

Finishing Furniture and Cabinets by Ken Susnjara

Finishing your product, whether it is custom furniture or a kitchen full of cabinets, offers an area where you most shops can substantially upgrade their products and gain an important competitive advantage.

Traditionally, the really fine finishes applied to high-end furniture have only been available to large furniture manufacturers who purchase material in high volume. These finishes are almost universally regarded as better, more visually appealing and refined than finishes commonly placed on cabinets.

If you plan to build custom furniture and compete with the large manufacturers, you absolutely need a finish that is as good as, and if possible, better than that offered by the major manufacturers. Until now, this was just not available to the small shop.

Cabinets, on the other hand have generally been given a relatively simple finish which looks OK until it is compared to a really nice furniture finish. If it were possible to apply a fine furniture finish to cabinets, you could very well create products that are not only easier to sell but also products that sell at a premium price which means more profit for the cabinet shop.

One basic requirement of cabinets is that the finish, primarily defined by the clear top coat must be much more durable than the finish typically applied to traditional furniture. Cabinets undergo more severe use and are exposed to more solvents and chemicals than bedroom furniture, for example.

When we talk about applying furniture finishes to cabinet, we are not talking about applying the exact same finish as is used by the furniture companies. Instead, we are trying to get the same quality visual appearance found on really fine furniture but, using a finish that has the same durability and wearability as a top quality but visually inferior cabinet finish commonly used today.

This is actually a new type of finish that combines the visual impact and traditional methods used by the furniture industry with the highly durable materials required by the cabinet industry. The combination is stunning.

We believe that finishing will become a critical feature of higher end custom cabinets in the future. That being said, you should also realize that quality furniture finishing is a misunderstood area. If you plan to sell custom furniture or high-end cabinets and you want a premium price, you must have a really high quality finish.

This is another area that can be addressed by a network of shops where any individual shop is not able to function.

A truly high quality furniture finish is a work of art. Art is not produced in factories, it is created by artists. In reality, a small shop can produce a finish that cannot be reproduced

in a factory. It takes some time and effort and some understanding of the process, but with the proper materials and techniques, typical woodworkers in virtually any shop can produce truly beautiful finishes without any kind of rare or special talent.

Arguably, when you sell custom furniture or cabinets, you are selling the finish. The wood and all your craftsmanship is simply something to hold the finish. The finish is what your customer sees. To a large extent, the finish determines whether or not you will be successful in building custom furniture and to some extent, custom cabinets.

Most shops that participate in the eCabinet Systems program are custom cabinet shops. As such, they are used to providing cabinet finishes. As a general rule, cabinet finishes are not furniture finishes. To sell custom furniture or to upgrade your custom cabinets, you must learn to apply true furniture finishes. Also, once you know how to apply truly spectacular furniture finishes, using them on your cabinets will give you a powerful competitive edge. This is enhanced by the fact that you can not only reproduce the fine furniture finish on your cabinets but you can do it using materials that are resilient and tough enough for the application.

Applying a great finish is not difficult. There are two requirements, good finishing materials and the knowledge of how to apply them. The actual application is quite easy and something virtually anyone can do. Unlike real art, which generally requires extraordinary skill, artfully applied furniture finishes can be applied by anyone with rudimentary skills.

Finishing furniture can be compared to cooking probably better than to creating art. Heating up groceries will almost always result in something you can eat. A little bit of knowledge and skill and the meal is better. A lot of experience and skill and the food can be extraordinary.

Like cooking also, there is no exact right way or wrong way. Different approaches and techniques result in slightly different results but all the results are good. We can show you how to accomplish the basic tasks, but your personal approach will give your results a unique and personal characteristic. This is sometimes called art and it makes what you do more valuable and more profitable.

Creating fine furniture finishes outside of major furniture manufacturers hasn't been done before because of several serious barriers. The first barrier comes from the finishing suppliers themselves. Finishing suppliers have different marketing and distribution groups that sell different finishes to cabinet shops versus those that sell furniture finishes to furniture companies. The finishes supplied to cabinet shops do not have the same overall look or feel of high quality finishes supplied to furniture companies.

They offer small shops simple straightforward standard finishes that require little or no specialized knowledge. They save more complex finishes for larger companies whose volume is high enough that they can afford to provide specialized training and service.

We have a different approach. In my experience, the average small cabinet shop is run by an entrepreneur who has been living by his or her own skill. They have had to deal with many areas much more complex than finishing. In general, they are more capable and skilled than middle management in large companies or the individual production line worker that typically applies these more involved finishes.

This area gets a bit complex because the marketing and selling methods of the finishing suppliers are different for cabinets and furniture. In the cabinet area, a series of standard, relatively simple finishes are made available with simple instructions on how to apply them. These finishes are available in both small and large quantity to fit the needs of most cabinetmakers.

