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Standard Guide to Wood Underlayment Products Available for Use Under Resilient Flooring¹

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1. Scope

1.1 This guide outlines the types of wood underlayment products commonly available for use under resilient flooring.

1.2 This guide points out the subfloor factors that shall be controlled in preparing underlayment as a base for resilient flooring.

1.3 This guide does not cover the structural adequacy of the subfloor or combination subfloor-underlayment which is governed by applicable regulatory agencies, nor does it apply to wood underlayment over concrete floors.

1.4 This guide does not supersede, in any manner, the underlayment manufacturer's or the resilient flooring manufacturer's instructions. Not all underlayment products are approved by all resilient flooring manufacturers.

1.5 This guide does not attempt to cover details of underlayment installation. Follow the detailed instructions of the flooring or underlayment manufacturers or both. Where conflicting instructions exist, consult the manufacturer's warranty coverage.

2. Referenced Documents

2.1 ANSI Standards:

ANSI/A208.1-1993, Particleboard²

ANSI/AHA A135.4-1988 Basic Hardboard³

2.2 Other Standards:

HPMA Standard HP-1 (1992), Interim Voluntary Standard for Hardwood and Decorative Plywood⁴

U.S. Product Standard PS 1-83, Construction and Industrial Plywood⁴

APA Design/Construction Guide: Residential and Commercial, Form E30⁴

U.S. Product Standard PS 2-92, Performance Standard for Wood-Based Structural-Use Panels⁴

Installation and Preparation of Plywood Underlayment for Resilient Flooring, Form L335⁴

¹ This guide is under the jurisdiction of ASTM Committee F-6 on Resilient Floor Coverings and is the direct responsibility of Subcommittee F06.40 on Special Properties.

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² National Particleboard Assoc., 18928 Premiere Court, Gaithersburg, MD 20879.

³ American National Standards Institute, 11 West 42nd St., 13th floor, New York, NY 10036.

⁴ American Plywood Assoc., P.O. Box 1700, Tacoma, WA 98411-0700.

Particleboard —The Ideal Floor Underlayment²

3. Terminology

3.1 Definitions:

3.1.1 *resilient flooring*—resilient material in tile or sheet form that is used to cover the underlayment referred to in this guide.

3.1.2 *subfloor*—that structural layer intended to provide support for loadings which may receive resilient floor coverings directly, if the surface is appropriate, or indirectly by way of an underlayment if its surface is not suitable.

3.1.3 *subfloor underlayment*—a structural floor system in which the upper surface is suitable to receive resilient floor coverings.

3.1.4 *underlayment*—that layer of material usually installed on or over a subfloor that provides a surface suitable to receive resilient floor covering.

4. Significance and Use

4.1 Resilient tile and sheet floor coverings are installed over various surfaces. This guide provides general information on the types of wood underlayment panels available for use beneath resilient flooring.

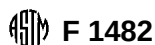
5. Materials and Descriptions

5.1 Plywood is composed of veneer layers, which are glued together with adhesive. The grain orientation of the veneers alternate so that the face veneers have the grain running in the long direction of the panel and the core veneers alternating in the grain direction. Underlayment grades of softwood plywood have a special inner-ply construction to resist indentation and puncture from concentrated loads.

5.2 Oriented Strand Board (OSB) is made of thin narrow strands of hardwoods and softwoods which are longer than they are wide. These strands are dried, screened, blended with adhesive, and formed into a multilayered mat. In the surface layers, the long direction of the strand is oriented so that it is parallel to the long direction of the panel. The strands in the core are perpendicular to the surface strands.

5.3 Waferboard is made from thin wafers of wood which are usually equal in width and length. The wood wafers are dried, screened, and blended with adhesive.

5.4 Particleboard is manufactured from lignocellulosic materials (usually wood) primarily in the form of discrete pieces



or particles, combined with a synthetic resin or other suitable binder and bonded together under heat and pressure in a hot-press. Other materials may be added during manufacture to improve certain properties. Particleboard for floor applications is defined by ANSI/A208.1, as Grade PBU for underlayment or Grades D-2 or D-3 for manufactured home decking.

