



Sirca Polyurethane

INTRODUCTION



EUROPEAN TECHNOLOGY

made in italy

Sirca is an Italian based company that was founded in 1973. Sirca has quickly become known worldwide as one of the elite manufacturers of wood coatings.

The people of Sirca believe that wood is a living material increasingly valuable and ecologically essential to all of us. Sirca also believes its coatings offer some of the very best possible ways to protect and enhance this resource.

Sirca wood coatings are focused on the furniture and kitchen cabinet sectors of the wood finishing industry. The Sirca Research and Development departments are constantly developing new products and modifying existing products to offer coatings that are; eco-friendly, superior in protection quality and reflect the very latest in wood coatings design trends.

Sirca prides itself on producing the very best wood coatings possible and looks forward to bringing this commitment to North America with it's coatings partner Gemini Industries.



Partnerships in Excellence!

Gemini Industrial Wood Finishes and Sirca Wood Coatings
A PARTNERSHIP IN EXCELLENCE!

Gemini is very proud of our special partnership with Sirca Wood Coatings from Italy. This "partnership in excellence" allows us to offer Italian coatings technology along with our Gemini family of wood coatings here in North America.

The basis of the Gemini Sirca partnership is our shared commitment to excellence in the manufacturing and distribution of wood coatings. Both Sirca and Gemini are dedicated to offering state-of-the-art technology in our coatings, support materials and unparalleled technical support.

for more about Gemini Industrial Wood Finishes & Sirca Wood Coatings check us out at:

www.gemini-coatings.com

European wood coatings are a very new and different concept in wood finishing today. Sirca has been a leader in manufacturing the latest coating technologies and are used in over 85 countries around the world. Our formulations are developed by our staff of over 60 chemists and researchers that undergo strict quality control measures. Sirca is one of the few manufacturers of European coatings that is represented in the USA. Sirca has factory trained personnel here to provide technical support at the highest level.

Polyurethane coatings may seem very different than the coatings you may be currently using but they are not difficult to understand or use. Most can use existing equipment with excellent results while perhaps only requiring a change of the spray gun's tip size. Normally there is no difference in how they are applied as compared to your current coatings and the learning curve is minimal, however there is a major difference in the performance of the Sirca technology.

Below are some of the categories that will be covered in this document.

- **2K Solvent Base Polyurethanes**

- Aromatic Polyurethane*

- Acrylic Polyurethane*

- **1k & 2K Water Base Polyurethane**

- 1 and 2 Component WB interior coatings*

- Exterior wood coatings*

- **Polyester Coatings**

- Isolante Sealer*

- High build technology*

- High Gloss*

Each technology offers specific performance characteristics. The following pages will give an overview of the basics.

For more detailed information on our products, contact your local Sirca distributor and request a Product Guide.





Companies are constantly looking for ways to improve their products and make them stand out from the competitors. The woodworking industry is changing at a rapid pace and it's important to stay informed on the latest available technology to keep an edge over competition.

That's a tall order in the woodworking business these days. There are only so many ways to build a box. There are a variety of new and innovative hardware selections on the market which many incorporate into their designs, the consumers are still looking at something more, something visceral. The business owner wants to not only bring more value to the customer, but something that would also touch them even on an emotional level.

Even though custom cabinetry is usually a big investment for the customer and they often start out looking for value in their purchase it is often the emotional appeal of how the product looks and feels that can close the deal. The move to partner with the Sirca brand is a positive step towards accomplishing this goal.

This is where Sirca Wood Coatings enters the picture. Headquartered in Venice, Italy we are a leader in European wood coating technology. The company's goal has always been to produce the finest quality and most luxurious finishes for wood cabinetry and furniture.

"When a customer walks into a showroom and is looking at woodworking displays and samples, what do they do?... THEY TOUCH IT!"

This simple act tells the customer volumes about the quality and craftsmanship of the product, the first emotional part of the sale. Putting aside color and style preferences, the second emotional selling point is the "look" of the product. Is the character of the wood enhanced, does it make them want to touch it again? Are the colors vibrant or do they look rather muted or masked over? Does this product look like it would be a great addition to their home? If the answers to these questions is yes, then all the construction and design features are the icing on the cake.