The furniture area is different, however. Finishing suppliers tend to make furniture finishes more complex and involved and, in general, offer little in the way of documented procedures. Numbering systems and material identification tend to be complex and each finish is custom blended for a particular company and a particular product. There are no standard production furniture finishes.

Operating in this complex environment requires special skills and knowledge which even the largest furniture manufacturers generally don't have. To address this, finishing suppliers provide full time technicians and ongoing technical support to their large furniture customers. Furniture companies rely heavily on these technicians and support to sort out the finishing process. These in-house people and this ongoing support are key to maintaining the account and represent a critical marketing ingredient for large furniture companies.

As you can see, it is in the best interest of the finishing supplier to make their furniture finishes as intimidating as possible. This gives more value to the technical support they provide and offers them a way to lock in their major customers.

These practices, however, make it difficult for smaller shops to use this same material. Obviously, unless you buy finishing material by the tanker truck, the finishing supplier cannot afford to develop special finishes for you or offer you the high level of technical support needed to deal with the complexities of the product. At the same time, if they make the product simpler and easier to understand for the small shop, they reduce the need for continuous technical help and loosen the ties that keep their large customers loyal.

It is within this arena that we decided to develop a method whereby small shops can get access to and apply really creative, quality furniture finishes in a manner that they can understand and work with.

To do this we turned to the largest supplier of production furniture finishes in the world, Valspar. If you buy a piece of furniture from almost anyone, built almost anywhere, it is likely that the finish came from Valspar, so who better to supply furniture finishes to our network.

The first barrier is a lack of standard finishes. In the world of supplying production furniture finishes, each new design also has a new finish associated with it. Often the designer that created the furniture design also has a great deal of input as to the finish color and appearance.

There are no standard finishes in the furniture industry because there is no demand for standard finishes. Existing customers are large enough that they can have a new finish developed for them anytime they want. Also, furniture finishes are part of the style and design and therefore go through changes in popularity over time.

Rather than try to follow industry practices and create custom finishes for everyone, we decided to work with our furniture designers and Valspar's International Color and Design Center to develop a series of standard finishes. We call these finishes "Schedules", following industry nomenclature for the recipe containing all the steps for a finish. Although we will sell individual materials if needed, we decided to offer all the material needed for a particular finish as a finishing schedule. The finishing schedule we offer includes all the various materials needed to reproduce a particular finish for a specific number of square feet of surface area. This means we need to offer these in quantities that correspond to typical job sizes for custom woodworking shops. Thus, for the first time not only can a custom shop get the material needed to reproduce a fine furniture finish but they can purchase it in quantities that are reasonable for individual custom jobs.

Another advantage to this approach is that the custom shop can purchase just what they need for a job and can charge the job with the total cost of the schedule. This vastly simplifies the job of estimating and tracking job costs.

The next problem is how to get the material to the customer. In general, these are hazardous materials with a lot of regulation and government requirements to both sell and transport the material. We have addressed these areas by establishing our own color blending laboratory. We added sophisticated computer systems that can generate the required material data sheets for each blended material as well as becoming certified to package and ship these materials.

There is an additional hazardous material shipping fee, however, we can generally ship an entire schedule for a custom job for a single fee of about \$20. This approach makes the whole process practical and opens new competitive advantages to custom shops.

Another barrier to cabinet shops applying these finishes is a certain mind set in the cabinetmakers themselves. There are several areas in creating fine furniture finishes that just go against the basic instincts of most cabinetmakers. To offer truly fine furniture finishes, they must develop an understanding of these differences and accept the furniture methods. We will cover some of these areas shortly.

The purpose of this document is to make this whole area clear and understandable. Luckily, applying really high quality furniture finishes is not all that complex or difficult. Even the materials are quite easy to use today.

In the mid-1980s, I set up a couple of fairly high production furniture finishing operations and had a chance to personally work with the materials available at that time. Recently, while working on this program, I had a chance to work with modern material and found that they are substantially easier to use and more forgiving than I remember. I assure you that if you have the skill to build custom cabinets and furniture, you also have the skill to apply a high quality furniture finish.

I am going to attempt to go through all the aspects of the finish using a basic practical approach. The methods, preferences and directions I offer are not the only way these things can be done. They do, however, represent my view of the process and tend to cut through some of the chatter and complexities that the industry tries to inject into the practice.

As I have stated, in an effort to address this area, we have established, working with Valspar, distribution of complete finishing schedules. We will talk about “schedules” shortly, but a “schedule” is simply a recipe for a furniture finish. It is a complete list of the steps needed along with the materials needed for each step.

In our program we are developing standard finishing schedules and then selling the material needed to apply the schedule as a package. You can buy the materials independent of the package, but having the entire package or schedule available as a single product just makes things easier. This brings professional furniture finishes from the world leader in supplying these finishes, to the small shop in a form that they can use.

