

Recommendations for the Application of Aluminum Roof Coatings

The Roof Coatings Manufacturers Association (RCMA) recommends certain procedures for the application of asphalt aluminum roof coatings.

General Considerations:

Adhesion or bonding to the roof surface is critical to the performance of aluminum roof coatings. The surface must be properly prepared, and in some instances properly aged/weathered, before applying an aluminum roof coating. Surfaces such as asphalt glaze or flood coats and solvent based asphalt coatings and adhesives typically require about three months of summer type weather before coating them to permit evaporation of the solvents and light end oil fractions. Asphalt emulsions can generally be coated a short time after curing (typically 5-14 days) without worry of staining or cracking, depending on application rates and ambient curing conditions.

Studies indicate that it may be better to coat many modified membranes before they age, rather than after they age. Follow the membrane manufacturer's recommendations when coating a modified bitumen membrane with aluminum roof coating. ARMA (Asphalt Roofing Manufacturers Association) and RCMA have published a brochure entitled *Evaluating and Preparing Modified Bitumen Membrane Roofing for Surface Coating Applications*.

While the aluminum roof coating adds to moisture protection, it is not designed to stop leaks or repair seams or blisters. Repair problem areas before applying any roof coating, including aluminum roof coating.

Weather Considerations:

Cold temperatures can cause dew or moisture to interfere with adhesion of the coating. Moisture trapped under or within a solvent based aluminum roof coating will result in a splotchy appearance when the coating cures. Low temperatures can also inhibit the leafing of the pigment in the aluminum roof coating, where leafing is defined as the affinity of the aluminum flake (pigment) to float to the surface of the coating during application and just prior to curing. Occasionally, this problem will resolve itself as the coating ages over the length of a summer.

High temperatures may also pose a problem during application. While the aluminum flakes leaf out well when the roof is hot, extreme temperatures (typically over 110°F) may also cause the coating to cure too quickly, resulting in streaks, highlights, and sometimes, "balling" up of the coating during application. Rain may cause problems if the coating has not completely cured. Most manufacturers do not recommend coating if rain is expected within 24 hours of application.

Surface Conditions:

The surface must be free of loose debris, dirt, oils and other materials that could interfere or cause loss of adhesion. Proper preparation of the surface may involve sweeping (with a broom) or vacuuming to remove loose dirt or other dry material, power sweeping to remove light contaminants (e.g. pollen, small amounts of light oil), power scrubbing for heavier contaminants, or in the severe cases, cleaning by pressure-washing. Pressure-washing is used to take off heavy exudate, oils and greases, loosely bound particles or old, weathered coating. The membrane manufacturer must be consulted for details on how to clean the roof.

Application Recommendations for Aluminum Roof Coatings

Ponding water is never desirable on a roof as it may cause delamination of the aluminum roof coating from the surface and causes premature coating failures. Positive drainage is necessary to flush away any accumulations of surface dirt from the roof and to keep the reflective properties of the coating intact. Coatings in ponded areas will have a much shorter lifetime.

Primer may be needed prior to applying the aluminum roof coating, dependant on the condition of the substrate. Allow the primer to dry thoroughly before applying aluminum roof coatings, to ensure optimum performance. Some solvent-based primers may activate the asphalt in some built-up or modified bitumen membranes, which can lead to staining if the primer is not allowed to sufficiently cure prior to coating. On metal roofs, synthetic solvent-based (e.g., acrylics) and even water-based rust inhibitive primers can be used as recommended by the aluminum roof coating manufacturer. Certain types of primers (e.g. alkyds) exhibit severe incompatibilities with aluminum roof coating. If a primer is required, consult the aluminum roof coating manufacture regarding proper selection.

Mechanical Mixing:

An important step in the application of asphalt aluminums is mechanically mixing the coating before and during use, since the aluminum pigment and extenders tend to settle out during storage of the coating. Proper mixing of the coating in the container will result in optimum reflectivity and a uniform aluminum color. Use mechanical mixers with a blade designed for fibered products (not paint products). If dispersion of the coating is not complete, streaking during application can occur.

Asphalt aluminum roof coatings are carefully formulated by the manufacturer to cure and weather properly on the roof. Thinning with solvent not only seriously degrades the coating, but may also be in violation of volatile organic compound (VOC) compliance laws and regulations.. Additionally, the final cured film may not be of the proper thickness and the coating will weather poorly. Further, improper solvent use can negatively inhibit the leafing of the aluminum pigment, or cause the asphalt to bleed through the aluminum flakes. Follow the manufacturer's instructions. Unless specifically directed by the manufacturer, — DO NOT THIN!

Application:

When applying by brush, use either a three or four knot roofer's brush or, soft bristled broom. If applying by roller, it should be medium nap in design. When roll or brush-applying an asphalt aluminum roof coating, it is important to finish all application strokes in basically the same direction to achieve the best aesthetics. When aluminum flakes orient in the same direction, they reflect light more uniformly.

Aluminum roof coatings can also be spray applied. Typically the spray equipment utilized is an airless sprayer, which means no air is used to "atomize" the coating during application. However, any spray unit capable of spraying the coating in an even pattern can be used. Consult the coating and spray equipment manufacturer for proper sizing and selection, since the density and viscosity of the aluminum roof coating, the internal hose diameter, and the overall transfer distance (length of hose) will all factor into determining the type of spray equipment needed for the job.

After application, as with any coating, avoid walking on the asphalt aluminum roof coating until it is fully cured.

Coverage:

Apply the aluminum roof coating according to the manufacturer's recommended coverage rate. The ASTM Standard D 2824, Standard Specification for Aluminum-Pigmented Asphalt Roof Coatings, Non-fibered, Asbestos Fibered, and Fibered without Asbestos, requires certain consistencies for the aluminum roof coatings, and the consistency allows for ease of application. Low and high coverage rates can result in poor performance and premature failure. Type I non-fibered aluminum roof coatings are typically applied at the rate of 0.5 to 1.5 gallons per square using a roller, brush or spray, whereas Type II or III fibered aluminum roof coatings are usually applied at 1 to 2 gallons per square, and can also be applied using a roller, brush or spray. Coverage rates are also dependent upon the type of surface being coated, as well as the degree of slope exhibited by the roof substrate. Additionally, Underwriter's Laboratories Class A, B or C ratings may require that coatings be applied at rates heavier than previously noted. Consult the coating manufacturer or the UL Directory for proper coverage rates over UL classified systems.

Note: These recommendations were prepared by and have the approval of the Roof Coating Manufacturers Association for informational purposes only. They are not intended to revoke or change the requirements or specifications of the individual roofing material manufacturers or local, state and federal building officials that have jurisdiction in your area. Any question, or inquiry, as to the requirements, or specifications of a manufacturer, should be directed to the roofing manufacturer concerned.