

STANDARD TEST METHOD FOR DETERMINING SURFACE EFFECT OF MOISTURE ON A LAMINATE FLOORING SEAM

1.0 Scope

This test method provides the ability to evaluate the effects of moisture on a joined laminate flooring seam.

2.0 Test Apparatus

- 2.1 Professional towel, (e.g. Kimberly-Clark Protowel 05770) for containing potential water run-through from specimens.
- 2.2 The measuring device shall consist of a three point flat support frame with dial indicator comparator that can measure changes in surface height at a specified location. See Figure 1. The unit shall be equipped with a micrometer gauge capable of measuring up to nominal 25 mm (1 inch) graduated to 0.02 mm (0.001 inches). The foot/anvil of the indicator shall have a diameter of $10\text{ mm} \pm 1\text{ mm}$ ($0.394\text{ inches} \pm 0.039\text{ inches}$) with an exerted force of $100\text{ g} \pm 14\text{ g}$ ($3.5\text{ oz} \pm 0.5\text{ oz}$). Other suitable devices may be utilized, provided they offer at least equivalent measurement capability.
- 2.3 Distilled or deionized water maintained at $23^{\circ}\text{C} \pm 3^{\circ}\text{C}$ ($73^{\circ}\text{F} \pm 5^{\circ}\text{F}$).
- 2.4 Plumber's putty or caulk.
- 2.5 Plastic pipe with nominal 75 mm (3 inch) inside diameter by approximately 20 mm (0.75 inch) high.
- 2.6 Graduated flask capable of measuring 50 ml (1.7 oz.).