Sirca's wood coatings have a smooth luxurious feel. They beg to be touched. They also have exceptional clarity that lets the natural beauty of the wood shine through. Sirca's finishes are the first thing that your customers will see and touch. ***They will represent you and your products in absolutely the most positive way.***



(2K) Two Component Polyurethanes

As the name implies, the coatings are made up of 2 parts. Part A is the resin and part B is the Hardener. Like PreCat Lacquer and Conversion Varnish coatings the first component (Part A) is a resin blend. There is broad range of resins available in 2K Polyurethane's, that offer a wide range of performance characteristics.

The Polyurethane hardener (Part B) consists of another set of resins and binders that are similar to part A. The second group of resins add another layer of performance to the coating. In a 2K Polyurethane system the hardener initiates the crosslinking reaction and becomes an important part of how the product performs. Some 2K Polyurethanes will have a shorter pot-life than PreCat Lacquers and Conversion Varnishes with most being between 2 to 6 hours.

Most 2K Polyurethane coatings have the advantage of being able to use several different hardeners. This makes them very versatile and coupled with the variety of different reducers allows them to be tailored to specific production needs.

At this point you may be saying that this sounds complicated. The truth is that it is not. Your Sirca distributor will recommend a system that is turnkey. Most products use the same hardener that will be specified to fit your needs. The distributor may offer 1 or 2 reducers to help tailor dry times to accommodate variations in temperature conditions. There is a very small learning curve and minimal if any equipment modifications. Application is generally the same as the product you are currently using.

Performance of Sirca's 2K Polyurethanes

PreCat Lacquer and Conversion Varnishes have been a mainstay of finishing technology in the US. They are good coatings and they have their place in the wood finishing arena. The performance of Sirca's 2K Polyurethanes start where the performance of PreCat Lacquer and Conversion Varnish ends.

Sirca wood coatings have superior chemical and water resistance which hold up to some of the harshest of environments. This protects the customers investment by maintaining the quality and the great look of their cabinets for years.

2K polyurethanes are sometimes referred to as Thick Film Technology. After drying they leave behind a thicker protective layer. Precats and Conversion varnish are often referred to as Thin Film Technology. 2K polyurethanes are very durable while being able to deliver a high level of flexibility. 2K Polyurethanes can be built to 6 to 10 dry mils without cracking, as compared to 4 to 5 dry mils for PreCat Lacquers and Conversion Varnishes.

Most finish failures are a result of seasonal wood movement. Even though it may be small it is relentless. Over time the finish gets stressed and develops microscopic cracks. This then let's in more moisture resulting in even greater wood movement and stress which leads to finish failure. Most often this is found around joints in the doors or cabinet frames. Eventually the finish starts to flake off.

The greater flexibility of the Sirca wood coatings helps resist chipping from normal household impacts. The Sirca wood coatings are designed to keep their sheen and luster for years. Sirca 2 component polyurethanes contain no formaldehyde. Sirca has coatings that meet even the most stringent air quality requirements imposed by states such as California, Utah and Washington. Due to its toxic nature the EPA is tightening their restrictions on formaldehyde release from household products.

- ***Sirca products release no odor after being dried and cured.***
- ***Humidity and other environmental elements do not effect application of products.***
- ***Sirca 2K Polyurethanes are price competitive with Conversion Varnishes.***
- ***Formaldehyde free***
- ***Hard Surface with excellent flexibility.***
- ***Sirca has the look and the feel of a luxury product.***

Performance of Sirca's Pigmented System

Sirca's Pigmented 2K polyurethane coatings have a very unique feature. The Sirca colorants that are used to tint the products contain polyurethane resin. Once the products are catalyzed, the colorants will crosslink with the coating and not compromise integrity.

Pigmented coatings that are tinted with an 844's do not crosslink with the coating. They harden, but they are just surrounded by the cross-linked coating. This results in a less durable finish.

The Sirca colorants provide several advantages.

- **Pigmented gloss coatings using Sirca's pigments are to be sanded and polished without the need of a clearcoat.**
- **Clear bases are made of 30% pigment. The pigments produce deep dark colors with often only 1 coat.**
- **Pigmented urethanes are proven to help reduce and eliminate cracks on styles, rails, and miters.**
- **The Sirca colorants have several pure color hues like red, yellow, blue and black. Not only does that allow for easier color formulation it also allows you to match Pantone colors. Matching colors becomes easier.**
- **Sirca's colorants are very finely ground and stay in suspension very well.**
- **Sirca's coatings are very flexible. You can build to between 6 to 10 dry mils. with no cracking, especially at the joints where stiles meet rails.**
- **Higher solids can equal labor savings in the finish department.**
- **Smooth to the touch feel.**



Below are some of the most commonly asked questions.

