



The Building Owners Guide to **Metal Roof Coating**

TABLE OF CONTENTS

Terminology Used for Metal Roof Coatings	Page 3
Introduction to the Basics of Metal Roof Coatings	Page 5
The Purpose and Importance of Metal Roof Coatings	Page 7
Maintenance and Repair Options for Metal Roof Coatings	Page 9
Duro-Shield Roof: Metal Roof Coating Alternative	Page 11

Terminology Used for Metal Roof Coatings

There are a number of terms used to describe the properties and installation process of metal roof coatings. When you are selecting a coating method, it is helpful to understand many of these terms and how they may apply to your installation.

Coating materials

The binders used in a roof coatings help define the characteristics of the coating. Binders are combinations of polymers and resins that hold the coating together. Depending on the application, binders include rubber, vinyl, silicone, acrylics and asphalt. These form a polymer with elastic properties.

Pigments are used to provide color, opacity and resistance to ultraviolet light. The right pigments can increase the longevity of the coating through the resistance. Fillers and modifiers are added to provide strength and reinforcement. Some fillers, like ceramic particles, increase the ability of the roof coating to flow. Modifiers increase the adhesion of the coating and add resistance to weathering and oxidation.



The carriers used in a metal roof coating provide the liquidity. Carriers are solvents that evaporate as the coating dries and cures, leaving the protective film behind. The best and longest lasting coatings combine the right fillers, modifiers and binders in the correct amounts to form a strong and weather-resistant finish.

Curing

Drying and curing are two different parts of the complete metal roof coating process. Drying occurs over a series of stages, the first stage being the tack-free time. When the coating reaches this level of drying, dust and debris will not adhere to the surface. The next stage is when the coating becomes dry to the touch. Finally, the coating becomes dry enough to walk across or add a second coating layer.

Different types of coatings will all have slightly different drying times. These times can also vary by weather and humidity. Curing is the time it takes the coating to reach its peak durability and changes to a fully solid state.

Curing times for metal roof coatings vary, some take nearly 30 days for full curing. The process can involve evaporation of the solvents used in the material, a reaction to the elements or a two-part chemical change.

The characteristics and performance properties of different metal roof coatings make each type unique. Your roofing professional can work with you to select the best roof coating to meet the needs of your metal roof or metal roof repair.

Introduction to the Basics of Metal Roof Coatings

Metal roof coatings come in many types and coatings designed for metal roofs are created in a variety of different fillers and binders. Coatings are a fluid or liquid that is applied to form a heavy film coating that protects the metal and prevents leaks.

Primers

The first steps in preparing a metal roof for a coating involves cleaning and priming the surface. Any damaged metal will need repair work performed first. A primer is applied to improve the adhesion of the actual protective coating. Primers come in different forms including cut-back, emulsion and polymer-based.

Emulsion primers use water as a solvent and are suitable for use in areas that restrict volatile organic compounds (VOCs). Primers must be allowed to dry completely before any other products are applied.

Polymer-based primers are also water-soluble and protect the roof coating from absorbing any stains from the underlying roofing material. Polymer primers come in different formulations to work with specific coatings. ERSystems Acrylic Metal Rust Primer works as both a primer and finish coat while also preventing rust formation on the metal roof.



Materials in metal roof coatings

The base materials for coatings include water-based acrylics, solvent-based aluminum, polyurethane, styrene-ethylene butylene styrene (SBS), and rubberized aluminum. Ceramics and fillers can be added to improve durability and increase weather and aging resistance.

Aluminum emulsions provide the appearance of a metal roof, with aluminum metal flake in the coating. If a metal roof currently has an aluminum coating, care must be taken in applying the correct primer to reduce the potential for the new coating to peel or chip from the surface. Black or asphalt based coatings are normally a low cost solution, but can also be used to effectively reduce water ponding on roofing system with poor drainage.

Polymer-based coatings include those with acrylics, silicone, ceramic or polyurethane. The properties of these binders add to the hardness, elasticity, durability and permeability features of the metal roof coating. Acrylics offer versatility with the ability to be applied over many other types of original coatings. Acrylics are also used in mastic or caulks to seal joints, penetrations and transitions.

Polyurea based coatings offer a harder surface finish. Urethane offers high tensile strength and elongation. Elastomeric coatings, like OneStep, maintain elastic properties for expansion of metal roofing systems and offer chemical resistance, durability and reflectivity for multiple substrates.

Coatings may be applied with an airless spray system, roller or broom. The surface preparation is critical to achieve the best results in metal roof coatings. Coatings should not be applied in high winds and manufacturers have different recommendations for minimum temperatures and drying times before rain.



The Purpose and Importance of Metal Roof Coatings

Metal roof coatings serve several purposes. Some of the main purposes of a coating are to protect the roofing system from moisture, heat and solar radiation. Coatings can also be used to restore aging or failing metal roofing systems. Different coating products can offer a combination of features to meet individual roofing needs.

Waterproofing

The key feature of any coating is to protect the building from moisture penetration. The type of moisture and slope of the roof must be considered to select the right coating materials. If ponding is a problem, coal tar based coatings have a thickness that can increase slopes and resist penetration from standing water. Acrylics do not perform as well under standing water conditions.

