



**Building Code E3/AS1: Internal Moisture
2nd Edition, Amendment 7
Alternative Solution Compliance Statement**

Building Code Clause E3 requires floor surfaces of any space containing sanitary fixtures or sanitary appliances in wet areas to be impervious and, easily cleaned, and have ventilation to meet conditions for health and safety.

It requires buildings to be constructed to avoid fungal growth and excessive moisture. Its provisions relate to habitable spaces, bathrooms, laundries and other spaces where moisture may be generated or accumulate. Its requirements include provisions for:

- adequate thermal resistance;
- space temperature; ventilation;
- disposal of overflow water; and
- surfaces to be impervious and easily cleaned.

The accepted solutions for flooring finishes in water-splash areas, including kitchen, laundries, bathroom and toilet areas are (i) slab-on-grade concrete that is steel trowel or polished finished, (ii) ceramic or stone tiles having 6% maximum water absorption or (iii) an integrally waterproof sheet material (e.g. vinyl) with sealed joints and edges sealed or covered.

The finish must be impervious and easily cleaned. The area extends to the doorway and all walls of the room, or at least 1.5 meters from all sanitary fixtures or appliances in open plan spaces.

Laminates and vinyl planks may still be used, however, these flooring finish types will now need to be specified and approved as an Alternative solution.

This document provides guidance in regards to the comment under section 3.1.1 Floors (under section 3.0 Watersplash) that states *“other floor finishes may also be capable of satisfying the performance for impervious and easily cleaned, if installed in a manner that prevents gaps or cracks within the finish and at any parts of its perimeter that are exposed to watersplash, and/or if the surface is sealed with a suitable durable coating”*.

When our products are installed in accordance with our Installation Manuals and, where applicable, Installation/Use Manuals of accessories, adhesives, moisture barriers and underlays, the product and systems meet the requirements of the E3 Building Code based on expert opinion obtained in this regard:

- In-Service History;
- Expert opinion or Producer Statement.

i. Impervious Surface

All our products are water and moisture resistant, featuring a durable, hygienic and waterproof surface that is easy to clean. Our products also feature locking systems that provide resistance to water penetration where watersplash may occur.

Our products utilize a I4F click technology, which is engineered to provide an extremely tight joint that inhibits regress of moisture.

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ii. Perimeters Exposed to Watersplash

For all our products (incl. Glue-down LVT, Rigid Hybrid Vinyl, Water-resistant Laminate and Engineered Stone products) the perimeters of the room should be installed with a compressible PE foam and covered with a flexible silicone sealant (not acrylic sealant) at the floor to wall junction to all perimeters extending to the doorway, or at least 1.5 meters from any sanitary fixtures of wet rooms or watersplash zone areas of open plan rooms to prevent gaps in the perimeter of the finish to prevent water ingress. In order to achieve the maximum allowed installation area, the main installation area should be separated from the wet room or splash zone area via joints at doorways and/or thresholds as required. Outside of water splash areas, standard installation guidelines must be applied as per our Installation Manuals.

iii. Service History

Our products have been distributed and installed by our partners in New Zealand for over 10 years. We have a proven track record of performance and service history in the New Zealand market for our products which were properly installed in accordance with our installation manuals and, where applicable, to the specifications as required under the Building Code.

iv. Additional Information

Apart from our long-standing history and experience in conducting business in the New Zealand market and the extensive testing performed internally by us, we are also currently working on having our flooring solutions independently appraised by BRANZ (www.branz.co.nz).

Please contact your Sales representative or our Technical Support team for further information, discussion or clarification of this statement or supporting documentation.

Konstantin Mishagin
Product Management and Compliance

Tenacity Flooring

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Phone: +86 573 8472 2833

Email: contact@tenacityflooring.com

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INSTALLATION GUIDE

Thank you for choosing our flooring. When properly installed and cared for, your new flooring will be easy to maintain and will keep its great look for years. Please read all the instructions before you begin the installation. Improper installation will void the warranty.

