Designation: D 5036 – 99 (Reapproved 2005)

Standard Practice for Application of Adhered Poly(Vinyl Chloride) Sheet Roofing[1]

This standard is issued under the fixed designation D 5036; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers the minimum requirements for the installation of adhered poly(vinyl chloride) roofing.

1.2 For the purpose of this application practice, the structure and deck are assumed to be mechanically sound, able to accept the weight of the membrane and other roofing system materials, comply with local building codes, and other roofing requirements. The insulation layer(s) and vapor retarder, if specified, are assumed to be in place, secured, and acceptable for use with the membrane and bonding adhesive.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For specific hazard statements, see Section 5.

2. Referenced Documents

2.1 *ASTM Standards:* [2]

D 312 Specification for Asphalt Used in Roofing

D 1079 Terminology Relating to Roofing, Waterproofing, and Bituminous Materials

D 4434 Specification for Poly(Vinyl Chloride) Sheet Roofing

3. Delivery of Materials

3.1 Deliver materials in supplier's unopened containers and packages.

4. Storage and Handling of Materials

4.1 Elevate stored materials and under protective covering. Roll goods shall be stored in a horizontal position, and in a manner that prevents the supplier's markings from being destroyed.

4.2 Store non-asphaltic adhesives in original tightly closed containers at temperatures between 5 and 30°C (40 and 85°F). Short term excursions beyond these temperatures may be allowable (for example, overnight, or during periods of inclement weather). Emulsion type adhesives shall not be allowed to freeze.

4.3 Do not exceed the labeled shelf life.

4.4 Store solvents in proper containers to prevent dilution or contamination, or both.

4.5 Store flammable materials in original closed containers away from any ignition source.

4.6 Store asphalt in original containers.

4.7 Consult membrane manufacturer/supplier for additional direction.

5. Safety Hazards

5.1 Store flammable materials in a manner that will not pose a fire hazard.

5.2 Shut down roof top air handling equipment and air intakes in the work area to reduce odors from entering the building.

6. Environmental Conditions

6.1 Install roofing components during weather conditions that do not interfere with adhesion, pliability, or workability.

6.1.1 Do not attempt bonding in conditions such as dew, fog, rain, snow, or when frost occurs on the surfaces of either the membrane, bonding/solvent adhesive, or when the ambient air temperature is below 5°C (40°F) or above 50°C (122°F).

6.1.2 Do not use emulsion adhesives if the ambient air temperature is expected to drop below 5°C (40°F) within 24 h after bonding the sheet.

6.2 Installation outside of these conditions require special conditions beyond the scope of this practice.

6.3 Wind may cause difficult working conditions. Temporary ballasting of roofing sheets may be required. Work surfaces must be protected from windblown dirt and debris.

7. Materials Definitions

7.1 *Poly(Vinyl Chloride) Sheet Roofing*—Roofing material that meets the requirements of Specification D 4434.

7.2 *Bonding Adhesive*—Provide adhesive, supplied or approved by the membrane manufacturer, to develop a bond between the membrane and the substrate to which the membrane is to be attached. Adhesive may be of three types: solvent-based bonding adhesive, water-based adhesive, or asphalt.

---

[1] This practice is under the jurisdiction of ASTM Committee D08 on Roofing and Waterproofing and is the direct responsibility of Subcommittee D08.18 on Nonbituminous Organic Roof Coverings.

Current edition approved Dec. 1, 2005. Published December 2005. Originally approved in 1990. Last previous edition approved in 1999 as D 5036 – 99.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

7.3 *Lap Seam Sealant*—When required, provide a compatible sealant that will be applied to the exposed edge of the seam.

8. Substrate Preparation

8.1 Surfaces to receive sheets shall be sufficiently free of contaminants such as dirt, debris, loose materials, and visible moisture. Remove sharp objects that could damage the roofing.

8.2 All gaps and joints between substrate components in excess of ¼ in. shall be filled with like materials.

9. Installation

9.1 If required by the contract, submit shop drawings to the awarding authority for review and approval. Install sheets in accordance with the approved drawings.

9.2 Use care not to damage materials when handling. Distribute materials in such a manner that the roof deck is not overloaded.[3]

9.2.1 Use care and diligence during installation to avoid damaging the substrate.

9.2.2 It is good practice to start the sheet installation at the high point of the roof and work to the lowest point to avoid the possibility of water penetrating under the completed roof system.

9.2.3 Orient field seams with sheet overlaps to shed water or be parallel to the direction of water flow when possible.

9.3 Do not puncture, fracture, or delaminate the substrate to which the roofing is to be bonded. Damaged substrate areas must be replaced.

