SAWGRASS PRESENTS

The Complete Guide to Sublimation Success

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THE ART OF WHAT'S NEXT

Introduction

Dye sublimation is one of the most effective methods for creating a wide range of customized and personalized products on demand. Your sublimation system will make it easy and cost-effective to provide more products than ever for your existing clients, while enabling you to reach new customers in new markets.

Using the Virtuoso HD Product Decorating System - which includes the only printers engineered for sublimation printing, online design and print management software, one-stop product and warranty support, as well as a complete library of resources - business owners can quickly produce high-margin, full-color photographic images on just about any kind of product.

Sawgrass has put together this guide to help you discover sublimation, purchase and setup your new equipment, and formulate profitable business strategies. In the pages that follow, you will be introduced to:

- The basic elements of sublimation production
- The equipment needed for specific applications
- Graphics software and the need for managing color
- How to set up your workspace for production efficiency
- How the Create - Print - Press process works
- How to build a successful sublimation business
- How to add sublimation to an existing business
- How to target markets with proven success
- Frequently asked questions

Download and save this guide for reference, and make it part of your recipe for success in sublimation.

The Basic Elements of Sublimation Production

ESSENTIAL TERMS

To give you a basic understanding of what we discuss in the coming pages, here are some essential terms that will soon become second nature.

Sublimation: The process of a solid changing into a gas without becoming a liquid. With dye sublimation, the heat and pressure in a heat press causes this change to happen with dye solids that are printed onto transfer paper. In this guide, we use the terms dye sublimation and sublimation interchangeably.

Dye: A substance used to color materials and fibers. To dye is to infuse color into a material. Often, this color change is permanent. In comparison, pigment (particles of solid color) inks, such as those used in screen printing, are applied to the surface of a substrate.

Polymer: A chemical compound made of smaller and identical molecules (called monomers) linked together. Most polymers, such as nylon and polyester, are manmade. Because of their versatility, polymers are widely used in industry, including in the making of plastics, glass and rubber.

Substrate: The base material onto which images are imprinted. Typical substrates include paper (coated and uncoated), fabrics, plastics, metal, acrylic, glass, wood, films and foils. Whenever we use substrate in this guide, we refer to the products you use sublimation technology to decorate.

Dye Sublimation Ink: Sublimation ink is not ink in the traditional sense. It consists of solid, heat-sensitive dye particles that are suspended in a carrier fluid. Under heat and pressure, the solid dye particles change into gas, bond with any receptive polymers and change back into a solid. The high temperature used in sublimation opens the pores of the polymer and allows the gas to enter. When the substrate is removed from the heat source and cools, the polymers close and the gas reverts to a solid, becoming a part of the polymer. As such, the dye particles can no longer be removed and will not wash out.

Sublimation Printers: There are only three printers currently on the market that are engineered for sublimation printing at widths below 44." They are the Sawgrass Virtuoso SG400, SG800 and VJ 628. These printers have been created through partnerships with Ricoh and Mutoh to enhance their initial design to create optimal efficiency, the highest-definition imaging possible, and to not only withstand, but optimize, the use of high-viscosity inks through their lines, nozzles and print heads. All other printers used with sublimation inks have been manufactured for general office use with low-viscosity pigment inks meant for everyday paper printing. When you use sublimation ink, with its concentration of dye solids, these office printers cannot successfully pass the ink through their internal systems, which leads to waste and damage.

INTRODUCTION TO SUBLIMATION PRINTING TECHNOLOGY

Dye sublimation is a method of digital printing that enables you to imprint full-color or black-and-white images onto products that are either made of polymers or have a polymer coating.

Prior to digital printing, reproducing images on these types of products required complex and labor-intensive processes, such as screen printing or vinyl transfer. With these analog methods, decorating products in small quantities is not cost effective, due to the time and equipment needed to prepare, and sometimes manually apply, the artwork to the product.

Dye sublimation is a digital process, meaning that all design takes place through graphics software, and artwork is produced by a printer that can reproduce digital images. This type of printing is quick and inexpensive to setup and produce, making it an ideal choice for creating personalized, one-of-a-kind items or for mass producing a variety of custom products.

Sublimation delivers beautiful, high-definition and permanent colors that are embedded in the surface rather than on top of the substrate or fabric. With fabrics, the polyester fibers are dyed with the color from your transfer, ensuring the images you imprint won't fade or crack, even after multiple washings.

