Choosing the right coating system

Where do you start? What questions do you need to ask yourself? **What do you need from a coating?** What chemical properties are needed? **What is the roofing substrate?**

Other factors that go into choosing a coating are the pitch of the roof, rooftop activity, geographic location, purpose of project (roofing, cold storage, etc.), external environment/chemical resistance, time of year of application, longevity of system required, aesthetics, costs, and codes and approvals.

IB Roof provides roof coatings for almost every roofing surface. There are solutions for water leaks, to obtain reflectivity to complete roof restorations. Their acrylic and silicone systems are ideal for complete roof restoration on just about any building.

Acrylic coatings are the most commonly used highly reflective roof coatings. They are normally water-based, easy to handle, and can exhibit good performance in a wide variety of applications. Acrylic coatings exhibit moderate elongation and tensile strength and will provide good adhesion to most roof surfaces. However, as they are water-based, performance and application limitations do come into play. The roof substrate must be dry, and you must have favorable drying conditions before the onset of inclement weather. The coating must be kept at temperatures above 40°F (4°C) until the solvent/water properties have the opportunity to evaporate. Acrylic coatings should not be applied in areas with ponding water. The ASTM D-6083 standard defines the performance properties for an acrylic coating.

Polyurethane roof coatings are solvent-based and typically exhibit much stronger physical properties. Polyurethane coatings for roofing applications can be single-component or dual-component products.

Single-components use the moisture in the air to cure, while dual-components are a chemical cure. They tend to have three to 10 times the elongation and tensile strength of acrylic coatings. Because they are solvent-based, polyurethane roof coatings normally have great water resistance upon curing and can typically be applied in a wider temperature range than their water-based acrylic counterparts. They also tend to have better adhesion to most roof substrates because of a stronger solvent carrier. They should be formulated to meet federal and state VOC regulations.

Silicone roof coatings are solvent-free and have minimal VOC's. They typically exhibit much stronger physical properties. Since they are moisture-cured and solids-based, silicone can be applied at virtually any temperature and often eliminate any need for primer. They also are usually applied in one coat, so there is a large labor savings. Silicone coatings will maintain their adhesion and remain leak-free even when under the pressure of ponding water. Also, because silicone coatings are specially formulated to be non-sacrificial, they do not chalk away over time. Another benefit of performance-related silicone roof coating is that they are resistant to UV exposure.

Follow the manufacturer's recommendations for application as they are set with proven testing and history. Guidelines are usually based upon the testing of products in all environments and climates with multiple mil thicknesses to ensure the guidelines provided will give you the best performing roofing system. Having great research and development teams help provide the best products and having the best upfront quality control will ensure consistent top-quality products.

If all coatings were created equal (and they are not)

, then we need to look at the companies that are manufacturing and distributing them.

Ask the right questions!

What type of quality control measures go into making their products?
What product mix do they have that will allow you to complete more projects using the same product lines?
How readily available are the products?
What products do they offer that will help you complete your projects at a lower labor cost?
Are their products manufactured to meet the regulations and environment you want to put them in?

There are many options out there. Ultimately, choose the manufacturer that will support and stand behind its materials. **Discover the Difference with IB Roof Systems.**

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Connect with your local sales rep, download a brochure or visit our website to learn more about our complete line of coatings and complete roof systems. www.IBroof.com

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IB Roof Systems Corporate
8181 Jetstar Drive, Suite 150
Irving, Texas 75063
www.IBroof.com

800.426.1626

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Choosing and Specifying the **RIGHT** Roof Coating

By Mike Swartzer,
National Sales Manager
IB Roof Systems

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When choosing a roof coating, you need to understand the roof's aging process and the coating's design.

There are three major components to the aging of roofing products:

First, UV light is responsible for most of the damage to exposed roofing materials due to the subsequent photochemical reactions. Within rings and chains of organic roofing materials, carbon atoms are held together by forming bonds with energy of vibration; when excited by light energy striking these material bonds, the carbon bonds may break and produce a new substance. These are chemical reactions.

The second aging component also comes from the sun's light; the near IR or Infrared. IR light makes up over 50 percent of the sun's energy, turning into heat when it is absorbed by a surface. Photochemical reactions are not temperature-dependent, but the subsequent chemical reactions are temperature-dependent.

The third component in the aging process is moisture. When added to heat, moisture increases the rates and severity of the deterioration process. When thinking of moisture or rain, we also have to think about the thermal shock associated with cool rain on a hot roof and the scrubbing action of rain. Roofs tend to see a bit of UV, heat, and moisture each year.

Next, we need to look at the coatings and their design.

You have to understand that making a coating and choosing the right coating is about "good science" and not just the "magic in a can" approach. All coatings are not created equal. It comes down to the right product and chemistry for the application. We have to understand that different roofing projects may require different coating products, whether that means different primers, activators, or chemistries.

A Coating is A Coating, Right? Wrong.

What makes up a coating? There are many different raw materials that go into making coatings. There are different levels of quality within those products, so you need to ensure that the coating manufacturer you are choosing uses top quality raw materials in the coatings. A coating's resin is what determines the chemistry of the coating, such as an acrylic, polyurethane, silicone, and so on. You also need the right mixture of solvent, surfactant, pigments, auxiliaries, and fillers to make a good coating. Having the proper mix of raw materials to give the coating the right performance characteristics on your roof is essential.

