High Pressure Laminate or HPL is the direct descendent of the original plastic laminate. It is considered to be one of the most durable decorative surface materials and is available with special performance properties including chemical, fire and wear resistance. Special grades of HPL can be postformed around curved edges by application of heat and restraint.

HPL is produced by saturating multiple layers of kraft paper with phenolic resin. A layer of printed décor paper is placed on top of the kraft paper before pressing. The resulting sandwich is fused together under heat and pressure (more than 1,000 PSI). Because phenolic and melamine resins are thermoset plastics, the curing process transforms the resin into plastic by a cross linking process that converts the paper sheets into a single, rigid laminated sheet. Thermosetting creates strong, irreversible bonds that contribute to HPL’s durability.

HPL is laminated to a panel utilizing a variety of adhesives. Particleboard or MDF are the preferred substrate because they provide a stable, durable, consistent and economical foundation.

High Pressure Laminate is considered one of the most durable decorative surface materials. It performs well in both horizontal and vertical applications. HPL is often utilized for countertops, furniture, cabinetry, and wall systems. Special custom laminates can be produced to match the theme or decor of any environment.
Due to its durability, HPL is a common choice for horizontal surfaces including flooring, countertops and desktops. It also performs well in horizontal and vertical applications for high traffic settings such as hospitality, office furniture, healthcare, retail casework, commercial interiors and educational facilities.

A relatively new development in HPL technology is Double Belt Press (DBP) for the production of Continuous Pressed Laminate (CPL). CPL is decorative paper impregnated with resins and fused under heat and high pressure with resin-impregnated backer(s). Laminate properties are similar to standard HPL and typical thickness range is .4 mm to 1mm. CPL is available in desired sheet lengths or continuous rolls.

Flexible CPL is decorative paper impregnated with flexible thermosetting resins and fused under heat and high pressure with resin-impregnated backer(s). This engineered CPL offers a unique range of formable decorative laminates suitable for profile wrapping and edgebanding applications. Common thickness range is .2 mm through .4 mm. Surface properties are similar to vertical grade HPL and are used significantly to complement HPL and TFL laminates.
There are many types or grades of high pressure laminates engineered for specific performance requirements:

**GENERAL PURPOSE:** Most widely used HPL and suitable for horizontal and vertical surface applications. Typical thickness range from 0.028” to 0.048” (0.71 to 1.22 mm).

**POSTFORMING:** Can be formed around curved edges by application of heat and restraint. Maximum thickness is approximately 0.038” (0.97 mm) and can normally be formed to radii as small as 3/8” (9.5 mm).

**BACKER:** HPL produced without a decorative face. Available as standard (most common; slightly thinner than decorative HPL) or regrind (reclaimed HPL with decorative sheet sanded off).

**SPECIAL PRODUCTS:** Special purpose high pressure laminates include cabinet liners, high-wear, fire-rated, electrostatic dissipative and chemical resistant laminates.

In addition to aesthetic attributes, the lamination of particleboard or MDF with HPL can improve the physical performance of the substrate. For example, a shelf of 3/4” industrial (M-2) particleboard that is 24” long will carry 45 lbs per square foot (psf) of uniform loading with 0.133” deflection. The same shelf can carry 85 lbs psf before reaching the same deflection if overlaid with HPL.

Please see pages 87-91 for information about the companies that produce HPL.
A more beautiful surrounding with Greenlam® decorative laminates.

Greenlam® has grown into one of the world’s most powerful producers of laminate products, providing projects across the spectrum with decorative and durable HPL, compact HPL (4’x8’, 5’x8’ and 5’x10’) and veneer (4’x8’) surfaces. With solutions for doors, washrooms, lockers, interior fittings and kitchens, we are focused on innovation, providing beautiful high performance surfaces for commercial offices, education, healthcare, public and residential spaces.

With an array of textures, patterns and colors including stunning wood and metal effects and a range of surface finishes, our collection is sure to include just the right look. What’s more all of our products achieve GREENGUARD Gold standard. Greenlam products are suitable for use in places where children spend significant periods of time, making them perfect for use in interior spaces.

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Compact & HPL: 4’ x 8’, 5’ x 8’, 5’ x 10’ I Veneer: 4’ x 8’ I Countertop: 5’ x 12’
THERMALLY FUSED LAMINATE

Thermally Fused Laminate or TFL is made by fusing a resin-impregnated sheet of décor paper directly to a substrate. There is no kraft paper used in TFL, and the resulting panel is ready for finishing. The décor paper generally weighs between 60 and 130 g/m² and is the same as the paper used in the production of HPL, making for easy matching across materials. Heat and pressure activate the resin in the saturated TFL sheet, creating a cross-linked bond with the substrate. This effectively seals the substrate. Particleboard and MDF are ideal substrates for TFL because they are consistent, uniform in strength and free of defects.

THERMALLY FUSED LAMINATE

LEADING APPLICATIONS
- LAMINATE FLOORING
- CABINETRY
- COUNTERTOPS
- SHELVING
- STORE FIXTURES
- HOME OFFICE FURNITURE

DECORATIVE PAPERS SATURATED WITH REACTIVE RESINS, CURED UNDER HEAT OR PRESSURE AND PERMANENTLY FUSED TO A SUBSTRATE SUCH AS PARTICLEBOARD OR MDF BECOME BOTH A DECORATIVE AND A CONSTRUCTION MATERIAL. THESE PANELS ARE OFTEN REFERRED TO AS THERMALLY FUSED LAMINATE (TFL). RESIDENTIAL APPLICATIONS INCLUDE LAMINATE FLOORING AS WELL AS CABINETS, COUNTERTOPS AND SHELVING IN HOME STORAGE AND MODERN KITCHENS.
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TFL decorative panels can be manufactured with enhanced visual and performance characteristics. Surface textures are created with steel press plates that emboss the decorative overlay to heighten the realism of wood grain, stone or abstract designs. Steel press plates can also be used to create or control the gloss level of the surface. TFL decorative panels have excellent scratch and wear resistance. They are widely used in laminate flooring, office furniture, closet system components, store fixtures and cabinets. It is also an appropriate spec in healthcare, hospitality, commercial and retail settings. TFL decorative panels typically require a decorative edge treatment and can be specified with or without edge, and with single or opposite-side face treatments. Due to the performance, design flexibility and cost advantages, TFL offers an excellent option for designers and specifiers.