On hard products that are made from polymers – acrylic, reinforced fiberglass plastic, etc. – color is embedded into the substrate itself. You can sublimate onto non-polymer-based products, such as ceramics, wood and metal, so long as they have a polymer coating on the surface. Coloration is infused into the coating and will last as long as the coating does. A high-quality product will not chip or fade over time.

The dye sublimation process is simple: create, print and press.

- **Create:** Use desktop or online graphics software to create a design.
- **Print:** Send your design to your sublimation printer to be reproduced onto transfer paper.
- **Press:** Affix the printed transfer to your product and place them both in a heat press using specific time, temperature and pressure settings. Once the time is up, remove the product from the heat press, take off the transfer and let cool.
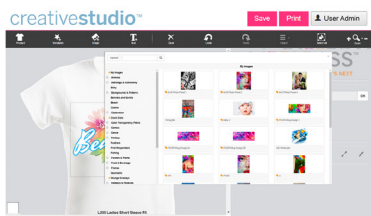
The Chemistry of Sublimation

You've already learned that you use a sublimation printer to print designs onto transfer paper. What happens from here is all chemistry.

The ink used in these printers are not really inks in the classical sense. They are made up of solid dye particles contained in a carrier fluid. When the inks print onto transfer paper, those ink solids embed into the paper itself.

You'll notice that your design looks faded or washed out when printed onto the transfer paper. That's because the dye

has very little color until heated. Placing the transfer paper on a substrate and putting both in a heat press will allow the chemical process of sublimation to take place.

In chemistry, sublimation refers to the process by which a solid becomes a gas without ever having become a liquid. The high temperature and pressure of a heat press cause the dye solids in your transfer paper to sublimate into colored gas. They also cause the polymers of your substrate to open up. The gas fills the open polymers, and as the press opens and the polymers close, the gas gets trapped inside of the molecules.

As the substrate cools, the gas turns back into solids, and the polymers of your substrate have essentially been dyed with your design. You'll also notice that your image is bright and your colors have changed to what you're looking to achieve.

The dye particles are designed to bond only with polymers (such as polyester). The higher the polymer content in the material, the more dye will bond to it and the brighter the final image. This is why it is not possible to sublimate 100% cotton; there are no fibers that are receptive to the dyes present. Similarly, other natural materials used in dye sublimation, such as ceramic, glass and metal, are first coated with polymers before they can be used.

Color Considerations

Sublimation dyes are semi-transparent and are used in combinations of four, six and eight colors to attain the desired print. However, there is no white sublimation ink. The inks you have must be blended in proportion to achieve certain colors. If you have white in a design, that will show up as a space on your transfer paper where no ink was applied. Whatever color your substrate is will show in that space instead.

Generally speaking, white substrates work best when looking to attain specific colors. You will have a true white in the areas of your design where you want white and the remaining colors will be as you intended. But because sublimation inks are semi-transparent, the color of the substrate will influence the pressed color of your design.

For example, if you pressed a photo onto a metal panel that had a clear polymer coating, not a white one, all of your whites would show up as the color of the metal beneath. Your other colors would have a metallic sheen to them, as well. This can create a dazzling effect, where light catches and illuminates the image. It may also make seeing the detail of the photo more difficult because of the loss of white.

If you were to press that same photo onto a metal panel with a white polymer coating, the image would come out much more vibrant, with clearer detail. This is because the white background is reinforcing the colors of the image.

Similarly, if you were to imprint a blue logo onto a pink shirt, that logo may have a purple tint to it. This is because the pink of the shirt will blend with the blue of the logo, because the blue has some transparent qualities to it.

So, what is best? That all depends on what you're looking to achieve with your prints. White substrates are the go-to for most applications. If you are looking to gain the effects of having the color of the substrate play a role in your final product, then choosing clear-coated metals or light-colored fabrics are a great option.

If you really need to imprint on a dark color, choose a color for your design that is markedly darker than your substrate. For example, black lettering on a red shirt works well. This is not recommended for photographs or multi-color graphics, as much of the image color will be lost in the base color of the substrate.