I. GENERAL PREPARATIONS

- Prior to installation, inspect material in daylight for visible faults/damage, including defects or discrepancies in color or gloss; check the edges of the flooring for straightness and any damage. No claims on surface defects will be accepted after installation.
- It is preferable to lay boards perpendicular to the window, following the direction of the main source of light. For the best result, make sure to always work from 3 to 4 cartons at a time, mixing the planks during the installation.
- Check if subfloor/site conditions comply with the specifications described in these instructions. If you are not satisfied, do not install, and contact your supplier.
- Flooring products can be damaged by rough handling before installation. Exercise care when handling and transporting these products. Store, transport and handle the cartons in a manner to prevent any damage. Store cartons flat, never on edge.
- Flooring products can be heavy and bulky. Always use proper lifting techniques when handling these products. Whenever possible, make use of material-handling equipment such as dollies or material carts. Never lift more than you can safely handle, get assistance.
- Calculate the room surface prior to installation and plan an extra 5-10% of flooring for cutting allowance.
- The flooring is intended to be installed in interior locations only. It is not to be installed in areas that are exposed to the elements, such as outdoor areas, semi-covered / "alfresco" outdoor areas, porches, etc.
- In most cases, this product does not need to be acclimated. However, if the boxes of flooring were exposed over 2 hours to extreme temperatures under 15°C or over 35°C within the 12 hours before the installation, acclimation is required. In this case, keep the boards in room temperature for at least 12 hours in unopened package before you start the installation. The room temperature must be between 15-30°C and the relative humidity should be maintained consistent between 30-65 % before and during the installation.
- Flooring should only be installed in temperature-controlled environments. It is necessary to maintain a constant temperature of 15-30°C and the relative humidity between 30-65% before and during the installation. Portable heaters are not recommended as they may not heat the room and subfloor sufficiently. Kerosene heaters should never be used.
- After installation, make sure that the flooring is not exposed to temperatures less than 0°C or greater than 50°C and the relative humidity between 30-65%.
- For floor surfaces exceeding 620 m² and/or lengths exceeding 25 m, use transition moldings leaving min 6 mm gaps.

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II. SUBFLOOR INFORMATION

- The flooring can be installed over most existing hard surface floor coverings, provided that the existing floor surface is clean, flat, dry, securely fastened, structurally sound and level to 5 mm within 3 m radius.
- The product can be installed on substrates with grout lines or grooves if these are less than 5 mm in width and 4 mm in depth. Depressions, deep grooves, expansion joints and other subfloor imperfections that do not meet this requirement must be filled with approved patching & leveling compound prior to installation.
- Substrates must be free from excessive moisture or alkali. Remove dirt, paint, varnish, wax, oils, solvents, any foreign matter and contaminants.
- Do not use products containing petroleum, solvents or citrus oils to prepare substrates.
- Although this floor is waterproof, it is not to be used as a moisture barrier, excessive subfloor moisture can be a breeding ground for mold, mildew and fungus – all of which can contribute to an unhealthy indoor environment.
- The subfloor must be dry. Comply with Mc requirements and tested as per one of below methods:
 - Concrete moisture vapor emissions should not exceed 3.63 kg MVER (moisture vapor emission rate) per 100 m² per 24 hours. This can be measured with the calcium chloride test (ASTM F1869).
 - 90 % RH (ASTM F2170) with a PH limit of 9.
 - Max. 2.5 % moisture content (CM method / ASTM F2659).

Note: It may not be the floor covering installer's responsibility to conduct these tests. It is, however, the floor covering installer's responsibility to make sure these tests have been conducted, and that the results are acceptable prior to installing the floor covering. When moisture tests are conducted, it indicates the conditions only at the time of the test. The floor should not be installed on subfloor with excessive moisture emission.

WOOD SUBFLOORS

- If this flooring is intended to be installed over an existing wood floor, it is recommended to repair any loose boards or squeaks before you begin the installation.
- Timber subfloors must have no more than 12% Mc (moisture vapor content).
- Nail or screw every 15 cm along joints to avoid squeaking.
- Basements and crawl spaces must be dry. Use of a 0.15 mm poly-film is required to cover 100% of the crawl space earth.
- Lay the flooring crossways to the existing floorboards.
- All other subfloors - Plywood, OSB, particleboard, chipboard, wafer board, etc. must be structurally sound and must be installed following their manufacturer's recommendations.
- Double-layered APA rated plywood subfloors should be a minimum 25 mm total thickness, with at least 45 cm well ventilated air space beneath.

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CONCRETE SUBFLOORS

- Existing concrete subfloors must be fully cured, at least 60 days old, smooth, permanently dry, clean, and free of all foreign material such as dust, wax, solvents, paint, grease, oils, and old adhesive residue.
- The subfloor must be dry. Comply with Mc requirements and tested as per one of below methods:
 - Concrete moisture vapor emissions should not exceed 3.63 kg MVER (moisture vapor emission rate) per 100 m² per 24 hours. This can be measured with the calcium chloride test (ASTM F1869).
 - 90 % RH (ASTM F2170) with a PH limit of 9.
 - Max. 2.5 % moisture content (CM method / ASTM F2659).
- A minimum 0.15 mm poly-film as a moisture barrier must be used between the concrete subfloor and the flooring.