For further information contact your Sirca Distributor or representative.

Q: What is the difference between an Aromatic and Acrylic Polyurethane?

Aromatic Polyurethane

- The resins in aromatic polyurethane can yellow over time depending upon which hardener is used.
- Aromatics have up to twice the solids of acrylics.
- Aromatics tend to be less expensive.
- Excellent chemical and moisture resistance.
- Hard surface with great flexibility.
- Cost effective for everyday use.

Acrylic Polyurethane

- Acrylics are non-yellowing
- Acrylics tend to be more flexible than aromatics.
- Acrylics are the best solution for close to the wood open pore finishes.

Q: What about isocyanates? Are they dangerous?

For many years in Europe the use of acid catalyzed coatings is not allowed because of the danger associated with formaldehyde. Polyurethane has been the accepted standard coating in Europe for over 70 years.

In the early days Polyurethanes use a single isocyanate to catalyze the coatings. These were very small molecules and were referred to as free isocyanates. They did require caution when using them. Today the story is different. Diisocyanate's are now the standard. In simple terms 2 different isocyanates are used and they chemically bond together to form a very large molecule. The molecule is so large that it does not penetrate the skin and is easily captured by a respirator.

Urethane technology is widely used by Sirca but it is also used by the largest paint manufacturers in Europe and other parts of the world. Sirca's diisocyanate hardener or second component, contain a very low quantity of free TDI or HDI monomer (generally less than 0.2%) and a high % quantity of encapsulated isocyanate (generally from 20 to 60%) with a higher molecular weight and a lower vapor pressure.

The urethane paint mixing in the spray application phase (part A + part B + reducer) also provides a further mixing with the first component (100 parts of the first component + 50 parts of the second component isocyanic hardener + thinner 30%) therefore in spray application phase, the exposure drops further and the low molecular weight TDI or HDI content becomes very close to 0.1%. The urethane coating, just a few weeks after the application, does not release any TDI or HDI low molecular weight monomer or any encapsulated isocyanate.

As with any coating you should not inhale the fumes. Isocyanates, if inhaled in large doses, or repeatedly inhaled in lower doses can cause inflammation of the lungs or other serious injuries. It is always recommended that atomized coatings be used in a ventilated spray booth and while wearing a respirator. Just common sense for any finishing professional. Standard cartridge respirators are effective, but the cartridges must be changed regularly, the same as with other types of coatings.

Q: Can I use my current spray equipment with these products?

Yes. Cup guns, Gravity guns, pressure pot, air-assisted airless pump, airless pump, diaphragm pumps can all be used for application.

Q: What is used for equipment clean up?

Acetone is recommended, Reclaimed acetone is fine, Clean equipment immediately after using. If the Polyurethane is left sitting in the gun beyond its pot-life it will harden and be extremely hard to remove.

Q: What about high gloss Polyurethanes?

Sirca has acrylic and aromatic Polyurethanes that are designed specifically for high polish buffed finishes. They are 90-100 sheen and use specific non-yellowing hardeners to help produce a high sheen.

Gloss coatings typically are applied wet on wet with no sanding in between coats. A wet on wet application creates a chemical bond between the layers so they melt into each other producing 1 final homogeneous film. Typically gloss finishes use very slow reducers. This aids in flow out and leveling of the topcoat which greatly reduces sanding and buffing.

Q: What is the shelf life of these products?

Most resins and hardeners have a 18 month shelf life if left unopened and stored away from heat. Cans should always be closed after their contents are dispensed. This is particularly important with hardeners. Catalysts react with moisture in the air and this will shorten their shelf life.

Q: How can you tell if a catalyst had gone bad?

When a hardener goes bad it greatly increases in viscosity and will become solid. It may also develop a milky color. Good hardeners are always water clear. If in doubt, mix a small sample and spray it to be sure it dries and hardens properly

Polyester coatings are a different technology than 2K Polyurethanes. Polyesters are three component coatings. Like other modern coatings it employs a resin and a catalyst but it also contains a third component, an accelerator.

The resin is typically styrene, although there are styrene free formulations. One of the things that makes polyesters so unique is its solids content, normally between 80 to 96 percent solids by volume. This is about twice the solids of Polyurethane, 3 times the solids of Conversion Varnish and 4 times the solids of PreCat Lacquer.

