Who doesn’t love a patina finish? It protects metal while offering a lively variety of colors. A patina occurs when metal oxidizes or changes color. This process is a product of natural weathering or exposure to acid. The classic example is the green color copper takes on with age. Although a natural patina may take several years to happen, patina chemical suppliers offer products that give the fabricator more control over patination. Such control speeds up the process to a matter of weeks, days, and even hours in some cases. This is referred to as forced patination, and there are several options available to even the lay patinator.

Chaitanya Dave of Sur-Fin Chemical Corp. says that patina has become a popular choice for finishing for two reasons. First, patina finishes create a more natural and attractive look. Secondly, developments in patina products continually make the forced process easier.

For example, it’s no longer necessary to use heat when applying patina chemicals, or what patina specialists refer to as the hot process. Although it may take longer for the cold process to produce the desired color, it requires less equipment, like a torch. But the same beautiful patina finish can result. You simply dip, brush on, or spray on a room-temperature product and the chemicals make the patina happen.

Of course there’s more involved in the cold process than simply applying a chemical. While heat is no longer necessary, it is still a very meticulous project, requiring careful timing and attention to detail.

Three basic steps
But no matter which process, there are three basic steps to patinating metals: clean, apply, and protect. But what’s the most important step? According to Sur-Fin’s Dave and Solomon Motamed of Triple-S Chemical Products (both of their companies are located in Los Angeles, CA), the most important step in patinating is the initial cleaning of the metal. If the metal surface is not properly cleaned from the get go, oils or
dirt on the surface inhibit the reaction of the patina.

**Step one – cleaning**

Ron Young of Sculpt Nouveau, Burbank, CA, says either sandblasting or using a good metal cleaner are the best ways to properly prepare metal surfaces. Sandblasting abrades the surface, which is necessary if it is highly polished. Young says, “When working with iron, steel, or aluminum you may need to remove rust and fire scale.” He also warns that although mild acids are available for cleaning, they can sometimes interfere with the patina reaction.

When using a metal cleaner on bronze, brass, or copper, Young suggests applying the cleaner with a brush, sponge, or rag. Let it stand for about five minutes. Then rub it with a red or green “Scotch Brite,” and rinse it with water. Repeat if necessary; dry the surface, and then apply the finish. When working with iron, steel, or aluminum, Young says to use the same steps but do not rinse the cleaner with water. Instead remove it with a cloth and then apply the finish immediately. Note that most companies that supply patina finishing products also supply metal cleaners and conditioners.

**Step two – applying**

But you can only prepare a metal surface so much. Some surfaces react differently to acid applications. Products like metal coatings and oxides provide a solution for applying patinas to surfaces that traditionally don’t accept patina or are difficult metals to work with. Metal coatings can be applied to just about any non-metal surfaces or to metal surfaces when you want to protect the metal underneath or change the type of metal for finishing. Once the coating is in place fabricators can then treat the coated surface like that particular metal — with a few exceptions of course. For example, when applying patina finishes, Young says to first apply a primer to a metal coating to keep it from being absorbed. Apply the primer “as soon as possible after cleaning because oxidation forms very quickly, even though you can’t see it,” says Young. He also stresses the importance of only using a cold process of patination when working with metal coatings.

Once the surface — whether true metal or metal coating — is properly prepared, cleaned, and thoroughly dried, it’s time to apply the patina. Which patina chemical to use depends on the kind of metal surface you are working with and the color or finish you’d like the end product to reveal.

There is a big dividing line between ferrous metals, which are iron, and steel and nonferrous metals, which are brass, bronze, and copper. It’s important to understand that a patina is a chemical reaction that causes metals to oxidize. This oxidation yields different colors with different metals depending on the chemical formula applied. Typically, the oxide of metals containing iron, ferrous metals, is rust, while aluminum forms a white oxide. So working with these metals greatly reduces your color choices to variations of rust and white. However, adding a chemical called selenium to a patina formula yields dark rust like black or grey on ferrous metals.

