CHAPTER 4
WOOD SUBFLOOR GUIDELINES

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

Part I – Wood Subfloor Specifications

A. Subfloor panels should conform to should conform to U.S. Voluntary Product Standard PS1-95, Construction and Industrial Plywood and/or US Voluntary PS 2-04 and/or Canadian performance standard CAN/CSA 0325.0-92 Construction Sheathing. Other CSA standards also apply.

B. Solid-board subflooring should be ¾" x $5^1/_2$" (1" x 6" nominal), Group 1 dense softwoods, No. 2 Common, kiln-dried to less than 15 percent moisture content.

C. Both CD EXPOSURE 1 plywood and OSB Exposure 1 subfloor panels are appropriate subflooring materials, but the proper thickness of the material will be determined by the factors noted below in **Part IV – Panel Products Subflooring, E - Acceptable Panel Subfloors.**

Part II – Subfloor Moisture

Note: the National Association of Home Builders' Green Home Building Guidelines contains the following directive under Section 5.3.8: "NAB Model Green Home Building Guidelines, Section 5.3.8: "Check moisture content of wood flooring before enclosing on both sides. Ensure moisture content of subfloor/substrate meets the appropriate industry standard for the finish flooring material to be installed."

A. For solid strip flooring (less than 3" wide), there should be no more than 4 percent moisture content difference between properly acclimated wood flooring and subflooring materials.

B. For wide-width solid flooring (3" or wider), there should be no more than 2 percent difference in moisture content between properly acclimated wood flooring and subflooring materials.

Part III – Subfloor Flatness and Integrity

A. Wood subfloors must be flat, clean, dry, structurally sound, free of squeaks and free of protruding fasteners.

1. For installations using mechanical fasteners of $1^1/_2$" and longer, the subfloor should be flat to within ¼" in 10 feet or $^3/_{16}$" in 6 feet.

2. For glue-down installations and installations using mechanical fasteners of less than $1^1/_2$", the subfloor should be flat to within $^3/_{16}$" in 10 feet or $^1/_8$" in 6 feet.

B. If peaks or valleys in the subfloor exceed the tolerances specified above, sand down the high spots and fill the low spots with a leveling compound or other material approved for use under wood flooring. However, it is the builder's or general contractor's responsibility to

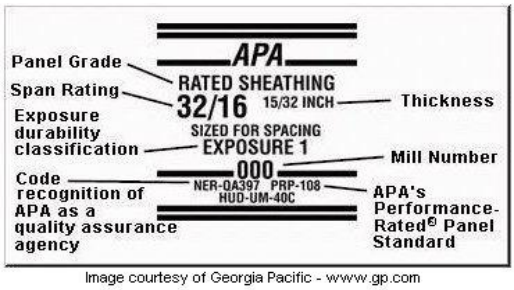

Image courtesy of Georgia Pacific - www.gp.com

When possible, check the back of the subfloor panel for American Plywood Association (APA) rating.

provide the wood-flooring contractor with a subfloor that is within the tolerances listed above.

C. Inspect the subfloor carefully. If there is movement or squeaks in the subfloor, refasten the subfloor to the joists in problem areas.

D. Protruding fasteners are easily remedied by driving those fasteners deeper into the subfloor.

Part IV - Panel Products Subflooring

A. For panel products subflooring, check for loose panels and re-nail or screw down loose panels securely.

B. Ensure that there is proper expansion space (1/8”) between the panels. If the subfloor panels are not tongue-and-grooved and if there is not sufficient expansion space, use a circular saw to create the specified space. Do not saw through joints on T&G subfloors.

C. Also check for delaminated or damaged areas and repair those areas as needed.

D. Make sure the subfloor is free of debris before beginning installation.

E. Acceptable Panel Subfloors: Truss/joist spacing will determine the minimum acceptable thickness of the panel subflooring.

1. On truss/joist spacing of 16” (406mm) o/c or less, the industry standard for single-panel subflooring is nominal 5/8” (19/32”, 15.1mm) CD Exposure 1 Plywood subfloor panels (CD EXPOSURE 1) or 23/32 OSB Exposure 1 subfloor panels, 4’ X 8' sheets.

2. On truss/joist spacing of more than 16”, up to 19.2" (488mm) o/c, the standard is nominal ¾” ($^{23}/_{32}$”, 18.3mm) T&G CD EXPOSURE 1 Plywood subfloor panels, (Exposure 1), 4’ X 8' sheets, glued and mechanically fastened, or nominal ¾” ($^{23}/_{32}$", 18.3mm) OSB Exposure 1 subfloor panels, 4’ x 8’ sheets, glued and mechanically fastened.

3. Truss/joist systems spaced over more than 19.2” (488mm) o/c up to a maximum of 24” (610mm) require nominal 7/8” T&G CD EXPOSURE 1 Plywood subfloor panels, (Exposure 1), 4’ X 8' sheets, glued and mechanically fastened, or nominal 1” OSB Exposure 1 subfloor panels, 4’ x 8’ sheets, glued and mechanically fastened — or two layers of subflooring. Or brace between truss/joists in accordance with the truss/joist

manufacturer's recommendations and with local building codes. Some truss/joist systems cannot be cross-braced and still maintain stability.

a. For double-layer subfloors, the first layer should consist of nominal ¾" ($^{23}/_{32}$", 18.3mm) CD Exposure 1 Plywood subfloor panels (CDX), 4' X 8' sheets or nominal ¾" ($^{23}/_{32}$", 18.3mm) OSB Exposure 1 subfloor panels, 4' x 8' sheets. The second layer should consist of nominal ½" ($^{15}/_{32}$", 11.9mm) CD EXPOSURE 1 plywood subfloor panels, (Exposure 1) 4' X 8' sheets. The ½" plywood should be offset by ½ panel in each direction to the existing subflooring. The panels may also be laid on a diagonal or perpendicular, with $^{1}/_{8}$" spacing between sheets. Nail on a 12" minimum grid pattern, using a ring-shanked nails or staples.

F. Fastening and Spacing Specifications

1. Follow the panel manufacturer's recommendations for spacing and fastening.
2. Typical panel spacing and fastening requirements for truss/joist systems call for approximately 1/8" (3.2mm) expansion space around the perimeter of each panel, with panels fastened every 12" (305 mm) along intermediate supports.
3. Edge swell should also be flattened. This can usually be accomplished by using an edger sander.

Part V – Solid Board Subflooring

A. Solid board subflooring should be: ¾" x $5^{1}/_{2}$" (1x6 nominal), Group 1 dense softwoods (SYP, Doug Fir, Larch, etc.), No. 2 Common, kiln-dried to less than 15% MC.

B. Solid-board subflooring should consist of boards no wider than 6 inches, installed on a 45 degree angle, with all board ends full bearing on the joists and fastened with minimum 8d rosin-coated or ring-shanked nails, or equivalent.

C. Some types of wood flooring should not be installed directly over solid-board subflooring.

1. Thin-classification solid strip flooring must have a 3/8"or better plywood underlayment installed over solid board subflooring.
2. Parquet flooring cannot be installed directly to solid-board subfloors. A parquet installation over solid-board subflooring requires 3/8" or better underlayment panels, nailed on 6" minimum grid pattern using ring-shanked nails or staples.

D. Some engineered flooring cannot be installed directly to solid-board subfloors. (See wood flooring manufacturer's recommendations.)