In addition to providing clear, easily understood identification of the various materials, we are also supplying DVD video instructions on applying the finishes for each schedule. This makes truly high quality furniture finishes practical for small shops.

The remainder of this document will give you an overview of this finishing process.

Let's start with spray equipment. Pretty much anything will work.

There is a wide variety of equipment available and any spray equipment that is capable to applying a controlled, even coat is acceptable. I tend to prefer a semi- HVLP gun operating at 20-30PSI. I also sometimes use a dual turbine system which also works well and can operate without an air compressor.

The only drawback I found with the turbine system is that it does tend to take a bit longer to lay down a wet coat than the HVLP gun. For all guns that use compressed air, I like to put a small regulator right on the gun itself. This lets me adjust pressure as I go and offers a lot more flexibility. Be sure to adjust pressure with the gun trigger pulled and material flowing.

Another gun I find really useful is a small auto touch-up gun. Mine has a small plastic gravity fed can that holds maybe a half cup of material. I also put a regulator on this gun.

This small touch-up gun is a great way to spray sap stains, equalizer or inert glaze or any other material that is applied to only specific areas. Also, if you take off the atomizer tip and turn the air pressure down to less than 5 pounds, it makes a great spatter gun, saving you the cost of a separate piece of equipment.

Next, I want to address a couple of basic tools, the “schedule” and the “step panel”.

A finishing “schedule” is simply a list of the steps needed to apply the finish. It is like the steps in a recipe. Simply follow the steps.

Every furniture finish has a schedule associated with it. The finishes we supply each have a schedule.

The number of steps on the schedule is generally the number of steps the finish is said to have. If there are 15 steps shown in the schedule, it is said to be a 15 step finish. This is, however, not exactly how many steps it will take.

Generally, the first step in a finishing schedule is sanding and distressing. After that, each time a clear coat is applied, you will again scuff sand and, for pre-cat you will also need to tack rag the surfaces clean. Sometimes this sanding step is added to each clear coat description in the schedule and sometimes it is not mentioned in the schedule. In either case, you still need to sand each clear coat except the last one. We will talk about this when we address sanding.

A second tool is the “step panel”. This is a panel, made of the same material that you are finishing. It shows, in steps, what the finish should look like after each step in the schedule has been completed.

When a finishing supplier develops a custom finish for a furniture company, they supply both a finishing schedule and a step panel as well as the materials required for that finish. This is part of the service they provide.

For our applications, you will always have a schedule. We also offer step panels for the various finishes but, you can also make your own step panel the first time you apply the finish. After that, you can use it as a reference to make sure subsequent jobs end up with the same finish as the first time.

Whether you buy a step panel or make your own, they become a standard part of the finishing process and many shops use the step panel to help sell the finish to their customers.

A step panel is quite easy to make. Start by applying the first step to the entire panel. Then when it dries, put a 1 ½ to 2 inch piece of tape across the bottom of the panel. Then apply the second step, and when it dries, put a second strip of tape above the first covering a section of the panel that has both steps completed.

Each time a step is completed, place on another piece to tape until the finish is complete. Remove all the tape and you have a panel that shows what each step should look like along with the top part of the panel which has the final finish with all steps completed.

The step panel is important because the finish will not look right, possibly it will not even look good, until the final step. If you try to judge how you are doing in the middle of the job, you could make some erroneous adjustments. The step panel says, “make it look like this and it’s OK”.

This is actually a good point for those that are not used to multi-step finishes. A good quality furniture finish has a lot of colors and effects laid on top of one another to achieve the final look. Some of these colors look strange and even wrong as they are being applied. You will find yellows and purples and oranges. As you work on the finish realize you can’t judge it for overall looks until it is complete. It won’t look good in the middle of the process so don’t try to make it look good at that point but just have faith that the final result will be every bit as good as you hoped.

Now we are ready to prepare the surface of the piece for finish. The first step is sanding. We need to sand the entire piece with 170 – 180 grit paper. This should be done just before you start to finish, not the day before.

The purpose of this sanding is to cut off and remove small wood fibers that are standing up and will complicate the finishing process. These raised areas absorb dyes and stains differently than smoother areas creating a blotchy look. 170 – 180 grit seems to be the best choice for this process. Coarser grits tend to scratch the surface and will show up in the finish and finer grits tend to lay the fibers down, rather than cut them off. As soon as you coat them, they will stand right back up and make life more difficult.

The reason you want to sand right before you finish is that if you sand and wait, other fibers will relax, raise up and take the place of the ones you just sanded off. The first step is sanding, right before you finish.

In this sanding process you must round off all edges and corners. This is the first area where the mind set of typical cabinetmakers comes into conflict with good finishing practices. A good cabinetmaker has spent considerable time and effort in creating, maintaining and preserving those sharp, clean edges. Now, you want them to sand them off.