Polyesters are best used for full fill finishes, or whenever high build is required. There are Polyester sealers, primers, clear and pigmented gloss topcoats. The polyester sealers and primers can be top coated with Polyurethane

Polyester is usually catalyzed at 2% by weight with Peroxide (catalyst). Cobalt (accelerator) is also added at a 2% by weight. Reducer for Polyester is 100% pure acetone. Reclaimed acetone should never be used as it can contain small percentages of other chemicals and most importantly water. This can cause polyester not to dry properly. Normal pot life for Polyester is 20 to 35 minutes. That is a relatively short time period but there are ways to make the mixing of these components easier.

Polyester coatings require the use of sealer coating before it is applied to the wood. This is called an Isolante sealer. The isolante sealer is a very thinned down 2 component coating. It is applied in a very light wet coat and left to dry for 1 to 2 hours before applying the Polyester. If the polyester is applied within this time period then it does not need to be scuff sanded before applying the Polyester sealer or primer. The isolante acts as a barrier coat for oily woods or stains. Even if the wood is natural an Isolante sealer will insure proper adhesion to the substrate. It is highly recommended not to skip this step.

The Polyester basecoats are applied wet on wet, about 25-35 minutes apart with no sanding between coats. Usually 2 to 4 coats will completely fill the pores of even the most difficult substrate. Polyester sealers have excellent clarity and almost no shrink back. This makes them the perfect basecoat for high gloss finishes. The build and shrink back of the polyester primers also make the best choice for pigmented gloss finishes as well.

Polyester topcoats are available in 3 types. Paraffin polyester, clear/pigmented basecoats, and direct gloss polyesters are the most commonly used in the woodworking industry.

Performance of Sirca's Polyester Wood Coatings

While you may not need to use Polyesters on every project, the benefits of using it for particular applications go without question.

Polyester Sealers and Primers

- *Exceptionally high build.*
- *The best solution for full fill or gloss finishes.*
- *Clear Polyester sealers have an uncompromised clarity.*
- *Applied wet on wet with no sanding between coats / Huge labor savings.*
- *Reduces bottlenecks in the finish room.*
- *Little or no shrink back.*

Polyester Topcoats

- *Extreme durability and scratch resistance.*
- *Clear Polyester topcoats have exceptional clarity.*
- *The best gloss retention of any coating.*
- *Produces a deep wet look.*

Polyesters are in a class by themselves when it comes to saving time and money when producing full fill and high gloss finishes. They are the key to not only being able to do this profitably, but at the highest quality level.

What is the shelf life of Polyesters?

The non-paraffin sealers, primers and topcoats have a 6 month shelf life. Paraffin products have a shorter shelf life, usually around 3 months.

How can I tell if the product is still good?

Polyesters typically will harden in the can, especially when subjected to high temperatures. If in doubt mix a small batch and spray it out to ensure that it dries and hardens properly.

How do you clean up your equipment?

Acetone is recommended, Reclaimed acetone is fine, Clean equipment immediately after using.

When asked to consider Water Base coatings many people have a similar response in that they tried them once and they were too hard to use, dried too slow or had a milky appearance. Sirca's European Water Base Technology will change those opinions.

Water Base coatings are probably the least understood and most maligned coatings on the market today. Domestic Water Base coatings produced in the early 2000's did not have the performance characteristics of the European Water Base coatings. Water Base technology was mandated in many cities in Europe over 25 years ago. This forced European coating manufacturers to develop Water Base coatings that would perform, spray, and have many of the desirable characteristics of the polyurethanes they were replacing. The result was easy to use fast drying coatings with outstanding performance.



Performance of Water Base Interior Coatings

First and foremost is their performance. They have excellent water, abrasion, and chemical resistance. The 2K water base coatings increase these attributes especially chemicals such as coffee, mustard, grape juice, cleaning agents, etc. Water base coatings are easy to apply and user friendly.

- **WB Coatings have great vertical hang and flow out beautifully.**
- **WB Coatings have high solids content and are very clear.**
- **WB Coatings are non-yellowing.**
- **Clean up with water.**
- **No odor. Eliminate solvent smell.**
- **Very low VOCs. Many government projects, hospitals and schools specify Water Base finishes for these reasons.**
- **No formaldehyde. They meet all air quality standards.**
- **It is not a flammable liquid so storage is simplified and it may even influence insurance costs.**



Sirca exterior water base coatings are extremely flexible and are designed for longevity. Coating failure in exterior applications are caused by some basic factors.

