



APA Performance Rated Panel Subfloors under Hardwood Flooring

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SUMMARY OF PERFORMANCE

APA Performance Standards have been instrumental in the market acceptance of wood structural panels, such as oriented strand board (OSB) and plywood in code-regulated construction applications. Since promulgation of *APA Performance Standard PRP-108* in 1980, now superseded in large part by *Voluntary Product Standard PS 2, Performance Standard for Wood-Based Structural-Use Panels*, APA members have been producing about 80 percent of all wood structural panels produced in North America. APA-trademarked wood structural panels ably fulfill the end-use requirements for floor systems, as well as other sheathing applications.

Plywood and OSB APA Rated Sheathing and APA Rated Sturd-I-Floor® panels have been used successfully as subfloors under 3/4-inch hardwood flooring. APA plywood sheathing has a long, successful performance history in this application. OSB APA Rated Sheathing panels have been shown to be equivalent in performance to plywood APA Rated Sheathing in subfloor applications. This is evidenced by the fact that these panels have qualified to the same Span Ratings as plywood, and by successful uses of OSB panels to subfloors under hardwood flooring.

APA RECOMMENDATIONS

Panel Specification

Both APA Rated Sheathing and APA Rated Sturd-I-Floor panel grades are commonly used for subfloors. APA panel subfloor spans are limited to maximum spacing of floor framing listed in Table 1.

TABLE 1

SUBFLOORS AND SPACING OF FLOOR FRAMING FOR HARDWOOD FLOORING^(a)

Floor Framing Spacing (in.)	Wood Structural Panels, Such as Plywood and OSB	
	Minimum Performance Category	Minimum Span Rating
16	19/32	40/20 or 20 oc
19.2	23/32	48/24 or 24 oc
24 ^(b)	7/8	60/32 or 32 oc

(a) Thicker panels with a higher Span Rating may be used.

(b) Alternatively, National Wood Flooring Association (NWFA) recommends a 2-layer subfloor consisting of 23/32 Performance Category 48/24 Rated Sheathing or 24 oc Rated Sturd-I-Floor plus 15/32 Performance Category 32/16 wood structural panel offset half panel in each direction.



Installation of Subfloors

Subfloor panels shall be installed continuous over two or more spans, with the long panel dimension perpendicular to floor framing. All panel-ends and edges should be spaced 1/8 inch.

To minimize the potential for squeaks, the subfloor panels may be glue-nailed to the floor framing using construction adhesives conforming with ASTM D3498 or APA Specification AFG-01. For increased stiffness, tongue-and-groove (T&G) or blocked panel edges also may be glued.

Glue-nailed subfloor panels up to 3/4-inch thick should be fastened with 6d ring- or screw-shank nails or 8d common nails spaced 12 inches o.c. along panel ends and intermediate supports. For subfloor panels thicker than 3/4 inch, and for nailed-only subfloor installation, see *APA Engineered Wood Construction Guide*, Form E30, for fastener size and spacing.

Note: National Wood Flooring Association (NWFA)^(a), recommends gluing subfloor sheathing when framing is spaced more than 16 inches.

Preparation of Subfloors for Hardwood Flooring Installation

Both the subfloor and hardwood flooring are sensitive to moisture. Most hardwood flooring is delivered dry (less than 10 percent moisture content). Expansion and buckling of the hardwood flooring can occur if exposed to excessive moisture, or opening of gaps between flooring strips can occur upon subsequent drying, and floor squeaks may result. This reaction to moisture can occur regardless of the panel type used for the subfloor.

If the subfloor has become wet during construction, it is imperative that it dries prior to installation of hardwood flooring. A hand-held moisture meter can be used to check the condition of the subfloor, which should be within a range consistent with recommendations of the hardwood flooring manufacturer. (Note: Moisture content measurement results will vary depending on the panel and meter type. In order to ensure accurate results, it is important that the moisture meter be calibrated before use. Calibration should be conducted in accordance with the moisture meter manufacturer's recommendations.)

For homes with crawl-space floors, the builder should ensure that the crawl space is well drained and dry when hardwood flooring is installed. Also, minimum 6-mil polyethylene sheeting should be installed as a vapor retarder on the ground in the crawl space prior to installation of the hardwood flooring.

Inspect the subfloor for flatness between joists. When necessary, the builder should install extra blocking and re-fasten the subfloor to flatten uneven areas. Check the subfloor for squeaks or loose panels and refasten as necessary before installing the hardwood flooring.

The installer should inspect the subfloor for smoothness along joints between panels. Any ridges at panel edges should be sanded smooth prior to installation of the hardwood flooring, using a heavy-duty floor sander with a moderately coarse grit sandpaper.

Hardwood Flooring Installation

Follow the recommendations of NWFA for handling, storing and acclimatizing, and installing hardwood flooring. Where possible, it is suggested that the hardwood flooring strips should be oriented perpendicular to floor framing for maximum floor stiffness.

(a) National Wood Flooring Association (NWFA), 111 Chesterfield Industrial Boulevard, Chesterfield, Missouri 63005, Phone 800-422-4556, www.woodfloors.org, www.nwfa.org.

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We have field representatives in many major U.S. cities and in Canada who can help answer questions involving APA trademarked products. For additional assistance in specifying engineered wood products, contact us:

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