TFL continued on page 44

The performance, design flexibility and cost advantages of thermally fused laminate offers excellent options for designers and specifiers. It is well suited to work surfaces in commercial environments 🛋️ and functional furniture in the home 🛋️.
Sustainable products present in everyday life

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Growing the Future
The two most common thermoset resin systems used in TFL decorative panels:

**MELAMINE:** The resin is introduced into the paper during an impregnating operation. After the paper is impregnated, it is partially cured (B stage) using curing ovens. The melamine resin is fully cured under heat and pressure during hot press lamination. The B staged paper has a definite shelf life that varies with temperature and humidity. Melamine resins are fully cured at 300-400 psi and 300-400 F. They are noted for their hardness, scratch resistance and color stability, and are the most commonly used resin in saturated paper overlays.

**POLYESTER:** The resin is introduced into the paper during an impregnating operation. After the paper is impregnated it is partially cured (B stage) using curing ovens. Polyester resin is fully cured at 175-200 psi and 275-350 F during hot press lamination. The B staged paper has a definite shelf life that varies with temperature and humidity. Polyester resins are noted for their chemical, stain, water and impact resistance, color clarity and machinability.

*Please see pages 87-91 for information about the companies that produce TFL.*
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Known as rigid thermoformable foils (RTF), three-dimensional laminate (3DL) and two-dimensional laminate (2DL), these materials are thermoplastic film overlays. They provide end users the freedom to design components with contoured surface profiles and seamless edges without requiring edge treatments. Designers can also use film overlays to customize shapes and incorporate punch-outs, logos and concave/convex surfaces. These films are available in solid colors or printed designs.

Film overlays can be vacuum formed or membrane pressed over contoured substrates. Common uses for 3D and 2D laminates alike include cabinet doors and drawer fronts in striking modern kitchens, and shelving in home storage.
The films used in 3DL and 2DL are thermoplastic, meaning they soften when heated to take on the shape of their substrate and return to a firm state when sufficiently cooled.

3DLs are primarily made of polyvinyl chloride (PVC) and polyester (PET) films. They can be seamlessly membrane pressed or vacuum formed around contoured components, including edges. 3DL can also be used in 2DL applications such as profile wrapping and flat lamination. 3D laminates are available in typical thicknesses from 0.008” to 0.040” and customized gloss ranges. In addition, they can be embossed with specific patterns to improve realistic aesthetics.

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3D laminates are resistant to chipping, cracking or breaking making them a popular choice for retail store fixtures. In addition, their application seals the core panel substrate from bacteria and moisture, which make them an increasingly popular choice in healthcare settings for over bed tray tables, furniture and cabinetry. Due to their ability to wrap around custom shapes, edges and contoured surfaces, designers often specify 3DL materials for POP displays, commercial hospitality components, office furniture and door/drawer fronts for cabinetry.

2DLs are generally made from vinyl, polypropylene (PP) or oriented polypropylene (OPP). They are designed to be flat laminated or profile wrapped.

2DLs are available in a variety of thicknesses ranging from 0.001” to 0.007”, and can be solid colored, reverse printed or top printed with an overlay based on end use requirements.

2D laminates provide excellent water and chemical resistance, and varying degrees of scratch and stain resistance. Common uses for 2D Laminates include walls and ceilings of recreational vehicles, vertical surfaces for retail store fixtures, cabinets, commercial flooring and residential components.

Films can be divided into eight categories:

2ML REVERSE PRINTED RIGID FILM: Print design and base coat are printed on the back of the film in reverse order. This film is used for wall paneling (mostly in recreational vehicles), kitchen cabinets, furniture and manufactured housing.

SEMI-RIGID CLEAR FILM / REVERSE PRINTED: The film is frequently embossed and can be coated with scuff-resistant coatings. These films range from 4 to 8 mils in thickness. Some can be mitre folded.
Laminates Inspired by Life.

Urban Studies Collection

The Urban Studies Collection, a collection of surf(x)® 3D Laminate designs from OMNOVA Solutions, brings together a unique fusion of texture and print inspired by urban environments across the globe. This collection of 11 unique and artistic patterns features a stunning compilation of color, print and texture to ctitify retail, hospitality and food service interior environments.
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SOFT FEEL

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Ask for available colors.

NEW COLORS!

BLACK & WHITE

SANDWICH FILM: Semi-rigid two-ply overlay. The opaque base film is top printed and a clear overlay is laminated on top. This film is designed for mitre folding and flat sheet lamination. These films range from 5.5 to 8 mils in thickness. Some are available with scuff-resistant topcoating.

SOLID COLOR FILM / SEMI-RIGID FILM: This film is integrally colored and can be top printed and/or embossed. Top-printed film is used extensively in manufactured housing, recreational vehicles, commercial paneling and movable walls. Plain solids are used in furniture, kitchen cabinets, fixtures, displays and office furniture applications. Thicknesses range from 3.5 to 8.0 mils. Some films are available with scuff-resistant topcoatings.

THERMOFORMED OVERLAY FILMS: Single-ply or two-ply construction. Gauges range from .010” to .030” and the film may be printed in wood grain or decorative patterns. Films may be embossed and may be coated with scuff- and stain-resistant coatings. Primers to promote adhesion are available. Films are designed for thermoforming with heat and pressure in a bladder press or vacuum forming process. Decorative effects can be achieved with two-ply films when a router is used to expose a different color in the bottom ply film. Films may also be flat laminated or mitre folded. Raised panel cabinet doors and free-formed furniture components are the most common applications for this type of film.

FILM OVERLAYS CONTINUED ON PAGE 52
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Over 80 designs available in stock

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High quality PVC foils

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WRAPPING FILMS are rigid vinyl films in gauges from .005" to .010". Film may be printed in wood grain or decorative patterns, may be embossed, and may be coated with scratch and stain resistant coatings. Films are designed for wrapping profiles, like picture frames and furniture moulding, and can also be flat laminated and mitre folded.