There are actually a couple of reasons they need to be rounded. First, the finish won’t adhere to a sharp edge. It tends to pull back from the edge, leaving a white stripe. When

you round the edge, the finish adheres properly, and actually tends to pool and sharpen the edge somewhat.

The second reason to round all edges is that it just looks better. People don't like clean, sharp, newly minted furniture. Quality furniture is carefully worn with smooth, soft, pleasing edges. Most people don't realize what they are seeing, but if you show them two pieces of furniture, one with smooth rounded edges and another with crisp sharp edges, they will assume the worn piece is the higher quality more valuable example and the sharp piece is a cheap, low quality imitation.

This is a very important concept because you can make a really nice piece of furniture built with the best woods available look like a low quality import by not rounding and smoothing the corners and edges.

This brings us to the next area which is distressing. If you think it is difficult to get cabinetmakers to sand and properly round edges, just try to get them to properly distress their product.

Distressing adds a feeling of age and quality to a piece and is an important part of most finishes. It is important to understand that distressing is not a haphazard frenzy, beating the piece with chains. Proper distressing is actually an important woodworking skill that must be applied properly.

Some finishes call for light distressing, others moderate or heavy. There are also specific tools used to distress a piece. The finishing schedule will specify which tools to use and to what extent the piece is distressed with each tool. Before we discuss these tools, why do we distress the piece at all?

The reason is that with many finishes, we are trying to make the piece look like it is old. Distressing tries to reproduce nicks and damage and effects of age that normally occur, even for furniture that is well cared for. Many of the finishing steps we apply will try to reproduce the effects of age and use, but without proper distressing these will fall short.

Fine furniture is a type of art. It is one of the few things that are considered better and of more value if it is hand made and is old. Even new furniture is considered better and is worth more if it looks like it gracefully aged. The first step in achieving this look is proper distressing.

This is one area where pretty much universally, cabinetmakers have a problem. Nicks, scratches, gouges and dents are considered signs of poor workmanship by the average cabinetmaker. Taking a piece where these have been carefully avoided and adding them, just goes against the grain. I have seen people that really want a particular look for their product but are unwilling to perform distressing that is vital to the appearance they want.

The bottom line is that if you want a high quality furniture finish you will need to properly distress it. If you do not properly distress your product during the finishing

process you will not have an acceptable finish. If you just can't bring yourself to do the distressing, you will limit yourself to a very few types of finish where little or no distressing is used. Most quality finishes, however, have some level of physical distressing.

This is the one area where I almost always hear comments and concerns from cabinetmakers. "I would like that finish but without the distressing." "I don't want to distress it too much". If you really don't want to do the distressing step, you should probably stick to "hardware store" finishes. Otherwise, you will put a lot of effort into a multi-step, high-end furniture finish and the result will be "Cheap" looking.

If you are not sure about distressing your "masterpiece", go ahead and finish a sample piece made of the same material. Distress the tar out of it. Go way beyond what you might normally do and then complete the finish. You will be surprised how really nice the final result is and hopefully it will get you over the natural hesitation.

One final note about distressing. This is a full step in the finishing process and requires some real time and effort. You can't properly distress a piece in a minute or two. This process will take as long, or longer, than sanding. Plan to spend enough time to get the proper result.

Before we address actual distressing tools, let's revisit sanding. A DA or belt sander is a great tool to begin the distressing process. If you examine old furniture you will discover that it does not have smooth, flat, milled surfaces. The surfaces are wavy and commonly corners tend to taper in slightly. Reproducing that slight taper on flat surfaces as they meet edges and corners can be done using a DA or a belt sander. The slightly rounded edge is very pleasing and gives an old refined look to the part.

In general, the older you want the piece to look, the more of this effect you need to add.

With our new appreciation of distressing and our sanding finally complete, let's start with the most basic and useful distressing tool. It is a palm sized stone. This stone should be oblong or triangular shaped and should have relatively sharp edges and points. With this you simply tap the surfaces and edges of the piece. Rotate the stone as you do this so that all the dents are not the same shape.

As you do this, vary the force and angle to get different impressions.

This does a great job of reproducing the dents, bangs and bumps furniture receives during years of use. Typically, this is a background distress that adds character but is not overly prevalent. A few bangs on the face and edge of a door should do unless the finishing schedule calls for a higher level of this technique. These dents will both be highlighted and blended as we continue our finishing operation and take on quite a pleasant appearance.

A variation of this is called a “chain”. This is generally a piece of broomstick handle with about a six inch diameter loop of coat hanger wire or steel cable taped securely to the end. This wire has been threaded through an assortment of nuts and washers that are left loose on the wire. I have even seen people grind washers to triangles to create points.

This is used by simply banding the assortment of nuts and washers against the furniture. It also creates bumps and dents, but this time they are kind of varied in shape.

