation in plane of 1/8" over 6'
- Deflection does not exceed L/360
- Structurally sound and able to support the load of the finished flooring
- Free of ALL bond breakers such as oils, waxes, coatings, sealers, dust, debris, adhesives, residual, etc.

Claims of the flooring telegraphing from subfloor imperfection is not the responsibility of the flooring manufacturer, but that of the flooring installer who improperly prepared the subfloor.

Follow the requirements of NFCA specification Guide 09 65 00 regarding surface preparation, including but not limited to:

- "the type, location, condition and surface tolerances of substrate must be in complete accordance with NFCA requirements and resilient flooring manufactures recommendations."
- "Fill substrate low spots, minor cracks, joints and holes with substrate filler... ensure substrates are free from all bumps, ridges and other imperfections....Sand smooth to eliminate all irregularities, bumps, ridges and other imperfections and vacuum clean to provide a surface that will not telegraph imperfections"

3.2LVP - Subfloor Requirements – Wood

Joist & Structure: Must be structurally sound, stable to support the flooring. Substrate deflection under all live, dead and impact loads, including concentrated loads, must not exceed L/360, constructed and constructed to meet building code.

Subfloor: At a minimum the wood subfloor must be an exterior grade CANPLY/APA rated T&G sheathing constructed and fastened to meet building code, with a moisture content less than 12%.

-5/8" (16mm) thick for joists spaced up to 16" OC

-3/4" (19mm) thick for joists spaced up to 19" OC

The subfloor seams must be sanded to create a flat plane.

Have a moisture content less than 12%.

Underlayment: A layer of underlayment grade (CANPLY/APA rated) plywood (ULAY) must be fastened on top of the subfloor, installed perpendicular to the subfloor sheets, fastened according to local building regulations.

All wooden substrate sheathing shall be covered with a suitable panel underlayment. The panel underlayment shall be specifically manufacturer and approved for installation beneath the scheduled floor covering.

- **OSB, particle board, chipboard, lauan or composite type underlayment's are not acceptable for installation beneath resilient flooring.**
- Have a moisture content less than 12%.
- Screw / Staple / Nail holes, imperfections and sheet seams in the subfloor must be "patched" with a suitable cement patching compound applied in according to patching manufacturer's requirements, to create a flat surface to avoid telegraphing of surface imperfections.
- Sheet seams sanded flush with adjacent panels
- Gaps / seams / indents and fastener penetrations must be filled with a correct Portland patching cement to create a flat surface
- Have a moisture content less than 12%.
- Fix floor squeaks PRIOR to installing flooring.
- A wood floor must be suspended at least 18" (457mm) above the ground. Adequate cross-ventilation is required.
- Wood subfloor installed directly over top of concrete (or on sleepers over concrete) is not permitted.

3.3LVP - Subfloor Requirements – Concrete

Concrete General:

Prior to installing flooring, concrete MUST be tested and verified as acceptable as meeting the following minimum requirements, tested at room temperature, on a clean, dust free surface with no contaminants:

- Prepared to ASTM F710 (standard for preparing concrete floors to receive resilient flooring).
- Free of sealers, coatings, curing or parting compounds, bond breakers, dust, oils, debris, etc.
- Minimum 90 days old.
- Minimum compressive strength of 3500 psi.
- ASTM F2170 and ASTM F1869 moisture tests must be performed.

- When tested according to the most current version of ASTM F2170, Relative humidity in concrete not to exceed 75% .
- When tested according to the most current version of ASTM F1869, Moisture Vapor Emission Rate (MVER) level to not exceed 3lbs / 1000sqft / 24 hours.

Note regarding ASTM F1869, ASTM F2170 and pH tests:

i) For installations under 1000sqft, 3 tests are required. For each additional 1000sqft, one additional test is required.

ii) A single test indicates the conditions only at the time the test is performed. You must take into consideration for change in season or environmental conditions, as this will change the results which could exceed the allowable moisture or alkaline levels.

iii) The tests must be recorded and documented.

- pH level no less than 7 and no greater than 9.
- Repair cracks and imperfections
- Prepare / repair all cracks prior to installation.
- Saw cuts / expansion joints in the concrete must be honored through up into the flooring.
Per NFCA specification Guide 09 65 00:
- “All low density or powdery surfaces shall be removed and corrected before the installation of any flooring material.”

Note regarding Alkalinity:

i) Alkalinity tests are to be performed per ASTM F710.

Factors such as moisture and concrete alkalinity can damage the flooring or the adhesive, which will void the product warranty. Installation failures due to the presence of moisture, hydrostatic pressure or alkali are not warranted.

ii) While LVP flooring is considered “waterproof”, a high alkalinity in a cement when coupled with or without moisture can damage the floorings, which can cause the finished flooring to curl, bubble, cup, lift or be subject to extreme dimensional changes. Mold, mildew.

Note regarding saw cuts, cracks and imperfections:

i) Claims of the flooring telegraphing subfloor imperfections is the responsibility of the flooring installer

ii) Patch, level, fill or grind low and high spots using suitable patching compounds, following the respective manufacturers requirements. Do NOT use gypsum based patching or levelling compounds.

iii) Saw cuts / expansion joints in the concrete must be honoured into the finished flooring.

3.3.1LVP – Subfloor Requirements – Gypcrete & Lightweight Concrete(s)

- Gypcrete and lightweight concrete have a high porosity, therefore require special instruction when applying resilient adhesive. Consult the adhesive manufacturer to determine surface preparation requirements such as the use of a surface primer prior to adhesive application. It is important to abide by the adhesive manufacturer's instructions and they can vary from brand to brand.