CALENDERED POLYPROPYLENE FILM: These films range from 5 to 20 mils in thickness and are available in a range of solid colors. Typical applications include flat laminations and edge banding for garage and kitchen cabinets, as well as electronics.

ORIENTED POLYPROPYLENE (OPP) FILM (OPAQUE): Relatively new to the decorative overlay category, these films are stretched (oriented) in both the machine and cross-machine direction to deliver improved dimensional stability. In addition, OPP offers resistance to water and chemicals. Because of its non-absorbent print surface, OPP is ideal for high-fidelity wood grain prints and decorative patterns. OPP films may be embossed and are typically coated for scuff, scratch and stain resistance. Oriented polypropylene films are available in thicknesses ranging from 0.9 to 2.2 mil (23 gsm to 56 gsm). Typical applications include RTA furniture, cabinets, wrapped profiles, ceiling and wall panels.

Please see pages 87-91 for information about the companies that produce Film Overlays.

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DECORATIVE FOILS

Decorative foils are an intermediate-range, paper-based overlay and are also called impregnated papers. They are generally pre-impregnated with a blend of melamine, acrylic and urea resins during the paper-manufacturing process, or post-impregnated after the paper is fully cured. Decorative foils weigh between 40 and 200 grams/m² untreated. During the impregnation process, the cellulose papers typically gain between 20 and 50 percent of their base weight. Those between 100 and 200 grams are dubbed specialty papers and are more likely than lighter-weight varieties to be used for exposed decorative surfaces.

HEAT TRANSFER FOILS

Heat transfer foils involve the transfer of a complete coating system from a carrier film to a substrate by means of heat and pressure. When transferred at point of contact between heated roller and substrate, the coating system provides both a decorative effect and a protective layer to provide specified end use properties.

The foils are gravure printed in reverse sequence on a co-polymer film. That is, the release coat is applied first followed by a protective coating, the decorative pattern, the base coat and finally, the heat-activated adhesive. These foils can be applied vertically or horizontally to flat surfaces, curves, edges and contoured profiles. They are thermoformable, making them ideal for applications with doors or decorative trim, and can be restamped after application to correct defects or damage.
The impregnated foils are bonded with an adhesive system to a substrate (ex: MDF or particleboard). Quantity, method and type of impregnation, as well as the type of adhesive system and substrate, will have a direct effect on the finished product. These qualities will be demonstrated in cutting and machining performance. Although impregnated papers do not require a topcoat to be considered a foil, most foils receive a finished topcoat for increased durability and scratch resistance.

Due to substrate surface advancements, the use and performance of decorative foils has increased. Widespread use of decorative foils ranges from retail fixtures to closet systems, RTA furniture, profile wrappings and POP displays. Specifiers choose decorative foils for their sharp print fidelity; wear-, stain- and water-resistant qualities; ease of maintenance, durability, cost-effectiveness, and their reliable machining and manufacturing characteristics.

*Please see pages 87-91 for information about the companies that produce Decorative Foils.*
Light basis weight papers range in weight from 23 to 50 grams/m². The paper may contain acrylic, polyester or other resins added during the paper making process to improve the internal bond strength. The paper is then printed and topcoated with polyurethane, urea, polyester, acrylic, melamine or a combination thereof for increased durability and performance.

These papers can be printed with excellent quality and high-fidelity patterns. Optional chemical, optical, or gloss-matte embossing of these papers enhances the realism of woodgrain and natural patterns. Light basis weight papers have long been common in higher levels of value engineering and are widely used in cabinets, store fixtures, paneling, shelving, closet systems, RTA and home office furniture.

Light basis weight papers are usually divided into two categories, standard and industrial. Standard grade papers contain a lower amount of resin in the base paper and offer an economical overlay for use on general surface applications.

Industrial grade papers with their higher resin content, should be specified for applications that demand higher production and processing performance (i.e., improved cutting and machining). The cost effectiveness of this overlay group is further enhanced by the possibility of single-sided panels. It is not necessary to laminate both sides of the substrate to achieve a balanced panel. As an additional application, depending on their weight, light basis weight papers can be profile wrapped to produce trim that is an exact match of the flat surface.

Light basis weight papers will accept a variety of adhesives applied during the laminating process. Additionally, they can be supplied precoated with hotmelt adhesive ready for hot roll laminating without any additional adhesive application to the paper or substrate. The performance and appearance of the finished panel will be affected by the adhesive system used and substrate quality.

Please see pages 87-91 for information about the companies that produce Light Basis Weight Papers.
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From our founding in 1918 as a single ply veneer mill, Darlington Veneer has grown into one of the oldest and most successful manufacturers of quality hardwood plywood products in the nation. Third-generation family owned, we’ve merged our knowledge and expertise with modern manufacturing techniques and craftsmanship.

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Another common decorative surfacing material used in the lamination industry is natural wood veneer. Veneers are available in a variety of wood species, both domestic and imported. Composite panels, like particleboard and MDF, are the preferred substrate for veneers due to their superior surface qualities of being flat, smooth, uniform, dense and free of knots and grain patterns. In addition, their dimensional stability, strength properties and cost advantages further increase the advantages of using these substrates.

Veneers are typically sliced between 1/25” to 1/50” (1.0 mm to 0.51 mm) and are available plain or with a paper or fleece backer that has varying degrees of flexibility. The backers provide stability and strength to the veneer and minimize leadin...
splintering, cracking and checking. Veneered composite panel constructions are used in many applications including high quality furniture, case goods, store fixtures and cabinetry. Some veneers are used for profile wrapping, typically over MDF, for high-end millwork applications.

Veneers can be overlaid with either heat-activated resins or cold pressed. The main resin used in hot press systems is a urea-based adhesive due to its ability to make the panel more rigid, faster processing parameters and lower-cost base. Another hot press resin system that is increasingly used is a soy-based resin. Cold press systems typically use polyvinyl acetates, casein and contact adhesives. These systems are used for smaller production quantities and may be less rigid than heat-activated resin systems.