Another distressing tool I call a screw paddle sometimes called a “worm hole” paddle. This is cut from plywood on a band saw. It is a handle about an inch wide and about 12-14 inches long. It widens at one end to about four inches across so it looks kind of like a paddle. A series of screws are run through this wide area so that they all protrude out the same side. I have seen some of these with just a few screws and others with a couple dozen or more.

This tool is used to simulate “worm holes”. Certain species of wood, especially on older furniture, attract insects that bore small holes through the wood. They tend to be grouped together in areas. Banging the screw laden paddle against the furniture a few times creates a realistic hole pattern. Depending on the level of distressing in a particular finish, these areas can appear pretty much anywhere on the piece.

Now, we get into somewhat heavier distressing. A sharp chisel or awl can be used to scratch flat surfaces. These scratches pick up finishing material and are highlighted during the finishing process. You might want to be a little careful with this. Most of the distressing we have done so far looks more pronounced now, than after it is finished. The fine scratches you place with the awl or chisel are almost invisible when you place them but will be highlighted significantly after finishing, so keep this in mind when you are trying to judge the level of distressing you have applied.

A heavy rasp or file can be used to gouge out edges or corners. This looks like a disaster when you first do it, but after layer and layer of finish, with sanding between each, it takes on a really nice refined look.

One extreme example of this was a small walnut wall table we made during a trade show in Mexico. We took one table and simply applied a nice stain and clear coat finish to the clean sharp piece with no rounding or distressing. I took a second identical table and first, using a hand router and an eight inch round over bit, ran it over every edge of the piece leaving no sharp edges at all. Then I took a belt sander with 80 grit paper and tapered all four edges of the table top so that they were about an eighth inch thinner at the corners than at the center. I also tapered the edges of the drawers. Then, I took a chain saw and bounced it over the top (while running) to put some deep gouges in the center of the top surface.

Then, I put a really nice multi step finish on it using glazes and dry brush. It looked gorgeous! Standing side by side, the two tables did not look like the same piece. Both were made of solid walnut but one looked like something you would buy at a deep

discount store for \$5 and the other looked like a beautiful and valuable antique passed down through many generations.

On certain types of wood, oak for example, you can take a V chisel and gouge out areas with the grain to simulate tear outs. When finished, these look very natural and add to the used, old look.

These are the basics of distressing. It is a careful, deliberate process with a specific look in mind. If you have an emotional problem with distressing your new masterpiece, I again suggest that you take several pieces of the same wood and distress and finish them separately. This will give you a good idea of what these look like after finishing and should both give you confidence and remove any remaining fears.

Now we have sanded and distressed our piece, we are ready for the finishing process itself. Before we begin spraying away, let's try to understand what we are attempting to do with each of the steps.

There are four basic phases to the finishing process. We have just completed the first phase which is preparing the surface. This phase includes sanding and distressing. In phase two we are going to color and balance the wood. This is where we add highlight color and accent the natural color of the material we are using. Then we will seal this with a material generally called a wash coat. This is nothing more than a sealer, cut fifty-fifty with reducer.

The reason we don't use full strength sealer is that we want to try to keep from filling the grain and other surface features of the wood, because we need these surface features for the third phase.

In phase three we are going to accent the grain and other surface characteristics of the piece. This will also accent any corners and inside edges. This process generally sprays various stains and glaze materials which are then wiped and brushed off. Since it is all but impossible to remove these materials from the cracks, grain and corners, it remains, accenting these features with various colors. This time we use a sealer full strength to seal the accent coat.

In the fourth and final phase, we emphasize the geometry of the piece and artistically add surface details and finish distressing. This phase pulls the piece together and adds touches that would occur normally over many years of exposure to the environment, use and care. This is where the piece really takes on a life of its own. Then we apply one or more top coats and we are done.

Over time you will discover that there are variations to this process. For example, after phase four, you could come back with a glaze that looks like dust, spray and wipe this and then clear coat again. After the final clear coat you might sand and the polish the final clear coat to get a smooth, glass like surface. Regardless of the variation, these four

phases are the backbone of a high quality furniture finish. Now, let's look at each phase individually.

Before we do, however, we need to discuss the types of clear coat we offer, furniture lacquer or pre-cat. Pre-cat is a commonly used name for pre-catalyzed lacquer and there is some fundamental differences between furniture lacquer and pre-cat.

Furniture lacquer is a solvent based material that hardens because solvents that dissolve it evaporate. If you put solvent back on it, it will again soften. It dries through a physical evaporation of the solvent.

Lacquer is a fairly easy material to work with and is slightly less expensive than pre-cat. It is quite easy to repair. You will scuff sand between clear coats to smooth the surface, however, it is not generally necessary to completely clean off the sanding dust because the next lacquer coat will dissolve any lacquer dust remaining. I use this to help fill grain by leaving the sanding dust in the grain when working with lacquer.