3.4LVP - Subfloor Requirements – In floor Heating

In floor heating is only suitable for 4.5mm and thicker LVP flooring. Thinner LVP floorings are not compatible with in floor heat and should not be used.

Per NFCA specification Guide 09 65 00:

- “The in floor heating system must be turned off 24 hours prior to the flooring installation and must remain off for 12 hours after the flooring installation.”

Important Note regarding in floor heat primary heat sources:

If the in-floor heating system provides primary heat to the dwelling you must determine the following:

i) If you are NOT able to maintain a surface and or air temperature within the service condition range **with the in-floor heat turned off** (+18°C to +26°C for 24 hours prior to installation and 12 hours after installation) you must consult the necessary trade contractor who can regulate the in-floor heat system to operate in a manner that the **surface temperature** does not drop lower than +18C or higher than +26C during the installation, acclimatization and required adhesive curing time.

ii) If in an extreme climate where it is not possible to regulate the in-floor and or surface temperatures to meet the service conditions defined in this manual, then the installation must be rescheduled to a date when the service conditions can be met.

- “Starting 12 hours after the completion of the flooring installation, gradually increase the temperature over a 7 day period at 2°C increments to the normal operating level”

The service condition temperature of the air temperature and floor temperature may not exceed the range of +18°C to +26°C, with temperatures never exceeding 2°C per 24 hour period until the operating temperature is achieved.

Once the installation is completed, the heat must be gradually increased at an increment no greater than 2°C per 24 hour period until the operating temperature is achieved, respecting the operating temperatures as noted in the “operating ranges” section of this document.

Do not place insulators such as rugs, dog beds, etc. on top of flooring with electric in floor radiant heating, as it can overheat the section of the floor, causing damage to the flooring or the electric heating wires or the flooring.

4.1LVP Adhesives & Installation

- Under no circumstance should you “perimeter glue” the floor, as this will indefinitely lead to gapping of the flooring.
- A “wet set” installation is mandatory for:
 - commercial installations (including light commercial)
 - residential and commercial installations with in-floor heating
- A “wet set” (also called permanent bond) adhesive installation is recommended for all installations (including residential installations) when compared with a “pressure sensitive” type installation as a “wet set” installation provides adhesive transfer to the underside of the flooring, providing higher bond strength, with more resistance to gapping, peaking, etc.
- Ensure 100% transfer of the adhesive to the substrate and the underside of the flooring for optimal performance. Adhesive transfer is critical for a successful installation.
- If there is not 100% adhesive transfer, remove the adhesive and reapply new adhesive.
- Per NFCA specification Guide 09 65 00:
“Periodically check by lifting a plank to ensure full transfer of the adhesive to the backing of the flooring.
- Perform a bond test is required per NFCA specification Guide 09 65 00 to ensure adhesive compatibility and suitability before installing the flooring.
- Do not spread more adhesive than can be covered by flooring before initial set takes place.
- Trowel teeth act as a “metering device” to apply a measured amount of adhesive to the flooring system. Thus as a trowel's teeth wear during installation, the trowel must be replaced to ensure the correct amount of adhesive is installed.
- Prohibit traffic on all installed resilient flooring for 48 hours after installation.
- An approved adhesive, installed per the adhesive manufacturer’s instructions must be used from the list below, to validate the flooring warranty.

Approved Adhesives

- Kiesel Okatmos Star 100+
- Kiesel Okatmos Star 150+
- Roberts 7350
- Mapei Ultrabond Eco 399
- Uzin KE2000

The responsibility, warranties and performance the adhesive is the sole responsibility of the adhesive manufacturer.

Refer to the adhesive manufacturer's guidelines & instructions to ensure adhesive suitability, sub-floor preparation, correct trowel sizes, rolling requirements, etc.

Adhesives cannot eliminate "gapping" or "peaking" in a finished floor, they can only limit it. Thus always abide by the "service condition" temperatures as defined in this manual.

A porosity test must be performed on the concrete prior to installing, with the results of the porosity test meeting those requirements of the adhesive manufacturer.

5.1LVP - Care, Maintenance & Use

- Only use cleaners with a pH neutral formula, which are specifically designed for vinyl floorings.
- Never apply polishes or waxes.
- Never use steam mops or hot water to clean the floor, as vinyl is a thermoplastic expands with heat exposure.
- Never use abrasive chemicals or abrasive pads to clean the flooring.
- Remove spills immediately.
- Chairs, stools, furniture, etc. must have protective pads at their contact point with the floor, to ensure the flooring is not damaged.
- If a chair has wheels / castors, the wheels must be soft and tested to ensure they do not damage the flooring, otherwise a protective matting must be laid on top of the flooring to prevent the flooring from being damaged.
- The flooring must be protected with appropriate temporary jobsite protective coverings during construction to prevent damage.
- Protect the flooring when moving appliances or furniture, to prevent damaging the flooring.
- Use vinyl compatible doormats at entrances to prevent unnecessary wear from abrasives like sand, mud, etc. Trapped sand or abrasives under the rug can scratch the floor.
- Mats & rugs must be confirmed to be compatible with vinyl flooring, rugs/mats with rubber (synthetic or natural rubber) backings can leave permanent stains, residual or markings on vinyl.

- Do not place insulators such as rugs, dog beds, etc. on top of flooring with electric in floor radiant heating, as it can overheat the section of the floor, causing damage to the flooring or the electric heating wires.
- Follow the requirements of NFCA Specification Guide 09 65 00: “at project completion, provide a minimum of one box of each type and pattern / color of resilient flooring used, or the amount required to meet 2% of the total area for each product installed or minimum 5m2 from the same production run for each type, pattern / color of flooring installed.”