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Versatility is the name of the game in contract furniture. Most major manufacturers offer several lines to meet the needs of specific applications, such as office, education, healthcare and commercial spaces. Yet even within general categories, technology and crossovers between market segments are changing the way people think about functional spaces. The task of the contract furniture designer is to develop products that can work within multiple lines. One way to accomplish that is through integrated material palettes, which allow for consistency across the entire product offering. When it comes to casegoods, the predictability of modern substrate materials – combined with precision processing equipment – gives manufacturers the agility to create a standardized set of components that can be easily customized. Decorative surfacing materials – which can be specified for a vast array of aesthetic effects, performance demands and price points – further expand the possible permutations of a product offering.

1. Veneer is often considered the high-end finish for contract furniture, in part because it requires additional top-coating to achieve the chemical and scratch resistance the application demands.

2. Laminates make excellent specifications for contract casegoods. Both HPL and TFL are beautiful, durable and require no additional finishing. HPL offers superior impact resistance, making it ideal for horizontal and high-use applications. Coordinating low basis weight papers and laminate foils are often specified for low-wear areas, such as interiors and back panels for shelving.

3. By virtue of location, upper vertical panels are somewhat protected, making it a good place for accent materials. In this system, the uppers are painted, though they could easily be finished with laminate, veneer, translucent resin panels, acrylic or glass.

4. This particular product line offers three options for countertops: HPL, solid surface and stone.
Decotone Surfaces is one of the largest distributors of Lamitech Laminates in the world with stocking locations in New Jersey, California and Florida.
Another common decorative surfacing option is paint coating. With the advance of technology, coatings can now be applied to composite wood substrates in either liquid or powder forms. Paint can also be used in tandem with special inks, particularly in applications calling for printed wood grains or abstract patterns. Aside from wood grain printing, coatings are available as a decorative color finish or as a clear protective topcoat. The surface characteristics of composite panel products, especially MDF, allow for direct coating and printing applications, which result in exceptionally consistent defect-free finishes. While some industrial finishes are available on a retail basis, most coatings are custom formulated to fit the specific prefinisher’s line configuration and the requirements of the intended end application.

LIQUID COATINGS

There are many types of liquid coatings used as industrial decorative surfaces. Coatings can be water- or solvent-based, and chemistry advancements continue to provide increases in performance of both types. Both families of coatings are used in finishing cabinets and furniture, exterior siding, millwork, trim, flooring and fixtures.

WATER-BASED ACRYLIC LATEX COATINGS: These coatings are used in industrial, commercial and residential settings, and are formulated for both interior and exterior applications. Manufacturers can modify these coatings with different types of resins and cross-linking agents to extend the service life and exterior durability of the coating system. These additives also improve the chemical, corrosion and water resistance properties. One of the advantages of water-based coatings is their lower VOC content, which reduces their impact to indoor air quality. They are also superior to other coating types in their exterior durability and color retention, which is a function of the acrylic resins used in the formulation. However, these coatings do not perform as well as solvent-borne coatings in chemical and wear resistance.

SOLVENT-BASED COATINGS: The higher VOC nature of solvent-based coatings limits their use primarily to industrial settings that are equipped with specialized air handling and treatment devices. These coatings can be modified with urethanes, epoxies, nitrocellulose, alkyds and acrylics to impart certain performance qualities.

Solvent-based coating systems are widely recognized for their outstanding chemical- and wear-resistant properties. This family of coatings is used for high gloss finishes that have superior abrasion resistance. Their toughness and performance properties are among the reasons they are extensively used in the furniture and kitchen cabinet manufacturing business. In addition, there is minimal grain raise and fiber swell with solvent-based coatings, and the finish is easier to touch up and repair if damaged.

ULTRA-VIOLET (UV) COATINGS: The main difference with this coating type is how the coating is cured or dried. UV coatings have special ingredients that react almost instantaneously with UV radiation. This results in a significantly faster curing process. As a result, UV coatings are extremely tough, durable and long lasting. They are mainly formulated as clear coats and sealers.
The popularity of powder coating has continued to grow as an industrial finishing system. Initially developed as an alternative way to coat metal, the advantages of this evolving technology have made powder coating the fastest growing industrial finish for metal in the world. Powder coatings are used on appliances, machinery, furniture and fixtures. The powder coating process significantly reduces waste, with nearly 95% transfer efficiency and low-VOC emissions.

In the late 1990’s, companies began experimenting with applying powder to wood products, particularly MDF. As MDF was a wood-based product and not prone to carrying electrical charges (critical for the electrostatic process), there were significant processing challenges to overcome. With the development of specially engineered MDF and powders, along with new processing techniques, these efforts were successful and a new way to finish composite panel products was launched.

Powder coating is an advanced method of applying a decorative and protective finish onto a wide range of materials and products that are used for both industrial and consumer applications. The powder used for the process is a mixture of finely ground particles of pigment and resin that is sprayed onto a surface to be coated. The charged particles adhere to the electrically-grounded surface until heated and cured, creating a variety of smooth and textured finishes that are uniform and durable. The coating process is a single-stage application where all exposed surfaces are coated simultaneously.

The benefits of powder coatings include increased design flexibility, cost efficiency and seamless edges. Powder coatings also provide high resistance to heat, moisture, abrasion, staining and fading, and offer a range of colors, textures and finishes.

Why Laminate with AACC Hot Melt Adhesive Coatings?
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With AACC hot melt adhesive coatings, your total lamination cost is lower than “wet glue” – or any other glue system.

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When did the apathy begin? When did the average American stop caring about the federal government’s assault on US corporations and capitalism? It is time to stand up and defend the constitution or we will all wake up in another America. In fact, we may already have. The current administration and Eric Holder’s justice department have attacked many corporations and private citizen – because they can. They use the IRS, Homeland Security, Fish and Wildlife, and the Department of Forestry to bully and intimidate.

I believe it is for two reasons: 1) They have a disdain for entrepreneurial spirit that has the courage to create something from nothing with the goal of profit along the way. 2) Jealousy, envy and greed for not having the courage or creativity to develop the qualities above.

They use the full force of the Fed’s arsenal to unjustly attack and extract huge sums of money. Corporations are too busy trying to be profitable, employ families, and focus on their role as honorable corporate citizens than to spend countless hours and attorney’s fees defending themselves. Instead they often agree to settle and pay the shakedown artists and move on. After all, the federal government has unlimited resources and plenty of time on their hands to make anyone’s life miserable for many years. All funded by you and I – the taxpayer.