The downside of furniture lacquer is that it is not as durable as pre-cat material. Because it will soften with solvents, it is not resistant to many household chemicals and can even be damaged by water over a period of time. Because of this, it is best used for furniture that does not experience heavy daily wear. Items such as bedroom furniture, bookcases, entertainment centers, occasional tables and the like are examples of where furniture lacquer works well. Items that do experience heavy use or where they come in contact with solvents, chemicals or water such as kitchen or bath cabinets, should use pre-cat material.

Pre-cat material hardens through a chemical rather than physical reaction. When exposed to air, the material undergoes a chemical reaction and changes from a liquid to a solid. Once changed to a solid, it cannot be turned back into a liquid. It is therefore resistant to most household chemicals and solvents. This characteristic, however, also affects its use and application.

As with lacquer, you will scuff sand between each coat of pre-cat but in this case sanding is a serious requirement. Since a new coat of material does not soften the existing coat, it cannot fuse with and bond with the existing coat. Therefore, you must roughen the surface so that the new coat can mechanically bond to the existing coat. If you spray directly on the shiny, un-sanded surface, there is the possibility that the new coat will not adhere to the existing material and you have problems.

Also, after scuff sanding pre-cat material, you must completely clean off any sanding dust. I recommend using a tack rag each time you sand. Unlike lacquer, which will melt any dust remaining, pre-cat will not melt the dust so it causes a grainy discolored surface.

So, the price we pay for the durability of pre-cat is that it is slightly more expensive and is a bit more involved in the application process.

If you check with finishing suppliers you will find they offer hundreds, if not thousands, of clear coat formulations. For our purposes, this is not really necessary. Many of these are formulated for specific finishing lines to account for flash time, oven temperatures, etc.

For our purposes, we offer a lacquer formulation and a pre-cat formulation, both formulated for air dry, that is no ovens. We do offer them in different sheens, which determine how glossy or shiny the final surface is. The proper sheen and material is supplied for each schedule.

To accommodate all requirements, we offer each of the furniture finishes in both furniture lacquer and pre-cat. In this way you can get the look you want with either system. We have finished the cabinets for entire kitchens in these furniture finishes and the overall look is just great.

Now let's turn to phase two, coloring the wood.

There are actually a couple of things we are going to try to do at this point.

First, we need to balance the light and dark areas of the wood. Most wood used today has both sapwood and heartwood. Generally the sapwood is lighter in color and the heartwood is darker.

In the past, craftsman carefully select their woods so that they all matched in color resulting in a uniform look even though much material was discarded to achieve this look. Today, we can't do this so we must use the finishing process to achieve the same look.

This is done in two ways. If we are trying to achieve a final color that is more like the darker heartwood, we will selectively spray the lighter sapwood with a sap stain. This darkens and balances the sapwood. This is a place where the little touch-up spray gun works very well.

If we are trying to achieve a lighter color, more like the sapwood, we will spray the heartwood with an equalizer. This is generally a brighter color stain that will highlight or brighten the areas sprayed as subsequent layers of finish are applied.

Once we have balanced the wood color, we create a background color. Depending on the final finish, this could be a yellow, orange, purple or other unlikely color. This is not the final wood color that we will see, it is a background highlight color. Subsequent layers of finish will tone down and modify it. This is a great example of where a step panel is helpful to show what the piece should look like after this step.

This overall color is achieved through the use of penetrating stains dyes or NGR stains. NGR stands for Non Grain Raising. Basically, it stains the material without popping up more of the little fibers that we sanded off before we started.

These materials penetrate into the wood, changing the color while leaving the natural color variations that are already in the wood. In many if not most cases, two or more of these material may be sprayed on the raw wood, layering color upon color to achieve the overall look we want.

Overall in phase two, we are working with the color of the actual wood. The materials applied penetrate and dye the wood to the color and balance we want. Now we will seal this color so that it can no longer be changed.

This is normally done with a wash coat. A wash coat is typically a thin clear sealer. This is sprayed over the entire piece and allowed to dry.

The reason we use a thin sealer is that we want to seal and lock in the background color but do not want to fill in fine grain or surface texture. We need this grain and texture for phase three.

Once the wash coat has dried, we need to scuff sand it using 320 grit paper. This is a light hand sanding over the entire surface of the piece. If you are using a pre-cat schedule, you will need to both blow it off and tack rag the surface to completely remove the dust. With lacquer you should be able to just blow it off.

At this point, depending on the schedule, we may or may not be ready for phase three. We have colored the wood itself, but in a lot of cases, these are strong background colors and we may need to tie the entire piece together with a stain.

Obviously, since this stain is being applied over a clear coat, it will not penetrate into the wood but will provide a somewhat transparent color coat over the entire piece. In some cases, we will brush or wipe the stain in certain areas, sometimes using steel wool to create lighter and darker areas. Generally this is done following the light and dark areas of the wood grain to accent the grain itself.