DO NOT INSTALL OVER

- Any type of carpet.
- Existing cushion-backed vinyl flooring.
- Any type of floating floor.
- Hardwood flooring / wood subfloors that lay directly on concrete or over dimensional lumber or plywood used over concrete.
- If the floor has a pre-attached underlayment, the use of an additional underlayment could damage the locking mechanism and will void warranty.

IMPORTANT NOTICE

- **In-floor Radiant Heat:** Your new flooring can be installed over 12 mm embedded radiant heat using the floating method.
- Maximum operating temperature should never exceed 27°C. Use of an in-floor temperature sensor is recommended to avoid overheating.
- Turn the heat off for 24 hours before, during and 24 hours after installation when installing over radiant heated subfloors.
- Operate the system at maximum capacity for 48 hours to force any residual moisture from the cementitious topping of the radiant heat system at least 4 days before installation.
- Make sure that the temperature in the room is maintained consistent between 15-30°C before and during the installation.
- Once the installation is completed, the heating system should be turned on, at the ambient temperature and increased gradually 5°C degree increments every 12 hours until reaching normal operating conditions.
- Refer to the radiant heat system's manufacturer recommendations for additional guidance.

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Warning: Electric heating mats that are not embedded into the subfloor are not allowed for use underneath the floors. Using electric heating mats that are not embedded and applied directly underneath the floor voids the warranty.

Tip: The best idea to maximize the results of your heating system is to have “ON” times with a comfort temperature and “OFF” times with setback temperatures which are normally 4°C lower than your comfort temperature. The setback temperatures are particularly important as these won’t let the temperature of your room drop too much, meaning it is much quicker to heat your room back to comfort levels when it’s needed.

III. INSTALLATION

TOOLS AND SUPPLIES REQUIRED: Spacers / Saw / Adhesive Tape / 0.15 mm or thicker Poly-film Vapor Barrier / Ruler / Pencil / Tape Measure / Pull Bar / Construction Adhesive / Wedges / Tapping Block / Rubber Mallet.

- **For straight cuts:** Electrical hand saw, circular saw, miter saw, or table saw with a carbide-tipped wood combination blade or a continuous or segmented diamond blade
- **For rounded cuts:** Bi-metal or tungsten carbide jigsaw.

Important: When cutting this product please use a dust mask or other safeguards for personal protection, it is advised to cut in a well-ventilated area.

- Remove baseboard, quarter-round moldings, wall base, appliances and furniture from room. For best results, door trim should be under-cut to allow flooring to move freely without being pinched. After preparation work, sweep and vacuum the entire work area to remove all dust and debris.
 - Whenever possible, plan the layout so that the joints in the planks do not fall on top of joints or seams in the existing substrate. The end joints of the planks should be staggered a minimum of 20 cm apart. Do not install over expansion joints. Avoid installing pieces shorter than 30 cm at beginning or end of rows.
 - **Measure the area to be installed:** The board width of the last row shall not be less than 50 mm. If so, adjust the width of the first row to be installed. In narrow hallways, it is recommended to install the floor parallel to the length of the hall.
 - Begin laying in the left-hand corner, with the grooved edge visible and facing outward. Use spacers between the wall and the floorboard in order to keep a 6 mm gap.
 - **UNDERLAY:** As the floor has a pre-attached underlayment, the use of an additional underlayment could damage the locking mechanism and will void warranty.
1. **First row, second plank:** Insert the end tongue on the short side of the second plank into the end groove of the first one and rotate downward to assemble. Make sure both planks are perfectly aligned.

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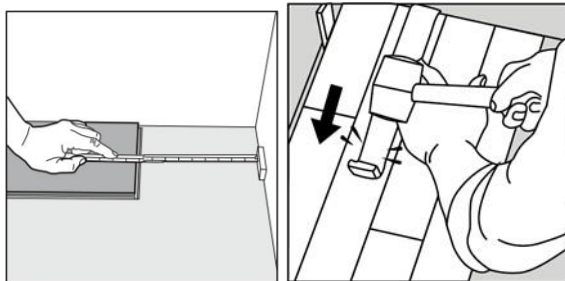
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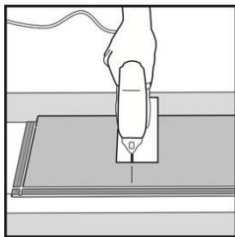
NOTE: If you notice both planks aren't at the same height or are not well locked together, please follow the disassembling instructions at the bottom of the page, disassemble and check if any debris stuck inside the lock is obstructing.