5.5 Hardboard is a panel manufactured primarily from inter-felted lignocellulosic fibers which are consolidated under heat and pressure in a hot-press to a density of 31 lb/ft³ (496.62 kg/m³) or greater. Other materials may be added to improve certain properties, such as stiffness, hardness, finishing properties, resistance to abrasion and moisture, as well as to increase strength, durability, and utility. Class 4 Service—Grade panels are recommended beneath resilient flooring.

5.6 Composite panels are veneer-faced panels, manufactured by bonding reconstituted wood between wood veneer in a three or five layer construction. When manufactured in a one-step pressing operation, voids in the veneers are filled automatically by the particles as the panel is pressed in the bonding process, creating a solid panel throughout.

6. Storage and Handling of Underlayment

6.1 The underlayment materials included in this guide are hygroscopic in nature and respond to variations in atmospheric temperature and relative humidity by dimensional changes, and other effects caused by changes in moisture content. Therefore, store underlayment flat on skids in a dry place and protect from wetting. Underlayment shall not be stored outdoors.

7. Preparation of Subfloor

7.1 The subfloor shall be of wood construction, dry, level, securely fastened, and reasonably clean, without projections. Repair or replace badly cupped or warped board subfloors if they cannot be made smooth and level. Walk across the entire area which will receive the underlayment panels and check the subfloor for squeaks. If squeaks exist, then securely fasten this area with nails or screws. If they persist, correct the problem prior to installing the underlayment panels. Drive any protruding fasteners flush with the panel surface. If the floor has excessive downward movement between joists when subjected to foot traffic, instruct the builder to correct the problem before installing the underlayment.

7.2 Crawl spaces underneath wood subfloors shall be well ventilated, or in compliance with local building code ventilation practices, and have clearance of at least 18 in. (457 mm) between the ground level and the joists. Place a vapor retarder, having a maximum rating of 1.0 perm, on the ground under the wood floor to reduce the amount of moisture to which the floor will be exposed. Joints in the vapor retarder shall be overlapped at least 8 in. (152 mm).

7.3 To minimize localized expansion and shrinkage of wood

floors, areas close to furnaces and ducts used for heating and cooling shall be insulated.

8. Selection of Underlayment

8.1 Select underlayment according to the recommendations of the resilient flooring manufacturer. Additionally, the underlayment manufacturer's recommended installation methods and end use service environment shall all be considered to avoid or minimize service problems.

8.2 The panels shall be smooth enough so that the texture of graining in the panel will not show through the finished flooring. They shall not contain any substance that may stain vinyl such as edge patching compounds, marking inks, paint, solvent, adhesives, asphalt or dye, etc.

8.3 Where there are conflicting recommendations, these shall be resolved prior to purchase and installation of the underlayment.

9. Storage and Conditioning

9.1 Installation of underlayment shall be delayed until the building construction has reached the approximate moisture content that it will have in service. For best results, the moisture content of the underlayment at the time of installation shall approximate that which it will have in service. To minimize damage caused by other trades, follow the procedures in Section 10.

10. Protection After Installation

10.1 Because satisfactory performance of resilient flooring depends in part on the condition of the surface of the underlayment, care shall be taken to avoid traffic on the underlayment after installation. Trade workers that might cause damage to the underlayment surface shall complete their work prior to installation of underlayment. Damage to the underlayment surface and floor covering can occur if water, oil, paint, spackle compounds, solvent, dirt, and other debris are spilled or tracked onto the underlayment. In addition, paint and solvent spills on underlayment may migrate to the surface of resilient flooring and cause a stain. The underlayment shall be protected by temporary walking boards or several sheets of heavy kraft paper. Do not use asphalt saturated paper or treated wood. Heavy or blunt objects, when dropped on underlayments, can cause depressions in the surface which will telegraph through the resilient flooring when in service.

11. Underlayment Surface

11.1 The surfaces of the underlayment before and after installation shall be smooth, firm, and unblemished.

12. Keywords

12.1 installation; resilient; sheet; tile; underlayment; wood

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