IB Roof System's complete line of fluid-applied coatings is manufactured with the highest quality materials. IB Roof is known for performance, having manufactured roofing solutions for over 40 years with those systems still performing today. Just as their PVC systems are top of the line, IB Roofs acrylic and silicone coatings meet and far exceed the minimum industry standards.

One of the most important steps to a successful coating application is preparation.

Coatings may have wonderful physical properties (elongation, tensile strength, weatherability, etc.), but if the coating does not adhere to the substrate, the other properties mean nothing. Often coatings fail due to lack of adhesion. Every roofing contractor should ensure they follow proper procedures laid out for them by the coating manufacturer. Preparation should include testing adhesion, cleaning, taking care of cracks or leaks, removing wet materials, and limiting movement.


IB adhesion test kits

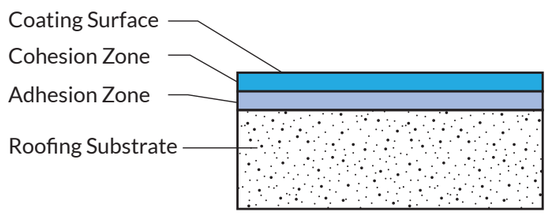
Performing actual adhesion tests on the proposed roof with the desired coating is a great place to start. The simplest method of measuring adhesion in the field is to select a representative area – or areas – of the roof. Clean and prepare the areas as if you were preparing the roof for a coating. Make sure the surface is dry. Then apply a thin layer of the coating to be tested with a small brush, and place a strop of fabric/cloth about 1" (2.54cm) wide and about 6" (15.24cm) long into the coated area, leaving a couple of inches of the fabric free of coating to use as a pull strip. Using the brush, make certain the fabric is placed into the coating. A second thin layer of the coating can then be applied over the fabric and the original coated area. Repeating these steps using different cleaning processes, primers, and products side by side will give you the ability to find the best product and procedure for the roof.

For most coatings under ordinary curing conditions, a minimum of 48 hours in ideal conditions or up to seven days of cure time should be allowed to make comparisons of adhesive strength. To test adhesive strength, the pull strip is pulled in a smooth, peeling motion with steady force at an angle of about 45 degrees. How much adhesion is enough? Typically, the more adhesion, the better. Since this is a qualitative test, a frame of reference is valuable, if possible. For instance, measure adhesion of a coating to a substrate with and without a primer; or compare two different cleaning processes; or compare two or more different products (perhaps a polyurethane and an acrylic).

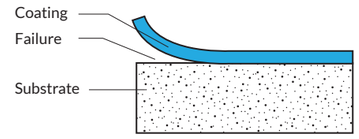
Maximizing adhesion of a coating requires a general appreciation of the principles of adhesion. Adhesion is the bonding/joining/sticking of two materials to each other. Adhesion can be described as primarily a surface phenomenon in which the coating must interact with the surface of the roof substrate (Fig. 1). Cohesion is the inner strength or bonding force holding together the cured coating itself (Fig. 1), and it is also important in roof coating performance.

When performing an adhesion test, separation and failure begins with a defect, a weakness, or a region of high stress. Like a chain, failure occurs at the weakest point. Failure may occur at the substrate interface with the coating (Fig. 2, adhesive failure), within the coating (Fig. 3, cohesive failure), or within the substrate (Fig. 4).

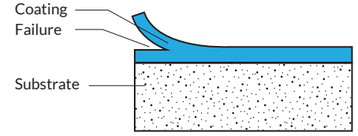
COATING CROSS SECTION (Fig 1)



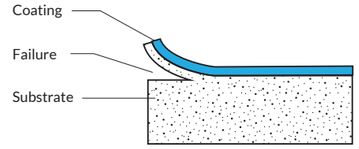
ADHESIVE FAILURE (fig 2)
Coating separated from substrate surface



COHESIVE FAILURE (fig 3)
Coating separated from itself



SUBSTRATE FAILURE (fig 4)
Coating removal causes substrate failure



How Clean Is Clean?

Roof cleaning breaks many coating applications. Cleaning of a roof substrate is needed to maximize adhesion between the coating and the roof substrate. Using a pressure washer at pressures of 2,500 to 4,000 psi is usually adequate for most roof surfaces, depending on the roof substrate. Cleaning agents and chemicals may be used to help remove greases and oils that are not removed with washing alone. A scarifier or a grinder may also be needed on the roof to prepare for roof coatings.

To avoid damage to the substrate, you must take the condition of the roof into consideration when cleaning it with grinding and scarifying. (Note: It is important to rinse the roof thoroughly to remove the loose dirt and cleaners—if used—and flush the rinse water and debris to the drains. Good environmental practices should be followed in collecting and disposing of rinse water and properly following federal and local laws.)

Next, waterproof the roof. The roofing contractor needs to repair the roof. Most manufacturers recommend repairing the roof with like materials to ensure the roof is watertight. (Use asphalt with asphalt roofs, single ply with single ply roofs, and so on.) The coating should be used as a "sacrificial barrier" against the elements and protecting the roof that the contractor has put in place.