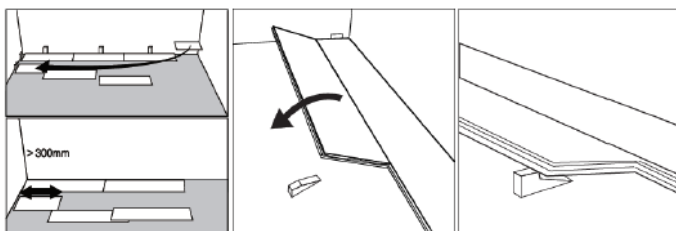
- 2. At the end of the first row:** Leave a gap of 6 mm to the wall to avoid any damage while installing your floor and measure the length of the last plank to fit. Insert the short side and tap it closed, using a pull bar.



Cutting tip: If cutting with a jigsaw, the floor surface should be turned down. Otherwise always cut with the floorboard facing up.



- 3. Second row, first plank:** Start the second row with a cut off plank. Always ensure that the end joints are staggered at least 20 cm, both when in the same row as when from one row to the next one. The first plank of the row should be at least 30 cm in length. Click the long side of the plank into the previous row and place an installation wedge under the board.



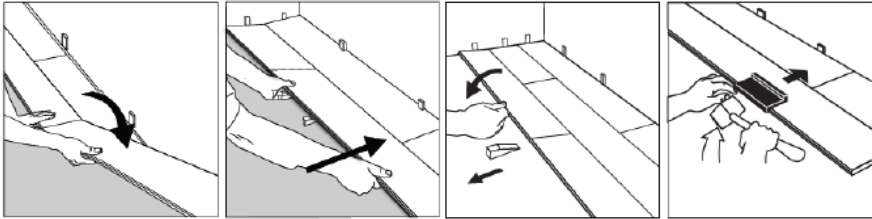
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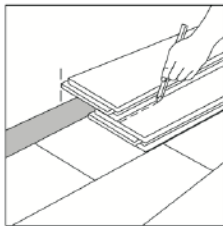


4. **Second row, second plank:** Place the short end of the plank at an angle against the short side of the previously installed floorboard and fold down. Slide down the long side of the board into the locking groove of the adjacent floorboard in the previous row. When the whole row is complete, remove the wedge and fold the row down. Use a tapping block or cutoff to gently tap along the long side until the joint is closed tightly.

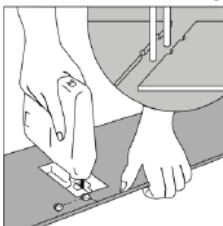


Tip: After finishing the installation of every row, use a tapping block or cutoff and a rubber mallet to gently tap the planks into the click of the previous row to make sure they are tightly clicked together and make sure there is no gap between the long side of the planks installed. Any gapping can compromise the whole installation.

5. **To lay the last row:** Position a loose board exactly on top of the last row laid. Place another board on top, with the tongue side touching the wall. Draw a line along the edge of this boards, to mark the first board. Cut along the edge of this board to mark the first board. Cut along this line to obtain of the required width. Insert this cut board against the wall. The last row should be at least 50 mm wide. Using a pull bar and hammer, work evenly along the length of the plank and lightly tap the joint closed. The spacers can then be removed.



6. **Holes for pipes:** Measure the diameter of the pipe and drill a hole that is 8 mm larger. Saw off a piece as shown in the figure and lay the board in place on the floor. Then lay the sawed-off piece in place.



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7. **Door molding and skirting:** Lay a board (with the decorative side down) next to the door molding and saw as shown in the figure. Then slide the floorboard under the molding.



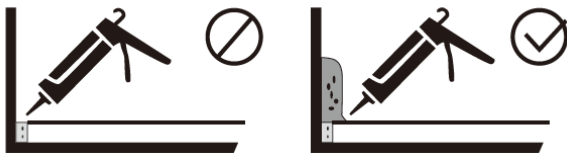
BATHROOM / WET AREAS / SPLASH AREAS INSTALLATION (including kitchens)

Fill the expansion spaces with a 6 mm compressible PE foam backer rod and cover with a flexible 100% silicone sealant to the entire perimeter of the installation. Do not use an acrylic sealant.

- Prior to installing moldings, apply silicone sealant to the portion of the molding or transition that will contact directly with the flooring surface.
- Install moldings and immediately wipe away any excess silicone sealant.
- Apply silicone sealant at connections to doorframes or any other fixed objects.
- Branded and generic silicone tubes are available in any local home center or hardware location.
- If a watertight installation is required, apply a silicone bead across the bottom of the tongue on both long and short side prior to installing the floorboard. Wipe off any excess silicone immediately.