This industry has heard of the raid upon the Gibson guitar factory by gun wielding Homeland security agents. Yes, you heard that right – homeland security agents. They were in hot pursuit of a couple of pallets of wood which allegedly were in violation of the Lacey Act. Seriously – don’t they have something better to do? Maybe the Gibson Guitar folks sent that political donation to the wrong address. Gibson Guitar is an American institution, beloved by musicians and music lovers everywhere. It’s a shame that Les Paul is no longer with us, the feds lost their opportunity to implicate him – after all, his name is on many of those guitars.

Probably one of the most audacious attacks on corporate America involves one of our brethren in the wood products business, Sierra Pacific. The prosecution of Sierra Pacific and who started the
Moonlight Fire in 2007 will become legendary. I wish I had the movie rights. The fire burned 65,000 acres, two thirds of which were on federal land. Before the fire was extinguished, California Forestry and Fire Protection (known as Cal Fire) was quick to blame the disaster on Sierra Pacific, suing for $1 billion. The government’s lies will become just as famous as the Moonlight Fire itself. But, unless you subscribe to the Sacramento Bee, you’ve probably heard little of the case. You won’t find it on the front page of the New York or LA Times unless the news relates to a short term government victory – which you can attribute to the willing infidels in the national media.

Like other cases of government intimidation, abuse and shakedowns of monumental proportion, Sierra Pacific felt it was easier to settle for a $55 million fine and fork over 22,000 acres of their private land to the feds. In the State of California case (yes, everybody lines up to follow the money) certain facts began to surface. Government investigators doctored reports, misrepresented facts and intimidated and retaliated against their own employees who threatened their strategy. The one brave soul who led the fire investigation and litigation on behalf of the state, found that prosecutors withheld material information in the case and actually changed the fire’s stated point of origin. When he reported his findings, he was promptly removed from the case. Prosecutors also claimed that the fire started when a Sierra Pacific bulldozer operator hit a rock and created a spark. They had a signed statement from the bulldozer operator to that effect. One small problem, the bulldozer operator could not have confirmed the statement he was forced to sign, because he didn’t know how to read.

When another prosecutor joined the case, he quickly withdrew when he discovered what he called prosecutorial abuse directed clearly at raising revenue. He told the defense counsel, “In my entire career, I have never seen anything like this. Never.”

In February 2014, California State Judge Leslie Nichol (a voice of reason) pummeled state and federal prosecutors for “abuses of discovery so reprehensible and egregious that they threatened the integrity of the judicial process.” He threw out the case and awarded Sierra Pacific $30 million in sanctions against Cal Fire, noting that prosecutors were out to win at any cost.

Sierra Pacific fought back and filed a motion in federal court to vacate the original settlement on grounds that it had been reached as a result of fraud on the court. What happened next is predictable, the judge was removed and a new federal judge assigned to the case. This is how Eric Holder’s Justice Department works.

Thomas Jefferson once said, “When the people fear their government, there is tyranny. When the government fears the people, there is liberty.” Americans need to stand up to the ugly, yet powerful hand of the federal government. The abuse has gone on for too long and it will continue because only a handful of true patriots like the leaders at Gibson Guitars and Sierra Pacific are standing firm. They need your support.
The Surface & Panel Symposium and the grand opening of the mHouse represent the best of material, technology & design in theory...and in practice. The Surface & Panel Symposium will offer an exhibit session revealing the best the world has to offer in surface materials, surfaced components and the coolest products for residential and commercial interiors. Experience round table discussions and presentations from industry professionals on the latest trends design ideas. If you are an interior designer, fabricator, architect or distributor, this event is for you.

It all culminates with the grand opening of the mHouse where everything is put into practice in this spectacular John Vetter designed modern home. Enjoy the golf outing, sparnfarckel (pig roast), beverages, entertainment and fireworks.

The Surface & Panel Symposium and the grand opening of the mHouse is the best inspirational one-two punch unifying materials technology & design.

| Surface & Panel Symposium     | September 29th 2015 | Harley Davidson Museum, Milwaukee WI |
| mHouse Grand Opening         | September 30th 2015 | On the 16th green at Watertown Country Club |
|                              |                    | 1400 Country Club Lane, Watertown WI 53098 |

Registration is free to the first 100 attendees. Registration opens on May 1, 2015.

Go to www.sandpsymposium.com for more information

Those interested in exhibiting should contact Ryan Wagner at 920-261-1945 or rwagner@bedfordfallsmedia.com

The world is flat. In the global decorative surfacing arena, this statement used to be true. In the last five years, we’ve come to realize that the world is not only round, but it has dimension and texture, as well. Decorative surface materials have come a long way from solid color surfaces in white, almond and gray where the only options were two gloss levels. Henry Ford famously said, “You can have any color you want, as long as it’s black.” Not long ago, our industry was stuck in a similar rut.
Advances in rotogravure and digital printing, paper technology, saturating chemistry and techniques, and – maybe most important – press plate technology have contributed to an industry on the verge of a renaissance. These technical advances have driven “design” to new heights. Surface material realism and texture have vaulted what used to be a “replacement for the real thing” to a desired and respected category with its own level of “real.” Decorative surface materials have made quantum leaps in style, design and performance. Many new types – including high pressure laminate (HPL), thermally fused laminate (TFL), light basis weight papers (LBWP) and its higher basis weight cousin, finished foils, three-dimensional laminates (3DL), oriented polypropylene (OPP), and the list goes on – have made their way into just about every product in residential and commercial environments.

When a consumer says, “This wood is absolutely beautiful. I’ve never seen anything like it before,” and then asks, “What is it?” our industry has arrived. We are no longer taking a back seat to lumber and veneers. And by the way, the answer to the question is, “That’s textured TFL. It is not solid wood or veneer, and it performs better.” We have entered an era where the vast majority of consumers believe it is wood or stone. Most important, they love what they see, and they want it. Architects and interior designers must become familiar with this new breed of surface materials because they are used in increasing volumes, and consumers are demanding them. Not long ago, consumers had no idea what medium density fiberboard (MDF) was. When it became a material of choice for the stars on HGTV remodeling shows, they learned quickly. In many cases, they became more knowledgeable than their architects or designers about the material, its characteristics and where it is used in the home.

