

SUBFLOOR PREPARATION FOR RESILIENT FLOORCOVERING

INSTALLATION BULLETIN

Careful and correct preparation of the subfloor is a major part of a satisfactory sheet vinyl floor covering installation. The finished installation will not look any better than the subfloor over which it is installed. Roughness and unevenness of the subfloor will telegraph through the new floorcovering. Proper preparation is necessary for a trouble free installation.

WOOD SUBFLOORS

All wood subfloors must be suspended at least 18" above the ground. Adequate cross-ventilation must be provided, and the ground surface of a crawl space must be covered with a suitable vapor barrier membrane. Wood subfloors directly on concrete, either on or below grade, are not satisfactory for the installation of resilient floorcovering.

In renovation or remodeling projects, it is necessary to prepare the existing floor to make it an acceptable subfloor for the new floorcovering. Wood subfloors covered with old paint, varnish, wax, grease, stains, etc. must have these coatings removed by sanding. These coatings can prevent the adhesive from penetrating the subfloor, which may result in a poor adhesive bond and discoloration. These coatings may also contribute to staining of sheet flooring.

Damaged areas must be repaired and loose boards must be properly nailed. Surface gaps or holes should be brought level with the appropriate latex patching compound.

If the existing wood surface cannot be properly prepared in this manner, it must be covered with a recommended underlayment. Installation of vinyl floorcovering in a new structure requires assurance that the structure complies with all state and local building codes and that the subfloor is smooth, clean, dry and free of foreign substances.

Wood Subfloors must be of double construction at least 1" in thickness, solid and well nailed. Single wood surfaces should be covered with underlayment panels of suitable thickness. If tongue-and-groove or shiplap lumber is used for the first layer, the boards should be 1" thick with a maximum width of 8". They should be installed diagonally over the joist and adequately nailed. This subfloor should then be covered with an underlayment at least 3/8" thick.

Double Stripwood Subfloors should have boards no wider than 3" and underfloor boards no wider than 8". Cupped boards should be sanded level. Cracks wider than 1/32" and all subfloor irregularities should be patched with a cementitious base underlayment compound. Double stripwood floors with boards wider than 3" should be covered with 3/8" or heavier underlayment.

Note: Even if a stripwood subfloor is made completely smooth, board joint show-through can occur at a later time. To eliminate this possibly, we recommend the installation of underlayment.

Double Plywood Subfloors should have a first layer at least 5/8" thick and a second layer at least 3/8" thick, with staggered panels and overlapping joints. In damp or wet areas, exterior grade plywood must be used.

UNDERLAYMENTS

When underlayment is required for a fully adhered installation, the following are suggested:

APA Underlayment Grade Plywood must be APA Underlayment INT or APA Underlayment EXT. If the floor may be subject to moisture, use only panels with exterior glue or APA C-C Plugged Exterior. Always specify panels with fully “sanded-face”, one side.

CAUTION: Some plywood manufacturers use plastic or resin fillers to patch voids or surface cracks in plywood. Some components in these fillers can cause the floorcovering to discolor. This type of problem should be referred to the plywood manufacturer. Specifying plywood underlayment with wood plugs and fills rather than plastic filler will avoid this problem.

Luan Plywood may be used if it meets the following requirements.

1. It must be Type I (EXT) Exterior, which indicates that the panel has an exterior or fully waterproof glue bond. This may also be indicated by the letter “P”.
2. Any of these three face grades is acceptable: OVL, CC, BB, with OVL (Overlay Grade) being the minimum acceptable face grade.
3. Most panels are in 4’x8’ sheets. Acceptable minimum thickness is 5.2 mm, also commonly available in 5.5 mm.

The types and grades of luan plywood are stamped on either the ends or the side edges (within 6” of either end) of each panel. Panels without these edge marks are of questionable origin and should not be used. Most luan panels are manufactured in the Far East. Consistent quality and panel warranty depend entirely on the manufacturer and the importer. It is important that the luan panels come from an importer who maintains a quality assurance program at the manufacturing mill.

NOTE: Extensive testing in the field has shown that using Type II (INT) interior glue luan plywood will cause installation problems. The variable porosity and moisture sensitivity of these panels can cause problems with adhesive bonding and panel edge swelling.

Structurewood is 1/4” thick, oriented strand board, sanded on both sides, and designed for use as underlayment. Any guarantees are only valid when structurewood is professionally installed and manufacturers installation recommendations are followed.

Particleboard, Chipboard, Construction Grade Plywood, and Hardboard or Flakeboard are not recommended as underlayment. All have inadequate uniformity, poor dimensional stability, and variable surface porosity. We also do not recommend the use of saturated roofing felts or resin builder paper under the finished flooring.

UNDERLAYMENT INSTALLATION

Underlayment panels should be conditioned to the room environment in which they are to be installed. When possible, underlayment panels should be delivered to the job site at least 48 hours prior to installation.

Underlayment panels must be laid with the face grain running perpendicular to the floor joists.