IV. FINISHING THE INSTALLATION

Replace molding or wall base. Nail the molding to the wall surface, not through the flooring. If required, it's possible to use a flexible 100% silicone sealant on the junction between the skirting board (cover skirting board) and the flooring. Do not use an acrylic sealant.



In areas where the flooring planks may meet other flooring surfaces, the use of a transition molding is required to cover the exposed edge but do not pinch the planks. Leave a 6 mm gap between the planks and the adjoining surface.

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V. MAINTENANCE

- Sweep or vacuum daily using soft bristle attachments.
- Clean up spills and excessive liquids immediately.
- Damp mop as needed and use cleaners recommended and approved for laminate flooring.
- The use of residential steam mops on this product is allowed. Use at lowest power with a suitable soft pad, and do not hold a steam mop on one spot for an extended period of time (longer than 5 minutes). Refer to the steam mop's manufacturer instructions for proper usage.
- Use proper floor protection devices such as felt protectors under furniture.
- Place a walk-off mat at outside entrances to reduce the amount of dirt brought into your home. Do not use mats with a latex or rubber backing since these backings can cause permanent discoloration.
- Do not use abrasive cleaners, bleach or wax to maintain the floor.
- Do not drag or slide heavy objects across the floor.

VI. DISASSEMBLY

Separate the whole row by lifting it up delicately at an angle. To separate individual plank end-joints within a row, rotate the plank upward to disassemble.

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Maintenance Guide

Your Tenacity floor is ready for use when you buy it. After installation follow a few care and maintenance guidelines and your floor will keep its great look for years.

1. Cleaning

- For general cleaning, use a dust mop or vacuum cleaner with the correct hard surface attachment – never a rotating brush, floor scrubbers, jet mops, buffers or similar products.
- The floor may be cleaned with a damp or wet mop / microfiber cloth and an appropriate laminate cleaner.
- Avoid using too much water and never pour the bucket of water / solution across the floor. Be sure to squeeze the water out of the mop before mopping and rinse the mop frequently.
- The use of residential steam mops on this product is allowed. Use at lowest power with a suitable soft pad, and do not hold a steam mop on one spot for an extended period of time (longer than 5 minutes). Refer to the steam mop's manufacturer instructions for proper usage.
- Do not allow for moisture to remain on the floor for longer than 72 hours.
- Remove stains immediately with a well-wrung cloth. Worn-in stains are difficult to remove.
- Pet stains (including urine, feces and vomit from domestic cats or dogs) need to be cleaned within 24 hours.
- After washing always wipe dry with a micro fiber cloth until no more moisture is visible on the floor and allow your floor the time to dry.

2. Protecting

- Never use wax on the floor.
- Never use abrasive agents, as those can affect the gloss layer.
- Place small carpets or rugs on high-traffic areas.
- Place doormats at exterior doors, to reduce the amount of dirt coming in.
- Place beige felt floor protectors under chair and table legs. Do not use colored floor protectors.
- Avoid wearing damaged or worn stiletto heels.
- Place a protective mat under chairs with wheels. Place a protective dish under flowerpots.
- Do not drag heavy objects across the floor; lift them up to avoid scratches.
- Use floor protectors and furniture legs/castors with a large ground surface to limit the impact of heavy objects.
- Maintain a normal indoor relative humidity level between 40% and 65%. Use a humidifier, if necessary.

3. Plank replacement:

You can fix minor surface chips and scratches with laminate filler products from the home center. But if the damage is severe, you might want to replace the board entirely. A damaged board doesn't require disassembling the whole floor.