As the outdoor environment changes with the seasons the moisture in the air fluctuates. Wood is hygroscopic; this means that it wants to take in or give off moisture to equalize itself with the environment. Even the best coating in the world will not stop moisture from penetrating the wood if all areas are not sealed properly. The exposure to heat and UV rays of the sun can cause a finish to deteriorate. Increases or decreases in the outside humidity causes some nominal movement in the wood.

Another cause of deterioration can happen underneath the wood coating. The cellulose in wood contain sugars. They are the perfect medium to grow algae, fungus and mold. There are even bugs that love to feed on the cellulose and its sugars. Wind, rain, and dust can act like fine sandpaper on exterior coatings and relentlessly blast away at it. It is said that exterior coatings can lose over 30 microns of film thickness a year to these forces. The reduction in the coating thickness increases the possibility of finish failure.

Sirca provides solutions to these problems. The process begins with a pre-treatment of the wood with an impregnator. It is a clear base that can have special exterior colorants added to it to create a stain, unlike a normal stain the Impregnator is applied very wet so that it soaks into the fibers of the wood. The impregnator contains a biocide that prevents the growth of mold, algae, and fungus. It is also a deterrent for insects. The impregnator keeps the wood from deteriorating under the coating resulting in longer life of the coating. The colorants used in impregnating stains add additional UV protection. A clear or white impregnator should be used before applying a primer when creating pigmented finishes.

There are water base sealers, primers, and topcoats in various sheens. Several of the topcoats are self-sealing. All of the topcoats contain a UV inhibitor in them. The honey colored topcoats provide the best UV protection. All of these coatings are very high in solids content and are designed to be spray applied 8 to 12 wet mils thick. They provide an excellent layer of protection and yet are extremely flexible so they can accommodate seasonal wood movement. Sirca has a brushable maintenance coat that can be applied every few years to refresh and replace the finish that has been worn away by the elements.

Performance of Exterior Water Base Polyurethanes

Sirca's exterior coatings are designed to protect from inside the wood and out. Impregnating stains act as a biocide to prevent decay of the wood surface from fungus, algae, mold and insects. The impregnating stains not only provide color, but also additional UV protection. Impregnators double the life of the coating and always should be used as part of the finishing system. Sirca's topcoats contain UV inhibitors to help increase their lifespan. The Sirca exterior water base coatings are high solids and can be sprayed 8 mils thick on vertical surfaces.

- **Exterior WB coatings are designed to be flexible and are easy to apply.**
- **No formaldehyde.**
- **Long Lasting.**
- **Good UV Protection.**

Exterior Solvent Base Polyurethane

Sirca has Solvent Base coatings for exteriors. The solvent born exterior products are an alternative to using water base exterior coatings. They are based on an acrylic polyurethane platform. They are a 2K product. Being an acrylic, they are non-yellowing. There are clear and pigmented versions available. Both are self-sealing products.

Sirca's exterior solvent base coatings have great flexibility, however the Water Base exterior coatings are considered the best solution. The main advantage of these products is they are quick dry and have a faster stack time.

