



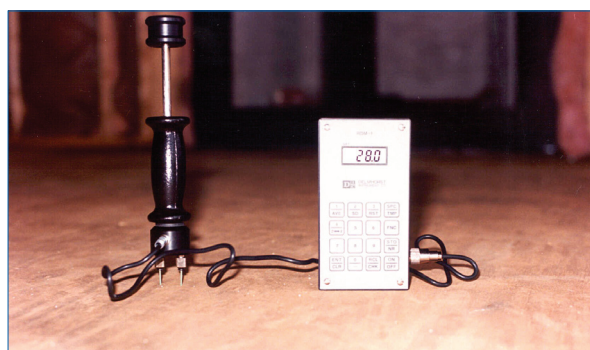
Underlayment and Subfloor Prep for Wood Floors

The finished floor is only as good as the base or subfloor. The make-up of the subfloor, actual system components, and the condition, quality of the subfloor system, directly affect the performance of the finished flooring. If the system components are not as recommended, the attachment of the flooring can fail. If the condition of the subfloor is poor, not properly cleaned, not dry enough, and not flat enough, the flooring performance will suffer and require a call back and some type repair, maybe even reinstallation.

Conventional wood joist systems

Recommended subfloor materials are performance rated panels, 5/8-inch (19/32-inch) and thicker plywood sheathing or 3/4-inch (23/32-inch) or thicker OSB, and nominal, 1-inch-by-6-inch SYP (Southern Yellow Pine) or equivalent square edge boards. A performance rating will be stamped on the panels by one of the associations, such as the APA The Engineered Wood Association or TECO etc., that rate engineered panels. The panels should be in place with the long dimension across the joist direction and with the correct fastener, typically ring-shanked or screw-shanked nails. Board subflooring should be on the diagonal to the joist direction.

The first step of preparation of the subfloor is to determine the moisture content of the system. The subflooring moisture content should be no more than four percent higher than the average moisture content of the geographical area. (See *FCI* article on Acclimation)



When moisture is too high, the subfloor is not ready for installation.



Check for proper moisture content, raised nails, and raised edges that need sanding.

- Check the subfloor for correct nailing, set any raised nails and add nails/screws necessary to secure panels. This helps minimize issues associated with noisy and loose flooring.
- Check the flatness of the system. All deviations from flat should be gradual. Lower humps and raise low areas. This can require the framer to cut joists or add spacers. For nail down flooring, 3/16-inch in 6 feet is the standard; any greater variation should be discussed with the customer. Flooring may not conform to a greater variation, and noisy flooring or movement between boards may result. For adhesive applied flooring, 1/8-inch in 6 feet is the maximum variation for good adhesive performance.
- Clean the subflooring of debris such as drywall compound, caulk, and other foreign objects. This may require sanding the subflooring.
- Check edges of subflooring for flatness. Sand all raised edges flat with an edger.
- For solid T&G flooring, installation mark all joist lines on the wall for location of face nails along starting and finishing runs.
- For solid T&G flooring, installation roll out #15 felt along starting wall. Continue felt overlapping edges 2-3 inches across room.
- Under cut with a jamb saw all door casings and door trim so that flooring will slide under and show no gaps after installation.
- Check for layout and determine longest and straightest continuous run for starter. Measure across rooms to determine square. Square rooms with starting line and position string line for starting run. Recheck measurements before installing starter run.
- Appropriate expansion should also be provided between subfloor panel edges and at panel ends (1/8-inch). For square edge plywood cut an expansion gap of 1/8-inch around plywood edges if gapping is not present.

Special situations and applications require additional preparation or slightly different procedures.

- Installation of solid flooring parallel to joists: Add solid 2-inch –by–6-inch blocking between joists every 24 inches or overlay subflooring with a similar thickness layer of subflooring; i.e. for 3/4-inch plywood, add 1/2-inch plywood.
- Starting runs across the middle of rooms: Cut and install backing strips to nail against. (See FCI article on nail-down flooring)
- Installation of parquet flooring: Add an additional layer of plywood (do not use luan) to the existing subflooring. Install on a diagonal if the pattern is square.
- Installation over radiant heating systems: Do not use the felt since associated odors have been reported with these systems.
- Installation over an existing solid T & G wood floor: Repair defective unsound flooring, re-nail, replace, flatten, as necessary. Add a layer of plywood sheathing 3/8-

inch minimum thickness (for nail down applications do not use luan) on a diagonal.

- For parquet and engineered flooring over board subfloors, add a layer of plywood sheathing 3/8-inch minimum thickness.
- Advise customers that where minimum subfloor systems are in place such as 5/8-inch plywood on 19.2-inch joist spacing, performance issues associated with movement, flaking finish, and noises may be expected.



Use a razor knife, pole scraper, ect. to properly clean slab of mud, dry wall compound, paint etc.

Concrete slab systems

Engineered floors, thin strip flooring less than 1/2-inch thick (check with the manufacturer), and thin parquet flooring can be installed with adhesive directly to the slab. Solid flooring 1/2-inch and thicker requires a proper nailing base. For 1/2-inch flooring, the minimum subfloor thickness is 5/8-inch plywood. For 1/2-inch flooring the minimum subfloor is 3/4-inch plywood (not OSB). Also 2-inch-by-4-inch sleepers (not 1-by-4s) spaced 12 inches on center can be used for 3/4-inch strip flooring. All plank flooring 4 inches and wider requires 3/4-inch minimum thickness plywood even when over sleepers.