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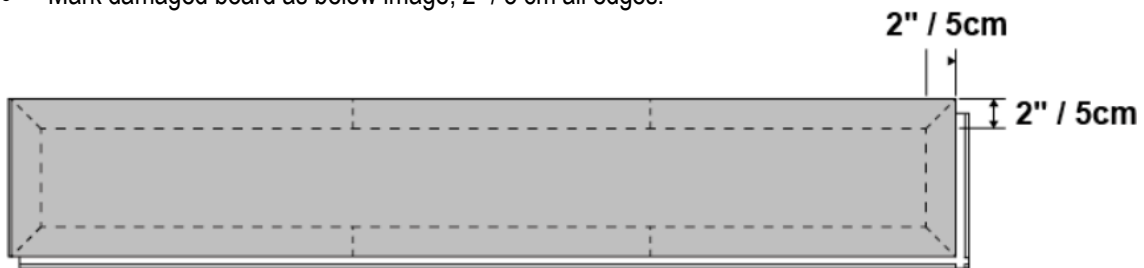
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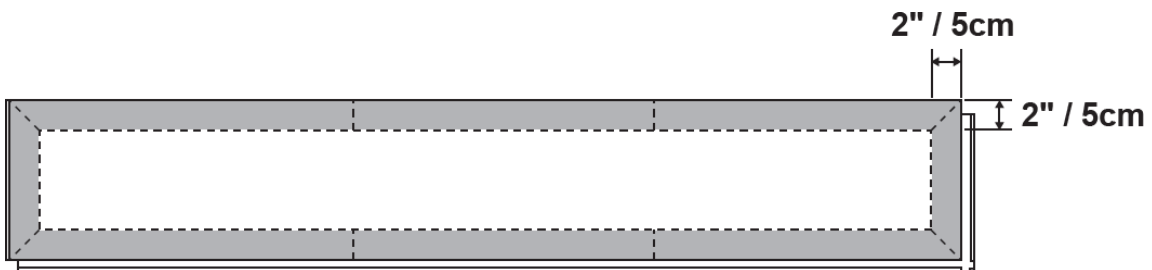
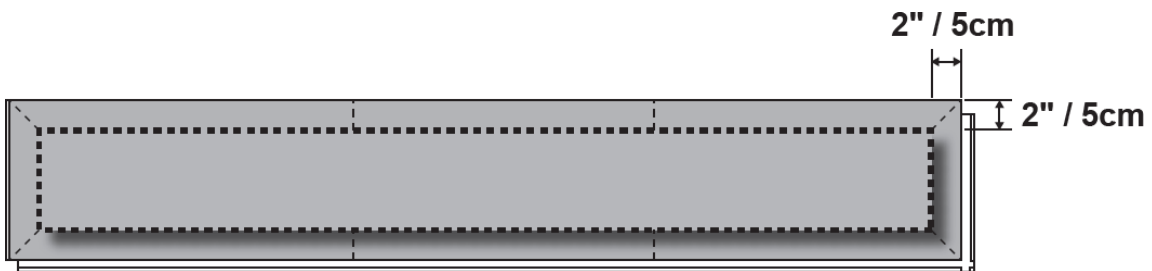
- If the damaged board is in a row alongside the wall, it's recommended to remove the base molding and unsnapping and numbering every plank until you get to the damaged portion.
- If the damaged board is in a row not touch a wall, you can fix it by cutting that single damaged board out and replacing it with a new one.

Things you'll need: Tape, knife, pencil, circle saw, chisel, high grab adhesive, weights, tapping block, hammer.

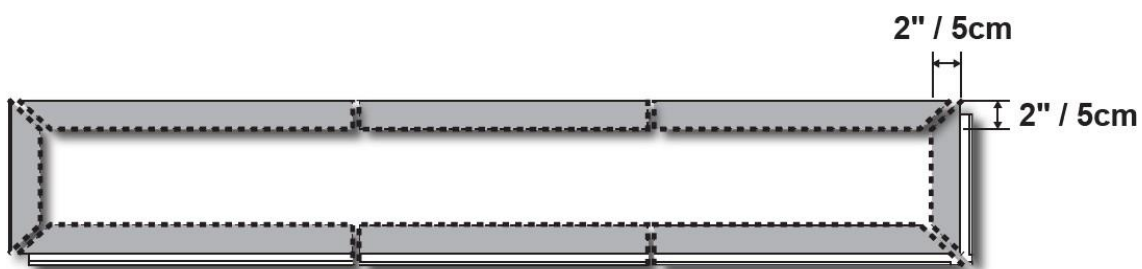
- Tape the neighboring boards around the damaged board for visual reference and for surface protection.
- Mark damaged board as below image, 2" / 5 cm all edges.



- Set saw depth to the board's overall thickness. Cut along lines and remove center section.



- Cut along lines to make relief cuts, then carefully lift and pull center length cuts first using a chisel, then work into corners to remove end pieces last.



