

## **Section 07 53 23**

### **EPDM Membrane Roofing - Adhered**

#### **PART 1 - General**

##### 1.1 Summary

- A. Section includes Ethylene Propylene Diene Monomer (EPDM) sheet roofing system, adhesive attached, and related sealants and flashings.
- B. Related Sections:
  - 1. Section 07 62 00 – Sheet Metal Flashing and Trim.
  - 2. Division 22: Vent stacks, and other plumbing penetrations.
  - 3. Division 23: Mechanical equipment and roof penetrations.
  - 4. Division 26: Electrical roof penetrations.

##### 1.2 References

- A. ASTM C177 – Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
- B. ASTM C1289 – Faced Rigid Cellular Polyisocyanurate Thermal Insulation.
- C. ASTM D412 – Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers – Tension.
- D. ASTM D624 – Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
- E. ASTM D746 – Test Method for Brittleness Temperature of Plastics and Elastomers by Impact.
- F. ASTM D822 – Practice for Conducting Tests on Paint and Related Coatings and Materials using Filtered Open-Flame Carbon-Arc Light and Water Exposure Apparatus.
- G. ASTM D1004 – Test Method for Initial Tear Resistance of Plastic Film and Sheeting.
- H. ASTM D4637 – Vulcanized Rubber Sheet Used in Single-Ply Roof Membrane.
- I. ASTM E96 – Test Method for Water Vapor Transmission of Materials.
- J. FM 4470 – Roof Assembly Classifications.
- K. NRCA – Roofing and Waterproofing Manual.
- L. UL 790 – Fire Hazard Classifications.

##### 1.3 Performance Requirements

- A. UL 790: Class A fire hazard classification.

##### 1.4 Submittals

- A. Submit in accordance with 01 33 00 – Submittal Procedures.
- B. Product Data: Submit characteristics on membrane materials, adhesives, seaming materials, flashing materials.
- C. Warranty: Submit manufacturer's warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

##### 1.5 Quality Assurance

- A. Perform work in accordance with NRCA Roofing and Waterproofing Manual.
- B. Installer Qualifications: Approved by roofing system manufacturer as installer for roofing system with specified warranty

##### 1.6 Delivery, Storage, and Handling

- A. Deliver products in manufacturer’s original containers; dry, undamaged, and with seals and labels intact.
  - B. Store products in weather protected environment, clear of ground and moisture. Protect foam insulation from direct sunlight exposure.
- 1.7 Environmental Requirements
- A. Do not apply roofing materials during inclement weather without proper weather protection.
  - B. Do not apply roofing membrane to damp or frozen roof deck, or when precipitation is expected or occurring.
  - C. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.
- 1.8 Coordination
- A. Coordinate Work with installation of associate roof penetrations and metal flashings, as Work of this section proceeds.
- 1.9 Warranty
- A. Provide a system capable of being warranted by the manufacturer for a period of not less than 15 years. The costs for a 15 year manufacturer’s warranty shall be included in the Bid.
  - B. Limit of Liability: No dollar limitation.
  - C. Scope of Coverage: Repair leaks in the roofing system caused by:
    - 1. Ordinary wear and tear of the elements.
    - 2. Manufacturing defect in materials.
    - 3. Defective workmanship used to install these materials.
    - 4. Damage due to winds up to 90 mph.

**PART 2 - Products**

2.1 Single Ply Roofing

- A. Membrane: EPDM, ASTM D4637 un-reinforced, .060 inch thick, black color, conforming to the following criteria:

Properties	Test	Result
Tensile Strength	ASTM D412	1305 psi minimum
Elongation	ASTM D412	300% minimum
Hardness – Shore A	ASTM D2240	65±10
Tear Strength	ASTM D624	150 lbs / in. minimum
Water Absorption	ASTM D471	+8% -2%
Moisture Vapor Perms	ASTM E96	2 perm mils
Low Temperature Brittleness	ASTM D746	-49°F

- B. Seaming Materials: As recommended by membrane manufacturer.
- C. Adhesive Materials: As recommended by manufacturer for substrate.
- D. Flexible Flashings: EPDM; conforming to the following:
  - 1. Thickness: 45 mil minimum.
  - 2. Tensile Strength: 1,200 PSI.
  - 3. Elasticity: 50 percent with full recovery without set.

4. Color: Black.

## 2.2 Accessories

- A. Roofing Nails: Hot dipped galvanized or non-ferrous type, size as required to suit application.
- B. Sealants: As specified by membrane manufacturer.
- C. Stack Boots: Flexible boot and collar for pipe stacks through membrane.

## PART 3 - Execution

### 3.1 Examination

- A. Verify surfaces and site conditions are ready to receive work.
- B. Verify deck is supported and secure.
- C. Verify deck is smooth and clean, free of depressions, waves, or projections, properly sloped to drains, valleys, or eaves, and suitable for installation of roof system.
- D. Verify deck surfaces are dry and free of ice and snow.
- E. Confirm deck moisture content is acceptable to roofing manufacturer using a moisture meter.
- F. Verify adjacent pre-cast concrete members do not vary more than 1/4" in height. Verify grout keys are filled flush.
- G. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, and wood cant strips, wood nailing strips, and reglets are in place.

### 3.2 Preparation

- A. Wood Deck
  1. Verify flatness and tight joints of wood decking.
  2. Confirm deck moisture content is acceptable to roofing manufacturer using a moisture meter.

### 3.3 Installation

- A. Membrane Application
  1. Lay out membrane and allow to relax.
  2. Apply primer if required.
  3. Apply adhesive at manufacturer's specified rate of application.
  4. Roll out membrane, free from air pockets, wrinkles, or tears. Place sheet into place without stretching.
  5. Bond sheet to substrate except for those areas directly over or within 3 inches of a control or expansion joint.
  6. Overlap edges and ends and seal with adhesive. Seal permanently waterproof.
  7. Shingle joints on sloped substrate in direction of drainage.
  8. Seal membrane around roof penetrations.
- B. Flashings and Accessories
  1. Apply flexible flashings to seal membrane to vertical elements.
  2. Secure to pipe, wall, or curb with bonding adhesive.
  3. Install roofing control and expansion joints to isolate roof areas as indicated on drawings. Make joints watertight.
  4. Coordinate installation of roof drains and associated flashings.
  5. Seal flashings and flanges of items penetrating membrane.

### 3.4 Field Quality Control

- A. Probe the edges of all seams with a blunt-tipped instrument. Use sufficient hand pressure to detect marginal bonds, voids, skips, and fish mouths.
  - B. Repair fish mouths and wrinkles by cutting to lay flat and installing patch over area to extend four inches beyond cut. Finish edge of lap with sealant.
- 3.5 Cleaning
- A. Clean roof surface of all membrane and flashing scraps, fasteners, metal trimmings, etc. during work and at completion.
  - B. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and conform to documented procedures.
  - C. Repair or replace disfigured finishes caused by work of this section.
- 3.6 Protection of Installed Construction
- A. Protect building surfaces from damage due to roofing work.
  - B. When construction traffic must pass over finished roof membrane, provide appropriate protection to roofing.

### **End of Section**