

CHAPTER 6

INSTALLING A SUBFLOOR OVER CONCRETE

NOTE: Always follow the manufacturer's recommendation for a proper subfloor.

Part I – Direct Gluing a Subfloor Over Concrete

- A. Always follow the adhesive manufacturer's recommendation for proper application, proper adhesive and correct trowel notch and spread rate.
- B. If necessary, add vapor retarder recommended by the adhesive manufacturer before applying adhesive.

Part II - Floated Subfloor

- A. In on-grade and below-grade applications, always add vapor retarder before applying underlayment.
- B. In above-grade applications, follow the flooring manufacturer's recommendations.
- C. A vapor retarder is recommended anytime solid $\frac{3}{4}$ " wood flooring is installed over concrete. A vapor retarder is required for installation over concrete with a calcium chloride reading greater than 3 pounds, a relative humidity reading of greater than 75%, or a calcium carbide (CM) reading of greater than 2.5%.
- D. Floated Subfloor System
 - 1. Materials
 - a. 2 layers nominal $\frac{3}{8}$ " (10mm) minimum CD Exposure 1 Plywood subfloor panels (CDX) 4' X 8' sheets.
 - 2. Installation method:
 - a. Place the first plywood layer with edges parallel to wall, without fastening. Leave $\frac{3}{4}$ " space between wall and plywood.
 - b. Plywood panels should be placed with $\frac{1}{8}$ " gaps between sheets.
 - c. Lay the second layer perpendicular or at 45 degree angle to the first.
 - d. Plywood panels should be placed with $\frac{1}{8}$ " gaps between sheets and a $\frac{3}{4}$ " minimum expansion space at all vertical obstructions and wall lines.
 - e. Staple or staple and glue (with urethane or construction adhesive) the second layer to first layer on 12" interior grid pattern (6" on the perimeter). Be careful not to penetrate the vapor retarder.
- E. Alternate Subfloor System
 - 1. Materials
 - a. Use nominal $\frac{3}{4}$ " (23/32", 18.3mm) CD Exposure 1 Plywood sheathing, 4'x8' sheets.
 - 2. Installation method

- a. Cut sheets to 16"X8' or smaller panels, scored on back 3/8" deep a minimum of every 12" across width.
- b. 16" planks oriented perpendicular or diagonally to direction of flooring
- c. Panels staggered every 2', and spaced 1/8" between ends, with 3/4" minimum expansion space at all vertical obstructions.

Part III - Glue-Down Subfloor

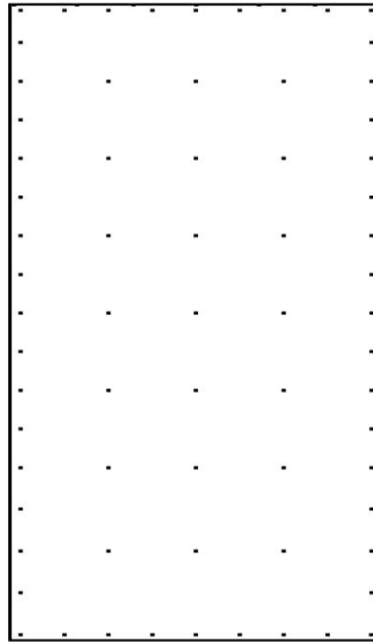
- A. Always follow the adhesive manufacturer's recommendation for proper subfloor, spread rate and trowel notch.
- B. If necessary, add vapor retarder before applying underlayment. A vapor retarder is recommended anytime solid 3/4" wood flooring is installed over concrete.
- C. Glue-Down Subfloor System:
 1. Materials
 - a. Use nominal 5/8" (¹⁹/₃₂, 15.1mm) CD Exposure 1 Plywood subfloor panels, (Exposure 1), 4'x8' sheets.
 2. Installation method:
 - a. Cut the plywood panels to 2'X8' or 4'X4' sections.
 - b. Score the back of the panels 1/2 the thickness on a 12"x12" grid.
 - c. Apply an adhesive approved for the installation of plywood, per the plywood manufacturer's recommendations.
 - d. Lay sections in a staggered joint pattern in the adhesive, with 1/8" spacing between sheets, and 3/4" minimum expansion space at walls and all vertical obstructions.

Part IV - Nail-Down Subfloor

- A. Always follow the manufacturer's recommendation for proper subfloor.
- B. In on-grade and below-grade applications, always add vapor retarder before applying underlayment. In above-grade applications, follow the flooring manufacturer's recommendations.
- C. A vapor retarder is recommended anytime solid 3/4" wood flooring is installed over concrete.
- D. Nail-Down Subfloor System Over Concrete
 1. Materials
 - a. Minimum: use nominal 5/8" (¹⁹/₃₂, 15.1mm) CD Exposure 1 Plywood subfloor panels (CDX), 4'x8' sheets
 2. Installation method

NOTE: Fasteners may be powder-driven pins, pneumatic driven nails, screws, deformed pins, or other fasteners suitable for concrete application. Check with fastener manufacturer for specification such as length, drill size, and/or shot load where applicable.

- a. Stagger panel joints allowing approximately $\frac{1}{8}$ " expansion space around all panels to prevent edge peaking due to compression caused by panel swell.
- b. Allow $\frac{3}{4}$ " minimum expansion space at all vertical obstructions.
- c. Panels should be mechanically fastened. For powder load or pneumatic pressure information, contact your local supplier.
- d. Fasten 2" from the edge every 6-8" along the perimeter of the sheet and one fastener or more spaced every 12" in the interior of the panel. Fasten the center first to prevent the subfloor from bowing. (See diagram at right.)



- e. Areas with higher humidity may require additional fasteners.

Part V - Screed System

- A. Solid $\frac{3}{4}$ ", 25/32" and 33/32" tongue-and-groove strip flooring may be installed directly to screeds.
- B. Engineered wood flooring less than $\frac{3}{4}$ " (23/32") thick, thin-classification strip flooring (including $\frac{1}{2}$ ") and solid plank flooring (4" or wider) cannot be installed directly to screeds.
- C. For engineered flooring less than $\frac{3}{4}$ " thick, thin-classification strip, and for solid plank (4" and wider), the screed system must be overlaid with proper subflooring. The screed system must be overlaid with nominal $\frac{3}{4}$ " (23/32" 18.3mm) Exposure 1, or nominal 5/8" (19/32" 15.1mm), Exposure 1, CDX plywood subfloor panels or nominal $\frac{3}{4}$ " (23/32", 18.3mm) OSB underlayment properly spaced and oriented perpendicular to screed direction. All joints must be staggered.
- D. Installation method. See Appendix I, Installation Over Screeds.