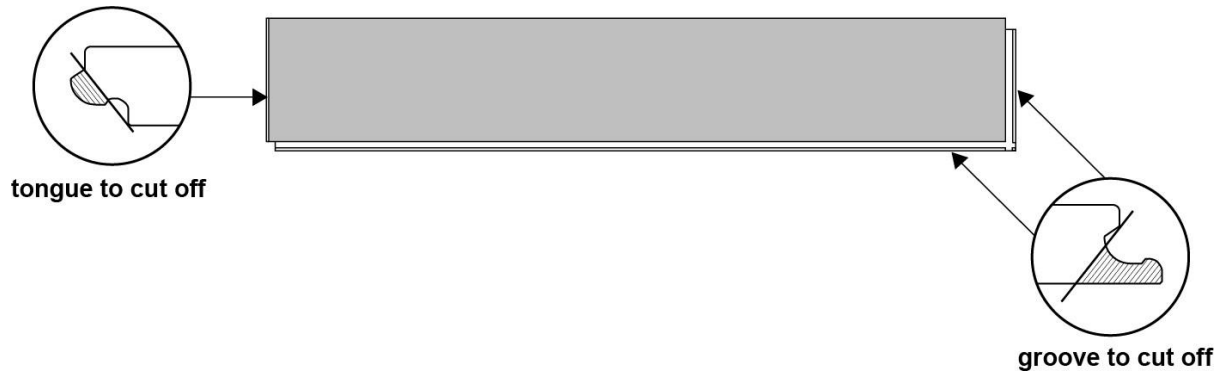
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- Vacuum all the dust and debris from the subfloor
- Using a utility knife, prepare the replacement board by removing the bottom groove on both ends (see drawing below) as well as the tongue on the short end.



- Apply a thin bead of high grab adhesive to the tongues of the remaining planks on the floor surrounding the plank being replaced.
- Slip the long side with the tongue in the groove of the surrounding plank. Gently lower the board into place in the hole. Be sure not to get any excess glue on the surface of the planks. If some glue does get on surface, wipe it off and clean immediately following glue manufacturer's instructions.
- Weigh the board down by evenly spreading out 88 lb / 40 kg of weight. Allow the glue to dry at least 24h or more if specified by the glue's manufacturer's instructions.

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TEST REPORT

No. : XMIN2207007314CM
Date : Jul 21, 2022
Page: 1 of 4



CUSTOMER NAME: CFL FLOORING (CHINA) CO., LTD.
ADDRESS: NO.111 CHANGJIANG ROAD, JIASHAN DEVELOPMENT AREA,
JIAXING, P.R. CHINA

Sample Name : MGO
Product Specification : 8+1mm RPET

Above information and sample(s) was/were submitted and confirmed by the client. SGS, however, assumes no responsibility to verify the accuracy, adequacy and completeness of the sample information provided by client.

Date of Receipt : Jul 15, 2022
Testing Start Date : Jul 15, 2022
Testing End Date : Jul 21, 2022
Test result(s) : For further details, please refer to the following page(s)
(Unless otherwise stated the results shown in this test report refer only to the sample(s) tested)

Signed for
SGS-CSTC Standards Technical
Services Co., Ltd Xiamen Branch
Testing Center

Civi Huang
Authorized signatory



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Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Gocheck@sgs.com

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TEST REPORT

No. : XMIN2207007314CM

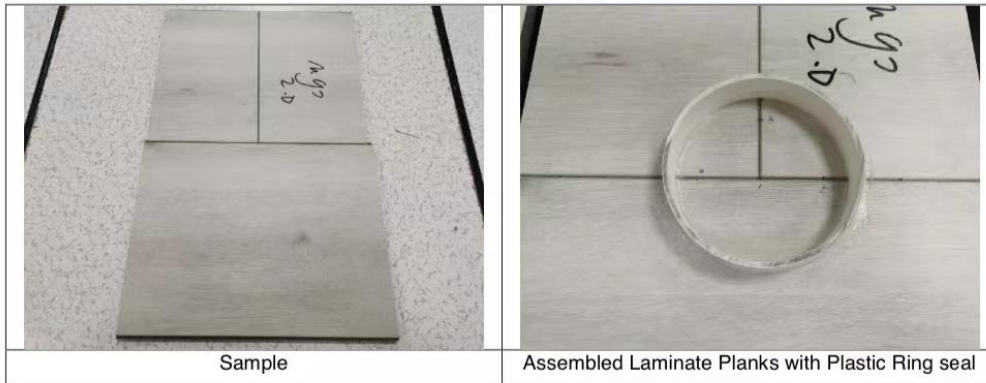
Date : Jul 21, 2022

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Summary of Results:

No.	Test Item	Test Method	Result
1	Laminate Surface Swell Test – Assembled Joint	Refer to NALFA Surface Water Test_Final_08-01-2019 and client's requirement	See results

Original Sample Photo:



Sample

Assembled Laminate Planks with Plastic Ring seal



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TEST REPORT

No. : XMIN2207007314CM

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Test Item: Laminate Surface Swell Test – Assembled Joint