During this step, we may also add padding stains. These are colored stains that are wiped on certain areas of the wood to add specific color. This is normally done with the corner of a small rag rubbed with the grain.

This is still in phase two since we are still developing the overall color of the piece. There can actually be several stages to this process, sometimes with a wash coat between these stages. There is no set pattern to how these things are done. The finishing schedule specifies the steps needed to develop the overall color, which is the focus of phase two.

In phase three, we will be accenting and highlighting the surface texture and geometry of the piece. This is commonly done with a glaze or wiping stain material.

The glaze is a thick, pigmented stain. A pigmented stain is one that has color of its own which sits on the surface and adds its color to the piece. If a pigmented stain is applied

over the wood itself, it colors the wood by covering the wood color with its own color on the surface. A lot of the simple stain products available through retail work this way.

We will use the glaze by spraying it on and then wipe and brush it back off. When we do this, it will hang up in the grain and depressions in the wood as well as hang up in the inside corners, accenting them. This is a relatively simple process but you do need to see it being done to understand it.

There is one additional consideration in this process. In addition to accenting the surface texture, the glaze will also somewhat darken and color the entire surface of the piece. There are probably areas, however, that are already too dark and this is a good place to begin adjusting for that. There may also be areas, such as end grain, that will naturally grab the glaze and become too dark. For these areas, there is a material called an inert glaze. Inert glaze, sometimes called neutral glaze, is simply the thick glaze carrier without the pigment. It is clear.

Using the touch up gun, the inert glaze is selectively sprayed on the areas we do not want the pigmented glaze to affect. It soaks into the grain and coats the surface. Then when the pigmented glaze is sprayed over it, virtually all the pigmented glaze is wiped away.

Another technique is to use a rag dipped in inert glaze to wipe an area after the pigmented glaze has been sprayed and wiped. This does a pretty good job of removing glaze in the areas wiped with the rag and can help balance color and lighten areas that are too dark. In general, however, it is better to apply the inert glaze on these areas before the pigmented glaze is applied.

All the steps described here are quite simple once you see them being done. To allow you to see the actual finishing process, we have developed DVD video showing the applications of each of the finishes we offer. In these DVDs you will see several people performing some functions to get a good idea of individual techniques. From these you will be able to develop techniques of your own that will work for you.

Once the glaze has been applied, wiped and brushed off, we are about done with phase three. Here we will probably spray a full strength sealer, since we no longer need to preserve the fine surface detail. Again, after the sealer dries scuff sand with 320 and tack rag if you are using pre-cat.

We are now into the fourth, and most artistic phase of the process. In this phase we will decorate the piece to add the effects of age and use.

A good way to approach this is to go to an antique store and look at furniture that is truly old. This furniture was probably finished by simply staining and clear coating. The clear coat might have been oil or shellac or lacquer. Originally, it was probably a consistent, even color, but not now.

Over the years, much has happened to the piece. People have used it, rubbed it, polished it and damaged it. The sun has bleached it and the environment has stressed it. All of these events have changed its look.

Focus on some of the effects. Hands rubbing on edges have rounded the edges. Oil from those hands have stained and darkened the edges. The piece has gotten dirty and been cleaned and polished. The center open areas have been polished to the point that they have become lighter in color. Recesses, areas around the hardware and corners that are not as accessible did not get cleaned quite as thoroughly. They are darker in color, blending into the lighter areas. On carvings, the inside areas are darker and probably have gray dust ground into them. The tops of carvings might have gotten worn light but, they also may have been rubbed and touched with oils and hands which would have darkened them.

The finish might be crazed or checked. In some areas, you might have rubbed all the way through the finish, exposing the light color wood underneath. Perhaps the piece has been painted several times, each time a different color. Now, we have worn through the top coat or coats to reveal the colors underneath. Insects and flies may have left little black spots. Water splashed in it may have caused small water stains or the finish may have unevenly deteriorated.

Damage, scratches and abrasions have darkened with subsequent applications of oil and wax and hand rubbing. Dings and dent have been filled in over the years with polish and dirt.

All of these things add to the character or patina of the piece. We are now in the phase in which we will try to accurately reproduce these effects without requiring decades of use. In this area, I will try to cover some of the more common techniques for doing this.

Probably the most powerful tool for doing this is called “dry brush”. This uses essentially the same glaze material used earlier, but the application technique is quite different. Also, the dry brush glaze may be a different color than the primary glaze depending on the finishing schedule.

The basic technique for dry brush is to fold a rag and place it in a flat container. I like to use the top of a gallon paint can, turned over. This provides a simple flat carrier with a lip around to keep the material from dripping out. Place the rag in the center and pour some dry brush glaze on the rag to soak it.

