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## **SINGLE PLY MEMBRANES**

### **Material and System Description**

Single-ply sheet membranes are produced using one of three manufacturing processes: calendaring, extruding or spread coating. The membranes may contain reinforcement layers. Common reinforcements for single ply membranes include polyester fabrics or scrims, glass fiber, or a felt or fleece backing.

Single-ply membranes are factory-manufactured sheet membranes. They generally are categorized as either thermoplastic or thermoset. Thermoplastic materials can be repeatedly softened when heated and hardened when cooled. Thermoset materials solidify, or "set," irreversibly after heating. Single ply membranes commonly are referred to by their chemical acronyms, such as ethylene propylene diene terpolymer (EPDM).

There are two types of roofing membranes:

- Thermoplastic materials are distinguished from thermo set materials in that there is no chemical cross linking. These membranes can be repeatedly softened by heating or hardened when cooled. Because of the materials' chemical nature, thermoplastic membranes typically are seamed by heat welding with hot air or solvent welding.
- Thermo set roof membrane is EPDM. EPDM principally is composed of two compounds, ethylene and propylene, that are derived from oil and natural gas. EPDM roof membranes can be installed fully adhered, mechanically attached (using batten bars) or ballasted. Most EPDM membranes do not receive surfacing.

A finished sheet's thickness typically is referred to as mil thickness; 1 mil equals 0.001 inch. Common mil thicknesses for these sheet membranes range from 30 mils to 60 mils.

Single-ply membranes can be installed fully adhered, mechanically attached or held down with ballast. Most single-ply roof systems do not receive surfacing.

In many instances, a combination of attachment methods are used to secure a roof system. For instance, an insulation may be mechanically attached to the substrate with the roof membrane fully adhered to the insulation.