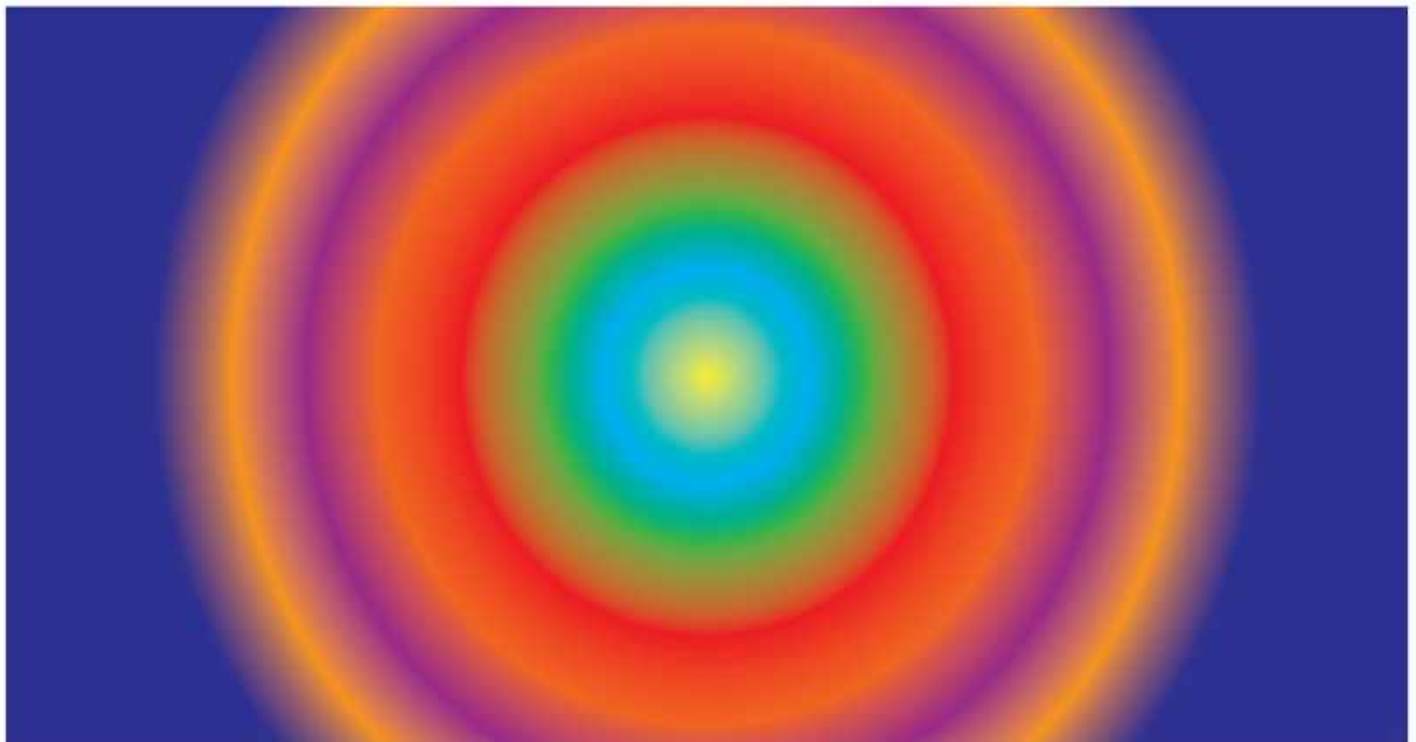
Sirca offers the most versatile stain system for coloring wood. They produce vibrant and rich stain colors that give the ability to shade and tone without loss of adhesion.

The Sirca stain system is rather different than the US based systems in 2 different ways. First, the stains are formulated differently. Second, the colorants are different than what is used domestically.

The 2 most common stain types are "spray only" stains and "wiping" stains. While each stain system has its own characteristics, both use pigments and/or dyes to develop the desired stain color. In the US the pigments most commonly used in stains are normally the same pigments used in glazes and paints. They are opaque and the pigment particles are of a fairly large size.

The Sirca solvent base and water base transparent pigments have properties that make them very effective in getting beautiful rich color on wood. The pigments are semi-transparent as opposed to opaque, so they color the wood while letting light pass through to the wood's surface. Transparent pigments are a very concentrated micro grind paste. The pigment particle is much smaller than those normally found in standard pigment formulations enabling them to distribute color evenly and reduces the muddiness normally associated with pigments in stains.

The second color component in the stain systems are the Sirca's dye concentrates. They offer the ultimate in color clarity and highlight the aesthetic qualities of the wood. They color the fibers of the wood, rather than staying more on the surface like pigments. These versatile dyes are soluble in both water and solvents and offer excellent light- fastness. They are available in a wide range of colors. You will also notice that the colors are more of a primary color. This makes color matching easier since these colors do not have a second color component that can add or subtract from the desired color and require correction.



Performance of European Stain System

- *The Sirca stain system produces clean vibrant colors that do not mask the grain of the wood.*
- *The pigments used are semi-transparent which eliminates the muddiness of other stain systems.*
- *The pigment pastes are a micro grind which helps keep the pigments in suspension for a longer time.*
- *The Sirca dyes can be used in both solvent and water base systems.*
- *The Sirca stain system is very versatile: Once the color is matched it can be used as a spray only or a wiping stain, depending on the additive.*



The Sirca Wood Coatings line in North America is distributed and serviced by Gemini Industries a name you have come to know and trust in the wood finishing industry for over 50 years.

For orders, service or support in ordering Sirca Wood Coatings
800.262.5710 or visit www.gemini-coatings.com



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