The process uses two brushes, a 2” brush to apply the material and a 4” to 5” brush to smooth it out and blend it.

There are several techniques for applying dry brush depending on what you are trying to do. We are going to use the dry brush to add the light and dark variations caused by use. We will darken the outside areas of panels, inside corners, behind hardware and pulls, and any other areas that would have naturally darkened with age.

Start by dabbing the small brush into the rag containing the material to pick up a little material on the tip of the brush. Then, dab the brush into a corner and brush the material away. This applies a little dry brush material to the piece. Then use the large brush to blend and even the material. Then repeat the process until all the areas you want darker have been darkened.

This is not a precise process. It is done quickly with a certain amount of flair and some relatively bold brushing. After you have worked on the piece for awhile, stand well back and look at the shadowing you have created. You will see areas that you might want to touch up or lighten. You can generally lighten an area using a fine steel wool.

After you have completed the shadowing you want with the dry brush, you can then accent the edges. Here, you simply snap the end of the brush over the edges, darkening and accenting the edge. There might be a little material trailing inward from the edge, which is OK, but you generally want to keep this accent to the edges themselves.

This process really gives a three-dimensional feel to the piece. People in the business call it “getting credit” for the edges.

At this point, the piece will have taken on a nice look, however, the dry brush material becomes somewhat flat as it dries so the piece will have a flat dull look. Again, this is OK since the top coats will add gloss or sheen and really bring out the work you have been doing.

Now, there are some additional steps that can be done.

Spatter is a material that is spattered on the piece to simulate various effects. Tight dark spots, called fly specks, are sometimes used. Other spatter may be much more subtle. Some are thin and spread out to simulate water stains or material break down.

There is a specific gun called a spatter gun that does a great job of applying spatter. They are not particularly expensive and if you are going to do a lot of finishing you should probably get one.

I use the touch up gun. Take the front cover off the nozzle and turn the pressure down to zero. Then, while spraying, slowly increase pressure to a couple of pounds. The gun will spatter, the higher the pressure, the smaller the spatter drops.

Practice on some large cardboard panels, adjusting the flow and pressure until you get the effect you are looking for. When applying spatter this way, you will stand back 4 – 8 feet from the part during the spatter process.

A final approach that does work but takes some time is using a tooth brush. Dip the brush into the spatter material and then run your thumb over the bristles to spatter the material. Again, practice on a cardboard panel before you attack your piece.

There is another effect, called “cow tails”, that might be added at this point. To do this you need to create a cow tail tool.

This is made by taking a small mop, cutting off the handle to about a foot long and removing all but a dozen or so of the mop strands.

One approach is to dip the mop into lacquer, raise it up and while it is drying, pull the strands apart so they don't stick together. Then repeat the process over and over.

I have never found this works very well and there is a short cut. Get some polyester resin, commonly available at a hardware store. Catalyze it and dip the tips of the mop into it. As it starts to set, put the strands apart to keep them separate.

The result is a mop with a series of hard, almost ceramic like tendrils hanging down. This is used to apply the cow tails. The cow tail material is the same glaze used for dry brush. Dip the cow tail tool into the material and let the excess drip off. Then, tap the top of the tool onto the piece, causing a series of black streaks in random directions. I find it is easier to control the cow tail effect by using the dry brush pad and picking up the glaze material from this pad, rather than trying to get it directly from the can.

Again, this is a little more difficult to explain than to actually do. Watch our videos on any finishing schedule that requires this process to see exactly how it is done.

We are now ready for the top coat. If you are using lacquer, I would suggest two or three top coats with scuff sanding on all coats except the last one. For pre-cat, I like to use at least two coats, again with scuff sanding and tack rag between them.

This final clear coat really brings the finish alive. The colors, shadowing and distressing really pop out as the top coat is applied. This is also the first time you get to see what you have really created. This is my favorite part of the process.

As you can see there are quite a few steps to this. Over time, it becomes a type of art form and, as we all know, really fine art sells for really high prices. Furniture artfully finished also sells for a premium. You can apply finishes in your shop that cannot be reproduced in a factory. This makes your products special and gives you a real advantage in selling premium pieces.

We try to keep the finishes we offer to 12 to 20 steps and most can be applied over a day or two. There are finishing schedules that run 30 to 50 steps and take a month or more to apply. As you add additional steps beyond the basics, the effect achieved by each step gets more and more subtle. The additional steps from a three to five step finish to a 15 step finish are rather dramatic. Additional steps and work further enhance the piece but we start to get into an area where very few people will either see or appreciate the extra. That being said, I know of shops that build really high end furniture for the truly wealthy and this is the type of finish they apply. They also sell a headboard for \$35,000 - \$40,000.

In our program, a truly nice finish is quite important, perhaps even essential. It separates your product from the “factory made” and gives your customers a reason to come to you and have it custom made.