Yes, the world of panel processing is flat, but surface texture and finishes have dramatically increased the visual and haptic qualities of what used to be ho-hum, overlooked products. Decorative surfaces are about to go prime time. Look for increased exposure of and more education about our materials in kitchen cabinets, store fixtures and household and office furniture leading to an increased demand in years to come.
Surface treatments are designed to protect surfaces and to give them qualities such as depth, sheen, transparency, color, coherence, and intensity. Various materials are used in the finishing process, including fillers, stains, wood-protective products, prime and finishing lacquers, primer and top coating, furniture oils and waxes. These products can be applied in various ways to achieve an endless range of surface appearances.

When problems arise with the finishing process, use this guide to troubleshoot the probable cause and remediate the issue.
### Possible Cause of the Problem

#### ORANGE PEEL

<table>
<thead>
<tr>
<th>Possible Cause of the Problem</th>
<th>Recommended Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insufficient or incorrect thinner has been used.</td>
<td>Use a slower thinner or add more thinner to the mixture.</td>
</tr>
<tr>
<td>Temperature changes between the coating and the treated surface.</td>
<td>Adjust temperatures so that the relative temperatures are compatible.</td>
</tr>
<tr>
<td>Incorrect spraying pressure or distance from the surface.</td>
<td>Adjust the spray gun and follow the working instructions.</td>
</tr>
<tr>
<td>Excessive air circulation or humidity in the spraying and drying areas.</td>
<td>Adjust the environment as necessary</td>
</tr>
</tbody>
</table>

#### BUBBLE FORMATION

<table>
<thead>
<tr>
<th>Possible Cause of the Problem</th>
<th>Recommended Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bubble formation in the mixture.</td>
<td>Remove bubbles using a filter and ensure there is no air leakage in the spraying unit.</td>
</tr>
<tr>
<td>Temperature or air velocity is too high in the drying area. Time for flash-off is too short.</td>
<td>Adjust the environment as necessary. Prolong the drying time by reducing conveyer belt speed.</td>
</tr>
<tr>
<td>Incorrect thinner has been applied resulting in a surface coat sealed for bubbles.</td>
<td>Use slower thinner.</td>
</tr>
<tr>
<td>Moisture ratio in the wood is too low.</td>
<td>Increase the moisture ratio in the wood.</td>
</tr>
<tr>
<td>Dirty spots on the treated surface.</td>
<td>Clean the surface thoroughly.</td>
</tr>
<tr>
<td>Spraying distance is too close, viscosity is too high or coating temperature is too low.</td>
<td>Adjust spraying method, spray unit pressure or add thinner to the coating and increase the temperature.</td>
</tr>
</tbody>
</table>

#### UNEVEN SURFACE CELL FORMATION

<table>
<thead>
<tr>
<th>Possible Cause of the Problem</th>
<th>Recommended Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too much thinner.</td>
<td>Add more undiluted mixture to the solution.</td>
</tr>
<tr>
<td>The coating is too thick.</td>
<td>Apply a thinner coating.</td>
</tr>
</tbody>
</table>

#### POOR OR INCOMPLETE DRYING

<table>
<thead>
<tr>
<th>Possible Cause of the Problem</th>
<th>Recommended Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature is too low or drying time is inadequate.</td>
<td>Check the drying temperature and timing. Also check ventilation and filters, as a slow air exchange affects the thermal exchange and the evaporation rate.</td>
</tr>
<tr>
<td>Converyer belt speed is too high.</td>
<td>Adjust conveyer belt speed downward to allow for more drying time.</td>
</tr>
<tr>
<td>Pre-heating temperature is too low.</td>
<td>Adjust the pre-heating temperature upwards.</td>
</tr>
</tbody>
</table>

#### CRATERS

<table>
<thead>
<tr>
<th>Possible Cause of the Problem</th>
<th>Recommended Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil, silicone or moisture in the coating.</td>
<td>Check all possible sources of contamination, including packers, compressed air, containers, etc. Do not use skin lotion or cream containing silicone.</td>
</tr>
<tr>
<td>Porous surface.</td>
<td>Sand damaged areas and use a filling primer.</td>
</tr>
<tr>
<td>Incorrect coating viscosity.</td>
<td>Adjust coating viscosity as needed.</td>
</tr>
<tr>
<td>Incorrect thinner.</td>
<td>Use a slower thinner.</td>
</tr>
</tbody>
</table>
### UNEVEN TONE AND GLOSS

<table>
<thead>
<tr>
<th>Possible Cause of the Problem</th>
<th>Recommended Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uneven coating application.</td>
<td>Adjust spray unit methodology.</td>
</tr>
<tr>
<td>Coating mixture is too viscous.</td>
<td>Add more fresh coating mixture to reduce viscosity.</td>
</tr>
<tr>
<td>Treated surface is defective or absorbs coating unevenly.</td>
<td>Eliminate defects by sanding and use a filling primer.</td>
</tr>
</tbody>
</table>

### DISCOLORATION

<table>
<thead>
<tr>
<th>Possible Cause of the Problem</th>
<th>Recommended Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too much hardener in the mixed finish.</td>
<td>Reduce hardener in the mixture.</td>
</tr>
<tr>
<td>Pink discoloration of coating after contact with rust.</td>
<td>Store acid-cured finishes in stainless steel or plastic containers.</td>
</tr>
<tr>
<td>Treatment of resinous pine wood with acid-cured finishes turns red or pink.</td>
<td>Sand the resinous pine wood immediately before the coating application. Avoid exposure to open light and store wood in a warm place.</td>
</tr>
</tbody>
</table>

### WRINKLING

<table>
<thead>
<tr>
<th>Possible Cause of the Problem</th>
<th>Recommended Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied coat is too thick.</td>
<td>Use less coating.</td>
</tr>
<tr>
<td>Thinner evaporates too slowly while drying.</td>
<td>Use a different thinner.</td>
</tr>
<tr>
<td>Top coat is applied before the primer coat is completely dry.</td>
<td>Allow the primer coat to dry completely before applying a coating.</td>
</tr>
</tbody>
</table>