The first step with slab construction is to check the slab for moisture. The temperature and relative humidity must be near occupied conditions for the tests to give good results. For adhesive installed flooring check with adhesive manufacturer for recommended moisture test and acceptable levels of moisture. For the calcium chloride test, a measure of 3 lbs or less is considered acceptable for wood flooring application. The slab must be clean, dry, and flat.

- Check the slab for sealers or coatings that may interfere with the moisture tests or adhesive performance. Sealers can give a false reading for moisture and may cause adhesive failure.
- Clean the slab. Sweep to remove loose debris. Use scrapers and or wide razor knives for drywall compound, paint etc. For adhesive removal it may be necessary to bead blast the slab.

NOFMA TIP SHEET

- Check for flatness. For nail-down flooring, a 3/16-inch variation in 6 feet is the maximum allowed. For adhesive applications 1/8-inch in 6 feet is the maximum; also check with the adhesive manufacturer for tolerance limits.
- Grind down high areas. A buffer with 12-, 16-, or 20-grit sand paper or one of the attachments with carbide bits or abrasive can be used. Even a drum sander can be used to flatten a slab but once used on concrete do not use for finishing the flooring without a complete overhaul. This operation may take a considerable effort and even hammering the areas maybe required.
- Use a leveling compound for low areas. The material must be strong enough for the application of flooring. Where adhesive is used to install the flooring, the leveler must be compatible and properly cured. For nail down flooring over plywood or sleepers, in addition to the leveling compounds, roofing shingles, pieces of vinyl flooring, even various thickness of plywood can be used to fill in low areas.
- For all thicker solid wood installations, add a proper moisture retarder over the slab. (See *FCI* column "Don't Forget the Basics When Installing Wood Flooring on a Concrete Slab").
- For nail-down installations install a proper subfloor as noted above. Also check this subfloor material for correct moisture content, the 4 percent difference for the



Leveling compound must be of correct strength and dry before flooring installation.

area average applies.

- Felt installation, squaring the space, and line out are the same as with wood joists systems only you don't have to mark joist lines.
- Appropriate expansion should also be provided between subfloor panel edges (different spacing depending on direction of panels and be from 1/8-inch up to 1 inch) and at panel ends (1/8-inch). Screed systems also require spacing between lapped screeds along edges (1/4-inch).

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For slab installation, install 4-by-8 plywood on a diagonal; don't forget proper spacing.

Special situations and applications require additional preparation or slightly different procedures.

- For radiant heating in slabs and naildown flooring: float the subflooring (See *FCI* article, "Radiant Heating Systems and Wood Flooring")
- For face nailing and hand blind nailing: using casing nails or trim screws on 3/4-inch plywood, cut the fastener to

just less than 1 1/2 inches to not penetrate the subfloor vapor retarder and allow for setting.

- For suspended slabs above the first floor level where the space below is environmentally controlled: a vapor retarder is not required.
- For multi-story buildings with sound transmission requirements: add a sound attenuation material and for nail down flooring float the system similar to the radiant heating requirements.

The subfloor must meet the manufacturer's requirements and be Sound, Clean, Dry, and Flat. Preparation to produce the correct system must not be haphazard, as call backs WILL result, and that costs money and most times will eat up all or more of the profit. ♦

About the Author: Mickey Moore is currently the technical director of the Wood Flooring Manufacturers Association (NOFMA), a position he has held since 1988. Prior to joining NOFMA, Moore worked as a remodeling sub-contractor and QC inspector for a general contractor. Moore is a graduate of the University of Memphis with a degree in wood working technology and biology.

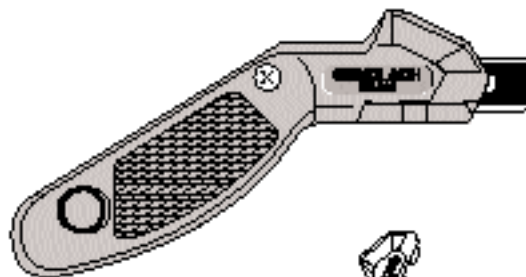
No. 230 Push-Button Slotted Razor Blade Knife

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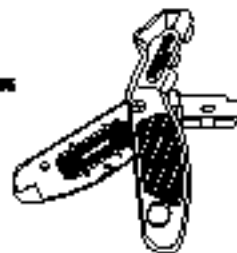
This is it, the quickest opening/closing slotted razor blade knife model. No more time-wasting screws to turn or hard-to-open ring type fasteners-needs no tools to open. The knife has no loose screws, caps, or buttons that can be lost. To use, simply push the button at the rear of the knife, swing the knife open, change the blade (or blade edge), and squeeze the knife shut. When you hear the knife 'click', you know it is closed and locked. It won't open unless you push the button.

Other features of this knife include:

- Full size textured handle for a comfortable 'feel' and non-slip grip.
- Slim nose profile provides good vision of the cutting edge.
- Thumb stop guard provides for safety and also allows increased cutting pressure and control.
- Interlocking nose firmly grips standard, or heavy duty, blades.
- Storage capacity for five blades in handle.
- Attractive and eye catching, the baked red enamel finish means you won't misplace this knife!



U.S. Patent No. 4,904,896



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