9.4 Unroll the roofing materials. If any defects are seen, repair or remove defective or damaged roofing from the site.

9.5 *Application Using Solvent-Based Bonding Adhesive*:

9.5.1 Align the sheet in its proper location and overlap the adjacent sheet a minimum of 51 mm (2 in.). Fold the sheet in half, either widthwise or lengthwise, to create a rounded fold in the sheet.

9.5.2 If required by the adhesive manufacturer/supplier, stir adhesive until uniform and apply solvent-based bonding adhesive to the substrate at the recommended rate. Allow the adhesive to dry so that it shall not string or stick to the finger when touched.

9.5.3 Apply solvent-based bonding adhesive to the back of the sheet at the manufacturer's recommended rate. Allow the adhesive to become tacky as evidenced by strings of adhesive forming when lightly touched. Keep adhesive out of overlap areas.

9.5.4 Carefully roll the adhesive coated sheet onto the prepared substrate, maintaining a rounded leading edge in a manner that minimizes voids and wrinkles. Keep the sheet even and continue rolling until the sheet is laid flat.

9.5.5 Fold back the unbonded portion of the sheet and expose the second half. Then, repeat the operation described in 9.5.2 and 9.5.4.

9.5.6 After the sheet is in place, apply pressure to promote bonding between the membrane and the substrate. Use a weighted roller to promote maximum adhesion.

9.6 *Application Using Water-Based Bonding Adhesive*:

9.6.1 Align the sheet in its proper location and overlap the adjacent sheet a minimum of 51 mm (2 in.). Fold the sheet in half, either widthwise or lengthwise, to create a rounded fold in the sheet.

9.6.2 If required by the manufacturer/supplier, stir adhesive until uniform and apply water-based adhesive to the substrate at the recommended rate. Roll sheet onto adhesive immediately. Do not allow formation of a film on the surface of the adhesive to occur. Keep adhesive out of overlap areas.

9.6.3 Continue rolling sheet into wet adhesive until roll has been set into adhesive. Keep the sheet even to maintain a minimum of 51 mm (2 in.) overlap of adjacent sheet.

9.6.4 Return to the beginning of the roll and fold back the unbonded section. Repeat the procedure specified in 9.6.2 and 9.6.3 to complete adhesion of entire roll of sheet membrane.

9.6.5 After the sheet is in place, apply pressure to promote bonding between the membrane and substrate. Use a weighted roller to promote maximum adhesion. Apply pressure working away from overlap area to prevent displacement of adhesive into lap area.

9.7 *Application Using Specification D 312 Type III Asphalt as the Adhesive:*[4]

9.7.1 For slopes grater than 3:12, use Type IV Asphalt.

9.7.2 If required by the membrane manufacturer, prime the substrate with asphalt primer at the recommended rate.

9.7.3 Align the sheet in its proper location and overlap the adjacent sheet a minimum of 51 mm (2 in.).

9.7.4 Apply the asphalt within the EVT application range as defined in D 1079. Carefully roll the sheet into the asphalt. Keep overlap areas free of asphalt.

9.7.5 Keep the sheet even to maintain the 51 mm (2 in.) overlap of the adjacent sheet, while continuing to roll the sheet into the hot asphalt.

9.7.6 Apply pressure as the sheet is rolled into place to promote bonding between the membrane and substrate. Use a broom or squeegee to promote maximum adhesion. Apply pressure working away from overlap areas to prevent displacement of asphalt into lap area.

9.8 *Hot Air Welding of Lap Areas*:

9.8.1 Visually inspect the overlap areas to determine that they are sufficiently free of contaminants such as dirt, debris, adhesives, and loose materials. If found, remove such materials according to manufacturer's/supplier's specification.

9.8.2 Insert the hot air nozzle and draw between the overlapping membranes while applying pressure. Fusion of the two mating surfaces shall occur immediately following the heating process.

9.8.3 Check the outside edge of the seam with a blunted metal probe along the edge of the welded lap area. The welded lap shall be visually free of any voids, fishmouths, or wrinkles, and shall lay flat.

9.8.4 If required by the membrane manufacturer, apply a continuous bead of lap sealant along all lap connections before the end of each workday.

[3] Consult designer of record for maximum localized load.

[4] Membrane material must be specifically designed for this application.

10. Keywords

10.1 adhered; bonding adhesive; hot-air welding; membrane; poly(vinyl chloride); roofing; single-ply