It is recommended to start laying panels from a corner, leave a 1/8" to 1/4" gap at all walls. Offset underlayment joints at least 16". Underlayment seams should not lie directly over subfloor seams. Stagger panels, ashlar fashion, so that four corners do not meet at one point. Lightly butt all panels and edges to a snug fit. Do not force or buckle sheets into place. Position three or more sheets on the subfloor before fastening. This will help in squaring up of the underlayment panels.

Fastening of 1/4" underlayment panels should be done with ring-groove or resin-coated nails.

CAUTION: Some types of nails, such as a common steel nail, may rust when used as underlayment fasteners. These rusted nail heads can cause discoloration of the vinyl floor covering, showing up as yellow or brown spots under the wear layer. We recommend using galvanized or resin-coated nails.

A power stapler with divergent staples can also be used. If underlayment panels thicker than 1/4" are to be fastened, the length of the nails or staples must be increased proportionately.

Fastening of each panel should start at one corner and work diagonally across the face of the panel. Nails throughout the field area of the panel should be no more than 4" apart and 3/8" in from the edge of the panel. Nail heads or staples must be flush or set slightly below the surface of the underlayment.

Any unevenness at joints between panels must be eliminated by careful sanding to a level surface. Gaps between panel edges, hammer indentations and all other surface depressions, must be patched. Use with a suitable cementitious based patching compound.

CONCRETE SUBFLOORS

All concrete slabs should be checked for moisture and alkalinity. Suspended concrete floors supported by pan construction often require an extended drying time to lose initial moisture. Concrete slabs in contact with the ground are always exposed to ground moisture unless protected by an unbroken membrane. A concrete slab on or below grade always has the possibility of dampness unless a continuous moisture barrier is present.

NOTE: Where hydrostatic pressure, or excessive vapor emissions may exist, the installation of resilient floorcovering is not recommended

Preparation: The concrete subfloor should be structurally sound, clean and free of extraneous materials. Irregularities such as cracks and grooves must be filled and leveled with a cementitious based underlayment compound.

Moisture: Very few concrete floors have a continuous protection against moisture. Where moisture or alkali conditions exist, we recommend products which contain moisture barriers. Check with your resilient manufacturers for these products and any warranties.

Never install floorcovering on a wet subfloor. Wait for the subfloor to dry, so the adhesive can cure and bond properly. The final responsibility for determining if the concrete is dry enough for installation of the floorcovering lies with the floorcovering installer

The moisture emission rate of a concrete floor is expressed in lbs/1000 sq. ft./24 hours according to ASTM F1869-98 test method. The test for emission rate requires a minimum of 60 hours to a maximum of 72 hours to conduct; therefore, proper installation planning is a must. An emission rate of 3 lbs. or less is acceptable.

The emission rate can be determined by utilizing a calcium chloride moisture test kit. This is a very precise test and must be conducted carefully with strict attention to the test kit manufacturer's instruction.

Note: There are other test methods such as concrete moisture meters, and plastic sheeting (approximately 2 ft. square and sealed around the edges with duct tape). Twenty-four hours are required for the plastic sheeting test. However, these tests only indicate the presence of moisture and are not a precise measurement of vapor emissions. A calcium chloride test must be done if these tests show signs of moisture.

Alkalinity: The pH on the surface of the concrete can be determined by slightly wetting the floor with distilled water and applying pH test paper. Digital meters are now available from tool manufacturers such as Taylor Tool (no affiliation to W.F. Taylor Co., Inc.). A pH range of above 5 and below 9 is acceptable. A reading of above 9 requires corrective measures. Taylor Envirotec #2000 Alka Prime Pre-coat is excellent for neutralizing the surface alkalinity while preparing porous surfaces and promoting adhesion of the adhesive.

CAUTION: Presence of Alkali (pH of above 9) and moisture emission rate of above 3 lbs./1000 sq. ft./24 hours are good indicators of excessive vapor emissions. Consult with the building owner or contractor before proceeding with any installation.

EXISTING FLOORCOVERING

In some cases, felt back sheet goods products can be installed over existing floorcoverings. When installing over existing floorcoverings, the performance of the new floor depends on the bond and conditions of the old floorcovering. Felt backed sheet goods products can be installed over existing Vinyl Composition Tile if the following conditions are met:

1. The existing Vinyl Composition Tile must not show evidence of alkaline salts, excessive vapor emissions, hydrostatic pressure, or moisture from the subfloor. Tile joints must be flat and tight.
2. Wax, oil, grease, and dirt or other foreign substances must be removed by a thorough cleaning and stripping. The surface must be completely dry.

NOTE: All existing floorcoverings that do not meet the above conditions should be removed or covered with a suitable underlayment. See Page 2 of this bulletin. Do not install resilient flooring with Taylor, Envirotec #2087 EVR-White Adhesive over existing vinyl or resilient floorcovering with the exception of Vinyl Composition Tile as noted above.