Sample Description: See photo

Test Method: Refer to NALFA Surface Water Test_Final_08-01-2019 and client's requirement

Test Condition:

Specimen: 2pcs samples of 150mm×236mm×9mm and 1pc sample of 304mm×236mm×9mm form a specimen, total 2pcs specimens, see photo(s)

Exposure time: 24h

Recovery time: 24h

Test Result:

Specimen No.		1	2	Average
Quantitative calculation (see note 2)	The inverted "T" Joint Wet swell value (mm)	0.047	0.068	0.058
	Wet swell (mm)	0.038	0.038	0.038
	The inverted "T" Joint Recovery swell value (mm)	0.030	0.058	0.044
	Recovery swell (mm)	0.026	0.030	0.028
Remaining water after 24h exposure time (%)		83	44	/
Qualitative rating (see note 3)		Grade 1	Grade 1	/

Note: 1. All test specimens were cut from the samples, see the photograph.

2. For Quantitative calculation as below:

Wet swell = Wet height – initial height, Recovery swell = Recovery height – initial height.

3. For Qualitative rating, Evaluate the joints for apparent differences, in visual and feel (light touch can be helpful in discerning differences) within the circle compared to unexposed portions of the specimen and grade the test assembly per the criteria listed below:

Grade:

- 1 = No change – No noticeable change in edge swell or panel surface lift.
- 2 = Slight swelling – Slight swelling, small ridge along one or more joints, very little if any panel surface lift.
- 3 = Significant – Noticeable edge swelling and some panel surface lift extending in away from joint.
- 4 = Objectional – Severely raised edge and swelling extending noticeably under the panel surface.
- 5 = Invalid Test – Water leaked out of the ring, leaving no continuous film of water inside the ring (this grade is given even if there is no swell of the edge joint).



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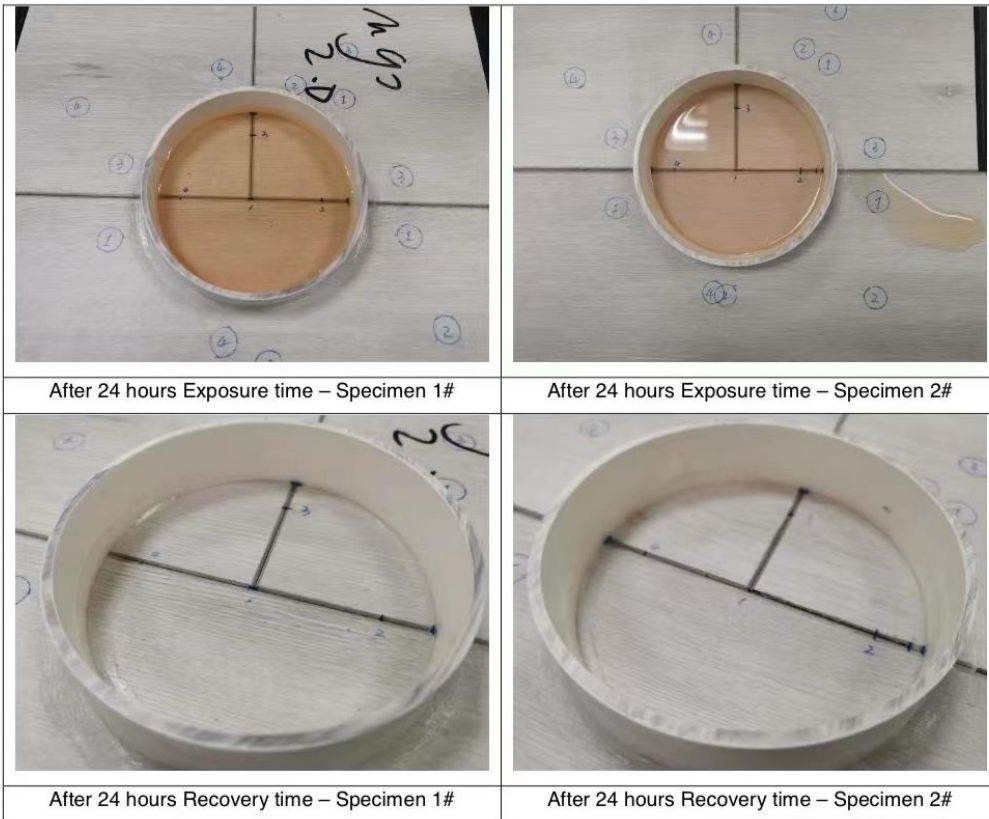


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Test Photo:



***** End of report*****



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