### SILICONE PROBLEMS

<table>
<thead>
<tr>
<th>Possible Cause of the Problem</th>
<th>Recommended Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lubricants, compressed air and/or hand creams have contaminated the coating.</td>
<td>Keep the working area clean and avoid use of skin creams, hand lotions, silicone treatments.</td>
</tr>
</tbody>
</table>

### CONTAMINATION OF FINISHED SURFACE

<table>
<thead>
<tr>
<th>Possible Cause of the Problem</th>
<th>Recommended Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dust appears on the surface of fresh lacquer or paint.</td>
<td>Check ventilation and air quality in the working area.</td>
</tr>
<tr>
<td>Dry residue from the hose is dissolved in the coating mix.</td>
<td>Clean the coating unit thoroughly with thinner. Replace the hose if necessary.</td>
</tr>
</tbody>
</table>

### PEELING

<table>
<thead>
<tr>
<th>Possible Cause of the Problem</th>
<th>Recommended Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor intermediary sanding.</td>
<td>Check the sanding unit and sanding belt.</td>
</tr>
<tr>
<td>Time lapse between sanding and coating application.</td>
<td>Apply coating immediately after sanding is complete.</td>
</tr>
<tr>
<td>Too much hardener.</td>
<td>Adjust the components of the finish mixture. Add more fresh mixture.</td>
</tr>
</tbody>
</table>

### UNEVEN STREAKY SURFACE

<table>
<thead>
<tr>
<th>Possible Cause of the Problem</th>
<th>Recommended Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorrect spray gun settings; defects and impurities in the spray nozzle.</td>
<td>Adjust the spray gun settings. Clean the spray gun nozzle.</td>
</tr>
<tr>
<td>Conveyor belt and spray guns are not synchronized.</td>
<td>Synchronize the spray gun movements with the conveyor belt speed.</td>
</tr>
</tbody>
</table>

### SWEATING

<table>
<thead>
<tr>
<th>Possible Cause of the Problem</th>
<th>Recommended Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paraffin or wax on the treated surface.</td>
<td>Use primer and wood materials that do not contain paraffin or wax. Clean your hands and tools carefully to remove any residue.</td>
</tr>
<tr>
<td>Too much hardener in the mixed coating.</td>
<td>Add hardener in small increments and reduce the amount in the mixture.</td>
</tr>
</tbody>
</table>

### CRACKING

<table>
<thead>
<tr>
<th>Possible Cause of the Problem</th>
<th>Recommended Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied coating is too thick.</td>
<td>Apply thinner coating.</td>
</tr>
<tr>
<td>Moisture ratio is too high.</td>
<td>Reduce the moisture ratio.</td>
</tr>
<tr>
<td>Incorrect quantity of hardener.</td>
<td>Adjust the mixing ratio.</td>
</tr>
<tr>
<td>Insufficient drying, poor storage conditions and excessive swings in temperature.</td>
<td>Change the drying and storage conditions.</td>
</tr>
<tr>
<td>Incompatible surface and coating.</td>
<td>Check compatibility of surface and coating.</td>
</tr>
<tr>
<td>Pot life of mixed finish has expired.</td>
<td>Use freshly mixed coating.</td>
</tr>
<tr>
<td>MDF boards are treated by dull blades.</td>
<td>Replace the blades; use primer if necessary.</td>
</tr>
</tbody>
</table>

AKZO NOBEL is a renowned manufacturer of chemicals, paints, pharmaceutical products and surface treatment materials for wood. AKZO NOBEL paint products are used for surface treatment of furniture, parquet, windows, doors, boards and other wooden surfaces. The company offers new products and new technologies which have a minimal environmental influence.

When choosing a surface treatment system, consider the coherence or suitability of the different layers to the treated surface as well as the correspondence of the treatment system to the properties of application, transportation and usage of the finished product. Using quality materials and following established protocols and best practices can help ensure a perfect finish each and every time.

---

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RG Fine Finishes talks about the clear advantages of using Varicure® 275

We traveled to Santa Clara, CA, to talk with Robert Gomez, owner of RG Fine Finishes, and Donald Jones, owner of Chemcraft Distributor Cascade Coatings.

Founded in 2002, RG Fine Finishes, Inc. produces architectural millwork, cabinetry and custom woodwork for commercial and residential customers.

“I started my business in 2002 and began working with Don and Cascade Coatings that same year,” said Robert Gomez. “It’s been a great relationship.

“We specialize in custom, higher-end finish work involving multi-step processes with a lot of layering, so we needed a product that would hold its clarity and color. Don suggested we try Varicure 275.”

“We make sure that we match our customers with the products and services that suit their application setting and desired results,” said Donald Jones.

“In addition to locking in and holding its color on solid colors, Varicure 275 has other exceptional points that make it a good fit for the processes that Robert favors.

“Another one of Varicure 275’s great qualities is that it’s a pre-catalyzed product,” said Jones. “That makes it very easy to use in a production setting.

“You don’t have to worry about mix ratio or under and over catalyzing,” continued Jones, “it’s taken care of for you. Just open the can and spray it out.”

“Varicure 275 is very user friendly,” said Gomez. “It’s easy to spray and it’s more efficient because we don’t have to take the time to catalyze it.

“It works much better for us than the other lacquers we’ve used,” continued Gomez, “it’s very durable, it’s chemical resistant, scratch resistant - just overall a very good, durable product for cabinet finishing.”

Regarding Chemcraft product support, Robert Gomez said, “If I do have any questions or issues that come up, Don is always there to support me. He’s very good at color mixing - very consistent.

“He shows up in person to make sure we’re getting the results we need. The support I get from Don and Cascade Coatings is just phenomenal.”

Visit chemcraft.com to locate your nearest distributor.
Wood finishing is precise work that involves a myriad of variables, and QC issues that result from inconsistent processes or improper procedures can weigh heavily on a manufacturer’s bottom line.

However, using a well-defined methodology, proper coating technology, appropriate equipment, and an optimum process set-up makes the wood finishing process far more consistent, less labor-intensive and requires a relatively lower skill level. Often re-engineering the finishing process to achieve better, more reliable results requires only small procedural tweaks and calls for little to no additional capital outlay by the manufacturer.