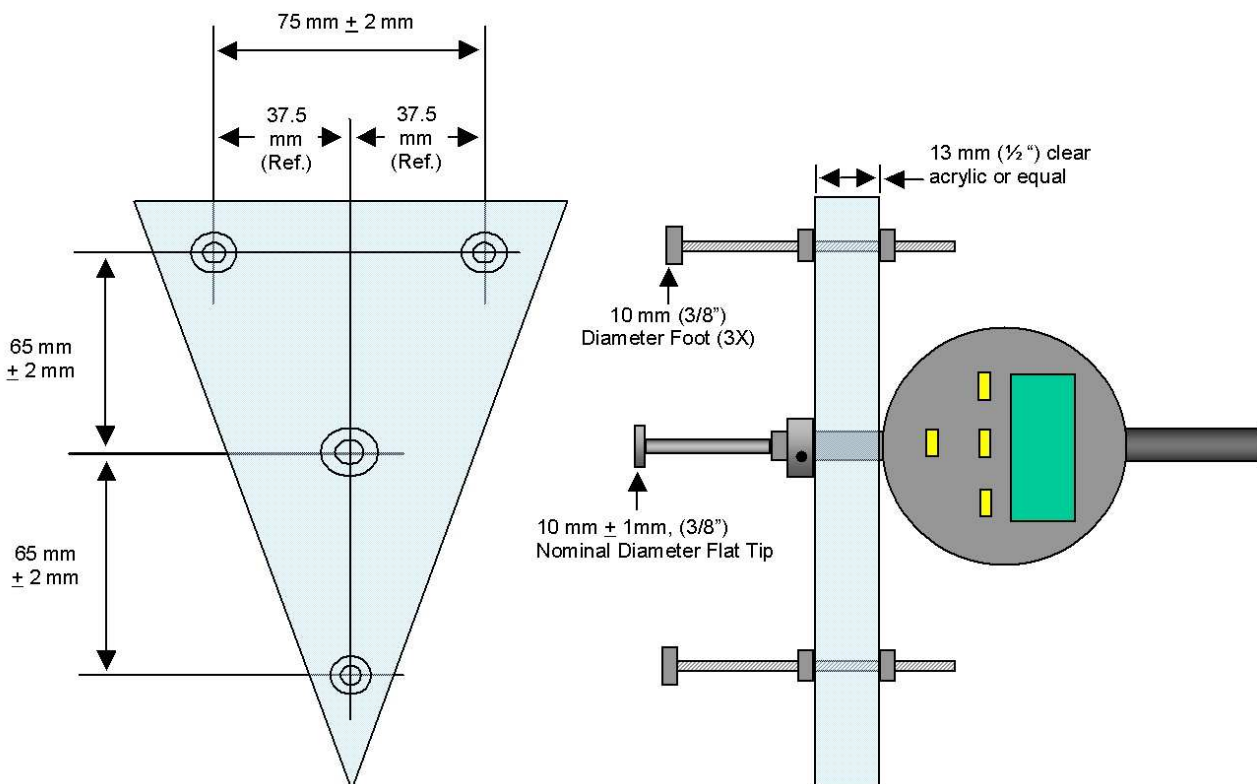


Figure 1
Measurement Device

3.0 Specimens

- 3.1 A test specimen shall consist of a laminate flooring assembly measuring a minimum of 600 mm (24 inches) long by a minimum of 200 mm (8 inches) wide. Specimens can utilize multiple narrow width planks provided plank width is at least 62.5 mm (2.5 inches) wide. If the boards are cut to make up a specimen, the samples shall be taken from opposite ends of the plank or tile. Materials shall be conditioned at temperature of $23^{\circ}\text{C} \pm 3^{\circ}\text{C}$ ($73^{\circ}\text{F} \pm 5^{\circ}\text{F}$) and $50\% \pm 5\%$ relative humidity for a minimum of 48 hours.
- 3.2 Specimens shall be joined together per the manufacturer's assembly instructions. If the seams are to be glued and/or sealed, prepare the joint according to the manufacturer's recommendations for proper set or cure time.
- 3.3 Joined specimens shall not be taken apart and rejoined until testing is completed once the specimens are assembled.
- 3.4 This method is designed to test a "T - seam" configuration. See Figure 2.
- 3.5 "T - seam" test locations shall be separated by at least 300 mm (12 inches)
- 3.6 "T - seam" test locations shall be a minimum of 150 mm (6 inches) from the end of the assembled specimen.
- 3.7 "T - seam" test locations shall be a minimum 100 mm (4 inches) from the side edge of the joined specimen.
- 3.8 Two specimens shall be tested.

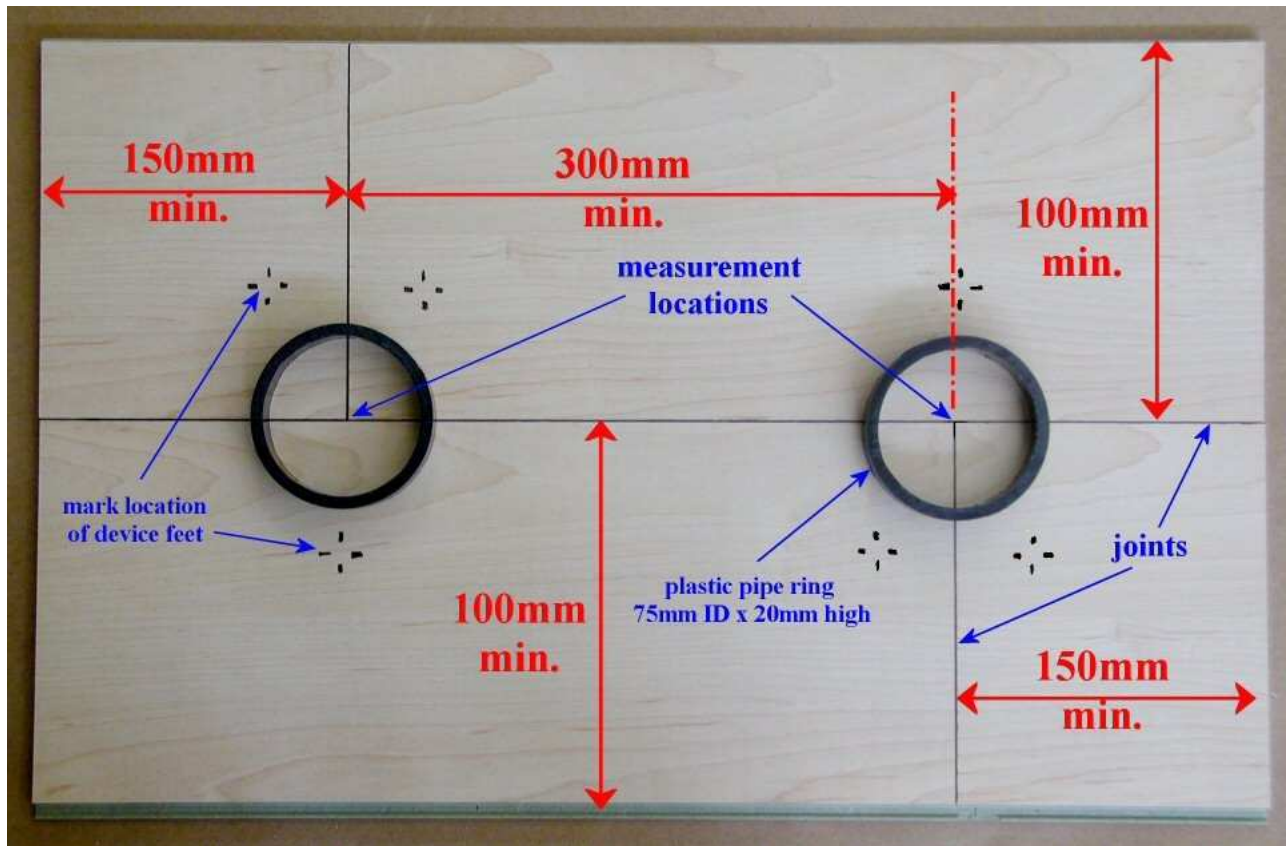


Figure 2
Test Specimen

4.0 Procedure

- 4.1 After assembling the specimen panels, trace a circle on the surface, using the plastic pipe, where seam swell testing will be performed.
- 4.2 Affix the plastic pipe using caulk or use plumber's putty placed on the laminate surface to form a dammed area that will contain the water.
- 4.3 Place specimen on an absorbent paper towel sufficient to contain the water should the water run through the seam.
- 4.4 Zero the measuring device on a flat granite or other suitable surface.
- 4.5 Place measuring device over the "T – seam", with the two support legs straddling the bottom of the "T – seam". Place the measurement foot of the device directly over the "T – seam" point of intersection. See Figure 3.
- 4.6 Mark location of support feet. This will enable the exact placement of measuring device for subsequent readings.