Elastomeric properties

The elastomeric properties of metal roof coatings can also be a critical feature. This defines the ability of the product to expand and contract with temperature changes. Under extreme temperature changes, a rigid roof coating could crack and then begin to leak.

Coatings with elastic properties can still provide a hard surface that is tear and cut resistant. Polyurethane sealants can also be applied for metal roof repair that offer superior weather resistance and permanent flexibility.

Reflecting heat and adding energy efficiency

White or aluminum based coatings help reflect sunlight, providing a cooler roof surface. Ceramic coatings also deflect heat, and reflect between 75 to 85 percent of the solar radiation that hits the surface. The solar reflective property not only reflects radiation, the coating improves the roof as it warms.

Excess temperature changes cause expansion and contraction in metal roofs, stressing the joints. Solar reflective coatings limit these temperature changes and should be used in areas with extremely high summer temperatures. However, in colder climates, or for roofs in continual shade, reflectivity may not be a major factor in choosing a coating.

Chemical resistance



In some situations, choosing a coating material with chemical resistance will be beneficial. Coatings containing silicones, coal tar, polyurethanes and polyureas are more resistant to chemical issues. Primers can also improve resistance, applying a primer with a rust preventative feature can greatly improve the longevity of the entire metal roofing system.

In addition to waterproofing, protecting and providing energy efficiency, some metal roof coatings are also manufactured to meet fire resistance ratings. While the metal roof itself resists fire, in some areas the coating material should also be taken into consideration for Class A requirements.

Discuss your roofing needs with a professional to determine the best metal roof coating for your unique application. Remember to consider if foot traffic is frequent and what other benefits you may desire including light reflection or increased energy efficiency.

Maintenance and Repair Options for Metal Roof Coatings

When you choose a quality metal roof coating with professional installation, you will face fewer worries about repairs and maintenance problems. The right coating for your type of roof and the environment will hold up longer without excessive effort on your part.

Maintenance for metal roof coatings

Your roof should be professionally inspected at least once a year, preferably twice. Keep in mind that some coatings do not accommodate heavy foot traffic. Drains and gutters must be kept clean or excess puddling will occur. Most metal roof coatings include algae or mold inhibitors. If mold growth is detected, it should be cleaned properly.

Pressure washing should always be performed with caution. High-pressure contact along penetrations or seams can cause damage. Low pressure cleaning is recommended. During an inspection, if signs of pooling are noticed, repair work should be scheduled. This will prevent damage to the underlying roof structure.

Metal roof repair

Sections of a coating system can be repaired or restored professionally. Acrylic latex caulk and other products are available to provide long lasting seals for seams and penetrations. Patching can be performed with fabrics or heavy sealants. Fabric lined butyl tape adds strength and water resistance for seams.

Re-coating of the surface should be performed when the original coating is nearing the end of its service life or is showing signs of aging or damage. The existing coating material must be identified in order to select the correct products for a re-coat. For example, an existing silicone roof coating can only be recoated with a silicone based primer and coating.



Professional difference

The preparation of the metal roof before a coating is applied is extremely important to the finished results. All debris must be removed and loose seams must be tightened and sealed. A rust inhibitor should be applied as part of the primer process. The correct primer is what allows the coating to have maximum adhesion to the roof.

Do discuss maintenance requirements and repair options with a professional. Even a complete restoration of a metal roofing system can cost less than 25 percent of a new roof installation.



Duro-Shield Roof: Metal Roof Coating Alternative

A Duro-Shield metal roof retrofit provides your building with a long-term alternative to costly metal roof replacement. Sealants or roof coating systems do provide protection, but these solutions do not last as long. As your metal roof expands and contracts with temperature changes, the coatings will crack and begin to leak. When you are looking for a cost-effective, durable metal roof repair, consider having a Duro-Shield membrane installed.

Duro-Shield installation process

The Duro-Shield membrane system is applied over your existing metal roof. No tear off is required and the interior of your building is not exposed to the elements during the process. Your existing roof will first be evaluated by an expert and measured to allow for manufacturing of the customized membrane.



Insulation panels are cut and installed into the flutes of your existing metal roof. A second layer of insulation is then added on top of the first layer, which ensures a flat surface for membrane installation. This second layer increases the total R-value and protects the interior of your building from condensation and drips that occur from temperature changes between the roof exterior and the interior of your building.

The pre-fabricated membrane is then installed over these layers of insulation. The pre-fabrication means that over 80 percent of the seaming process is completed before the Duro-Shield membrane reaches your roof. This includes pre-welded fasteners for mechanically attaching the system.

Membranes for flashing and roof penetrations are then installed and heat welded onsite providing you with a roofing system that has no seams to worry about. There will be no gaps or cracks around penetrations that can begin to leak and you no longer have to worry about your metal roof rusting or corroding.

The standard warranty for a Duro-Shield metal roof retrofit is a comprehensive 15-year, no dollar limit guarantee with no ponding exclusions. This warranty is transferable to a new building owner. A 20-year warranty is also available. Talk to a professional today to understand all of the benefits of a Duro-Shield metal roof retrofit repair today.