Many manufacturers rely on an experienced lead foreman or a paint process engineer to run their finishing processes. In such instances, what is commonly referred to as “tribal knowledge” often serves as the information base used in the finishing room. In many cases, tribal knowledge is the sum total of information that the lead finisher or supervisor has acquired through trial and error over the years. It can be hit-and-miss, and it may or may not be efficient, economical, based on best practices or informed production standards, materials and technologies.
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swaltman@stilesmachinery.com | 616.698.7500 | www.stilesmachinery.com
An SWI is a written document that gives precise step-by-step instructions for each process to be performed, together with a list of required materials and equipment necessary to carry out the procedure.

For example, we recently performed an evaluation on a manufacturer and discovered that workers were using four different grit sizes in the final sanding and preparation department prior to finishing. This inconsistency resulted in annual rework expenses of over $1.5 million for the firm.

Even worse, when the guru who is the source of the firm’s tribal or institutional knowledge moves on, production can come to a standstill and product quality is often severely compromised.

What are Standard Work Instructions (SWIs)?

By implementing Standard Work Instructions (SWIs) to set up finishing processes and ensuring that operators follow all established procedures respectfully, the need for a dedicated in-house process engineer to operate the finishing facility can be eliminated.

An SWI is a written document that gives precise step-by-step instructions for each process to be performed, together with a list of required materials and equipment necessary to carry out the procedure.

Do you really need SWIs?

Every shop, whether large or small, needs SWIs for every process they perform, from sanding and surface preparation through to clean-up and equipment maintenance.

While developing comprehensive SWIs can be tedious and time consuming, without a thorough, replicable, well-defined process, it is impossible to ensure consistent finishing results each and every time. If you commit to writing one SWI per month, in a few months, you can complete the procedures necessary to provide security for your business.

What are the basic SWIs?

In a typical finishing department, these are the most essential processes for which SWIs are needed:

- White wood sanding
- Stain and color development
- Glazes
- Sealer application
- Sealer sanding
- Gun set-up
- Topcoat applications
- Spray equipment flush out procedures
- Gun Maintenance
- Quality control procedures

SWIs should describe the finishing process for every step of each specific application.

HOW TO WRITE AND WHAT TO INCLUDE IN AN SWI

When writing an SWI, remember that you are not writing an essay. Your objective is to condense the information and describe each step of the process as succinctly as possible. You will need to think through the process first so that you include all critical information about the procedure in order to make sure that the SWI is accurate and complete.

We recommend that several process experts work together as a team to develop SWIs. The team should include the “doers” and the “decision makers” from the finishing team as well as representatives from plant management and from the engineering department. It is important to take into consideration everyone’s input; however the final SWI must be based on the best practice standard for performing the process and the best interest of the company.

As you review the documentation process, you will have an excellent opportunity to re-evaluate and update your processes. If a process is not based on current best practice standards or you want to integrate lean manufacturing methods or environmentally friendly processes, this may be the time to implement changes and improvements. If this requires new equipment or a capital outlay, we recommend that you write the SWI for the existing process while bearing in mind the changes that you have identified and making allowance for the updated process information to be inserted into the SWI at a later date.
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- Roller Stable

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www.kleiberit.com
Does your Company Rely on Tribal Knowledge?

Manufacturers often rely on “tribal knowledge” as the basis for methods, procedures and practices used in their finishing processes. In many cases, tribal knowledge is basically “the way we’ve always done things around here,” and serves as a means to justify outdated processes, inefficient techniques or unproductive steps. Developing standard work instructions (SWIs) enables a manufacturer to maintain quality procedures and also to incorporate best practices, lean manufacturing methods, revised environmental standards and changing technologies into their finishing operations. SWIs can also be used for quality control, training and process analysis purposes.

AWFI offers cutting-edge software applications that streamline the process of developing SWI documentation. Finish Genius software systems include templates, standard terminology, pre-written SOPs, best practices and other features that enable users to develop SWIs quickly and easily. AWFI also provides training and consulting services on developing SWIs for processes and procedures used in the wood finishing industry.

Steps in writing an SWI

- Define and describe the purpose of the SWI;
- List all equipment and materials required for the process;
- Note where these items are located and/or stored;
- Specify any steps to be performed before the process begins. This may include quality checks or preparing equipment and the environment;
- Specify all safety procedures in the pre-process procedure checklist;
- Number and describe each step in the procedure. Use pictures, charts or graphics to illustrate complex steps.
- Specify all instructions for product handling and storage.
- Include areas for approval signatures;
- Append any related SWI documents.

As a final step in the SWI development process, you will need to verify the accuracy of the document. A good way to do this is to designate someone who is unfamiliar with the process to read the SWI and follow the instructions given. This lay person should be able to perform the procedure successfully per the SWI. At this stage, you can identify and make any necessary modifications needed.

Implementing SWIs in the finishing environment

Once standard procedures are developed, they need to be implemented. Too often SWIs are relegated to a file cabinet drawer and never seen again. The key to implementing a flawless, replicable process is clear, precise communication and competent oversight.

Keep in mind that an SWI is a living document that will need to be updated when processes, procedures, regulations or codes are changed or upgraded.

Writing finishing procedures can be a laborious, mind-numbing task. Fortunately, however, the process of developing and writing SWIs has been automated and greatly simplified. Today, software is available on the market that provides written work instructions as well as illustrations, videos, SWI templates, sample SWIs, and best practices for developing finishing procedures. In most cases, these platforms are easier and more effective training devices than the 50-page written SOP guides that are stashed in the back of your file cabinet.
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Cefla North America introduces Inert Coating Technology (ICT), new surface and edge finishing technologies that turns low-cost materials into high-value panel products - in four easy steps - while saving you money on coatings, energy and floor-space. You’ll be more environmentally responsible too.

ICT is a heat-free, UV curing process. The patented system applies a durable sealer coating on inexpensive raw materials; MDF, OSB, chipboard, honeycomb, and more. The resulting panel can be combined with Cefla Pixart digital printing to produce results that are virtually indistinguishable from valuable veneers or other expensive surfaces – at considerably lower cost.

ICT is ideal for RTA furniture, flooring, store fixtures or any other high-production flat panel operation.

Take steps to enhance your business. Go to www.ceflaamerica.com to learn more.