COATINGS TECH NOTE 3

RECOMMENDATIONS FOR THE APPLICATION OF ALUMINUM ROOF COATINGS

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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 worrying about staining or cracking, depending on application rates and ambient conditions.

Studies suggest that coating modified bitumen membranes before they age may be more effective than after. 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.

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. Leafing is defined as the tendency of the aluminum flake (pigment) to float to the surface of the coating during application and just prior to curing.

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 104°F or 40°C) may also cause the coating to dry too quickly, resulting in streaks, highlights, and sometimes, “balling” up of the coating during application. Apply aluminum coating when ambient temperatures are 50°F (10°C) and warmer but not more than 104°F (40°C) Rain or other moisture may cause problems if the coating has not completely dried. Most manufacturers do not recommend coating if rain, heavy dew or other sources of moisture are expected within 24 hours of application.

Surface Conditions:

The surface must be dry and 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 remove exudate, oils and greases, loosely bound particles or old, weathered coating. The membrane manufacturer should be consulted for details on how to clean the roof.

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 failure. 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 than expected.

Application Recommendations for Aluminum Roof Coatings:

Primer may be needed prior to applying the aluminum roof coating, depending on the condition of the substrate. Allow the primer to dry thoroughly before applying aluminum roof coatings. Some solvent-based primers may soften the asphalt in some built-up or modified bitumen membranes, which may lead to staining if the primer is not allowed to sufficiently cure prior to coating. On metal roofs, synthetic solvent- based primers (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) are incompatible with aluminum roof coatings. If a primer is required, consult the aluminum roof coating manufacturer regarding proper selection.

Mechanical Mixing:

An important step in the application of asphalt aluminum roof coating is mechanically mixing the coating before and during use, since the aluminum pigment and other components may settle during storage of the coating. Proper mixing of the coating in the container will result in optimum reflectivity and a uniform aluminum appearance. 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.

Unless specifically directed by the manufacturer — **DO NOT THIN!** Asphalt aluminum roof coatings are carefully formulated by the manufacturer to cure and weather properly on the roof. Thinning with a solvent not only seriously degrades the coating but may also violate 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 inhibit the leafing of the aluminum pigment or cause the asphalt to bleed through the aluminum flakes. Follow the manufacturer's instructions.

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. 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. Review ASTM D3805 *Standard Guide for Application of Aluminum-Pigmented Asphalt Roof Coatings* for additional information.

Aluminum roof coatings may 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 manufacturers 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.

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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, specifies certain consistencies for the aluminum roof coatings. 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 dependent upon the type of surface being coated, as well as the degree of slope exhibited by the roof substrate. Additionally, Underwriter's Laboratories (UL) Class A, B, or C ratings may require that coatings be applied at rates different than previously noted. Consult the coating manufacturer or UL for proper coverage rates over UL classified systems. For FM Approved systems, consult FM's RoofNav for specific coverage rates and requirements. In high-velocity hurricane zones, ensure compliance with Miami-Dade NOA approved products, which must meet specific coverage and application requirements.