Working with bronze, brass, and copper leaves you with a much wider variety of possible colors, from green, to blue, to violet, and so on. Since there is no iron in these metals they do not form rust. But, according to Debbie and Ron Young, even an experienced patina applier may find it difficult to create certain colors on nonferrous metals. It takes a skilled eye and careful handling of the metal and chemicals. To make this process easier and to increase the variety of possible colors for ferrous metals, Ron Young created special patina oxides. Since the product is already an oxide, the color, so to speak, is already produced. By applying it to the metal surface, you are
The color of the surface of the metal caused by weathering or oxidation is known as patina. A process of applying patina chemical solutions directly to the unheated surface of the metal is called cold patina. Usually cold patinas are layered patinas involving cycles of applications lasting days or weeks until the desired color is developed.

Hot Patina: The most widely used technique. The surface of the metal is heated with a torch to open pours, usually around 200°F. Then the patina chemical solutions are applied with a brush or spray. As the metal cools, the patina is locked in.

Torch: An instrument for bringing together and properly mixing oxygen and gases so that when ignited, the heat of the flame is controlled.

Ferrous: A word used to describe compounds that contain iron, from the Latin word ferrum for iron.

Oxide: A naturally occurring agent that causes the surface of metal to change color.

Step three – protecting

Once you’ve achieved the look you want, seal it. Sealing your finish protects it from further weathering. Ferrous metals may still rust and non-ferrous metals may tarnish. Your best bet is to apply a clear coat. Young suggests spraying on your clear coat rather than brushing, or spraying. Jeremy Bonaguidi of Patina Finishes and Copper Coats Inc., San Diego, CA, warns fabricators to be careful during application not to create puddles where the formula will be thicker in some areas. According to Bonaguidi, weather temperature and humidity also affect the patina reaction. He says, “Do not apply in direct sunlight or excessively hot weather, or during freezing or rainy weather.” Also be sure to allow each layer the appropriate amount of drying time before applying another layer or before sealing the patina with a clear coat. Depending on the product you are using this can take from 24 hours to six or eight days or longer.

Definitions from Contemporary Patination by Ron Young:

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Hot Patina: The most widely used technique. The surface of the metal is heated with a torch to open pours, usually around 200°F. Then the patina chemical solutions are applied with a brush or spray. As the metal cools, the patina is locked in.

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author and editor Danielle A. Doiesz explains why the demand for pre-patinated copper roofing is on the rise - it’s already done. However, David Hunt, Manager of Architectural Services at Revere Copper, says that although Revere produces pre-patinated copper sheets, there’s no been demand for pre-patinated stock material.

“Typically, we only produce pre-patinated sheets up to 2 milliliters thick for a sheet ounce weight,” says Hunt. “The reason is that there simply isn’t a market for anything else yet. Perhaps there could be. But gates and rails are subject to a lot of ‘physical abuse,’” which natural patination and pre-patination materials aren’t really that resistant too.” He explains that patina is not resistant to abrasion. “If a door is sheathed with patinated copper, the patina would wear off from touching,” says Hunt. “It’s very tenacious to environmental attacks, but certain acids will destroy it, and abrasives wear it.”

Keep this information in mind when offering patina finishing to your clients. It’s another reason why protecting a patina with some form of clear coating is so important. And it may require including a maintenance fee in contracts involving patina work.

But Motamed of Triple-S Chemical says the reason ornamental and miscellaneous fabricators aren’t really interested in pre-patinated materials is because they like to have more control over their projects. This said, as the versatility of patina products increases, fabricators will have even more control over the finished look of their metal creations, and that’s good news!

Free Patina Technical Advice

Sur-Fin Chemical Corp • (800) 282-3533
Triple-S Chemical Products • (800) 862-5958 • www.ssschemical.com
Patina Finishes and Copper Coats • (800) 882-7004 • www.patinafinishes.com.

Instructional Videos and Books (Obtaining these items have incurs a fee.)
Sculpt Nouveau (760) 432-8242 • www.sculptnouveau.com

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