Figure 3
Measurement Device and Test Specimen

- 4.7 Record measurement of "T – seam" height.
- 4.8 Pour in 50 ml of the deionized or distilled water.
- 4.9 Allow water to remain on the specimen surface for a total of 24 hours \pm 0.25 hour at 23°C \pm 3°C (73°F \pm 5°F) and 50% \pm 10% relative humidity.
- 4.10 At the end of the 24 hours remove the water (Sponge out), if any remains. Make a notation if water leaked through the seam; A) If less than 50% of the original water is gone or B) if some water remained but is less than 50% of the original amount or C) if all of the original water is gone.
- 4.11 For informational purposes only, if all of the water drained through the seam one should consider repeating the test in which the back is sealed to prevent water leakage through the board, using caulk or other sealant.
- 4.12 Repeat measurements outlined in steps 4.4 through 4.7. Record the measurement as the wet "T – seam" height.
- 4.13 Repeat measurements outlined in steps 4.4 through 4.7 after the test specimen has been allowed to dry for 48 hours \pm 0.5 hours at 23°C \pm 3°C (73°F \pm 5°F) and 50% \pm 10% relative humidity. Record the Re-dry "T – seam" height.

5.0 Calculation

- 5.1 Express the "T – seam" swell as the increase in seam height. It is calculated by taking:
Wet "T – seam" # 1 swell = Wet "T – seam" # 1 height - Initial "T – seam" # 1 height
Wet "T – seam" # 2 swell = Wet "T – seam" # 2 height - Initial "T – seam" # 2 height.
Re-dry "T – seam" # 1 swell = Re-dry "T – seam" # 1 height - Initial "T – seam" # 1 height.
Re-dry "T – seam" # 2 swell = Re-dry "T – seam" # 2 height - Initial "T – seam" # 2 height.
- 5.2 The Wet "T – seam" test specimen value is considered to be the average of the two measurements on a specimen.
Average Wet "T – seam" swell = (Wet "T – seam" # 1 swell + Wet "T – seam" # 2 swell) / 2.
- 5.3 The Re-dry "T – seam" test specimen value is considered to be the average of the two measurements on a specimen.
Average Re-dry "T – seam" Swell = (Re-dry "T – seam" # 1 swell + Re-dry "T – seam" # 2 Swell) / 2.
- 5.4 Repeat calculations 5.1 – 5.3 for the second test specimen.
- 5.5 The Wet "T – seam" swell value is the average of the measurements for both test specimen # 1 and test specimen # 2. See section 5.2.
- 5.6 The Re-dry "T – seam" swell value is the average of the measurements for both test specimen # 1 and test specimen # 2. See section 5.3.

6.0 Report

- 6.1 Reference to this standard.
- 6.2 Description of the material under test.
- 6.3 The Initial "T – seam" height measurements.
- 6.4 The Wet "T – seam" swell value (average of two specimens – four measurements).
- 6.5 The Re-dry "T – seam" swell value (average of two specimens – four measurements).
- 6.6 The amount of water lost during the test.
- 6.7 Any deviation from the specified test method.
- 6.8 Date of the test.
- 6.9 Test operator.

7.0 Precision & Bias

From the limited gage Repeatability and Reproducibility study performed using the NALFA developed seam swell test device, two operators and two products, the expected variation would be \pm 0.02 mm.

For a test device conforming to the drawing in the NALFA seam swell method, repeatability should be expected to fall within ± 0.02 mm. A repeatability study should consist of at least 10 parts and three repeated measures.

This method is considered to be a developmental tool to evaluate seam swell potential where relatively large differences may exist.

Appendix

“T – Seam” Swell - Table of Results Individual Readings

Specimen _____	Test Location # 1	Test Location # 2
A) Initial “T – seam” height, mm	_____	_____
B) Wet “T – seam” height, mm	_____	_____
C) Re-Dry “T – seam” height, mm	_____	_____
D) Residual water rating*	_____	_____

* Rating “A” - More than 50% water remaining in test area
 “B” - Less than 50% water remaining in test area
 “C” – No water remaining in test area, it all leaked through joint

Wet “T – seam” swell = **B - A**

Re-dry “T – seam” swell = **C - A**

The test specimen value is considered to be the average of the two measurements.

Avg. Wet “T – Seam” Swell = (Wet “T – Seam” # 1 Swell + Wet “T – Seam # 2” Swell) / 2

The test specimen value is considered to be the average of the two measurements.

Avg. Re-dry “T – Seam” Swell = (Re-dry “T – Seam” # 1 Swell + Re-dry “T – Seam” # 2 Swell) / 2

The final wet “T – seam” swell value is the average of the measurements for both test specimen # 1 and test specimen # 2.

The final re-dry “T – seam” swell value is the average of the measurements for both test specimen # 1 and test specimen # 2.

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appendix is not to be sent with R & R testing