HOW TO USE SUBLIMATION TO DECORATE PRODUCTS

As we said earlier, sublimation is a three-step process: create, print and press. Though this is an easy method of product decoration to learn, there are some best practices that you should start with and then adapt to work best with your equipment.

Create

In this step, you work with graphics software to create a design for your product. This may include imagery provided by your customers, original artwork you have created or purchased, photography and other forms of digital images.

We cover the topic of working with digital images in an upcoming chapter, but, in general, the goal is to create the highest-quality image possible. Sublimation, like any other form of digital decoration, is simply a means to produce an image on a substrate.

Though sublimation has the capability of rendering finished images with an extremely high level of detail, clarity and sharpness, the final product will never be better than the initial image. If your initial image is low in quality, then it's likely that the sublimated image will be too.
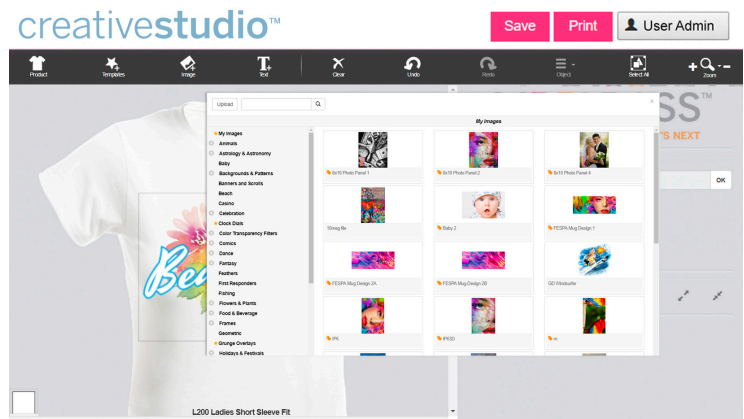
Most types of professional graphics software can be used to create, edit and/or modify artwork for sublimation. Popular programs include Adobe Creative Suite, CorelDRAW and Silhouette.

So long as the program you choose can export high-resolution graphic files in standard formats – JPEG, PNG, GIF, TIF, EPS – and can support the printing software needed to bring your design from the computer to paper, you should be in good shape.

Sawgrass has made the "create" stage of sublimation printing very easy by providing Virtuoso CreativeStudio Online Designer with the purchase of a Virtuoso HD Product Decorating System. This cloud-based program provides users with templates of popular substrates, many direct from dealers and manufacturers, as well as a continually growing library of art templates, fonts, images, graphics, photos and more.

Though not as robust a program as the Adobe and Corel products, CreativeStudio is designed specifically for sublimation design and production. It takes a lot of the guesswork out of design, provides resources that can be used for commercial production and manages colors with Virtuoso printers and inks in mind.

Print

Sawgrass' Virtuoso HD Product Decorating Systems make printing both easy and efficient. Our printers fall into two main categories – desktop (SG400 and SG800) and mid-format (VJ 628) – and are engineered to work together with SubliJet-HD inks, a wide variety of graphics software and transfer paper, not to mention Virtuoso Print Manager software and several RIP programs. What all this means is that when using a Virtuoso system to print, you can be assured of optimal print quality and efficiency.

Your artwork/photos should be at least 300 dpi for high-definition prints. With the desktop printers, you can print up to 1200 x 1200 dpi, and with the VJ 628, up to 1440 x 1440 dpi. These higher resolutions are recommended primarily for fine art and professional photographic prints. For general day-to-day printing, 300 dpi is usually sufficient.

Virtuoso systems use SubliJet-HD inks, a family of application-specific ink sets that have been optimized for each printer Sawgrass offers. These inks are of the highest quality and only sold in cartridges to preserve ink purity and prevent contaminants that can cause costly damage from entering the printer. We do not recommend using any other ink in Virtuoso printers, and doing so can void your warranty.

You will also need sublimation transfer paper upon which you will print your designs. It is best to use high-quality sublimation transfer paper, as its ability to consistently release the ink's dye particles to become gaseous during pressing will greatly affect image quality. We recommend contacting an authorized Sawgrass dealer to research transfer papers. We do not recommend searching for bargain paper sold online.

Press

We discuss specific printers later in this guide. Here, we will look at the process of pressing an image for sublimation imprinting. This is NOT an exact science. Some of the reasons include the fact that every press is different – even when made by the same manufacturer – as are substrates, papers, environmental conditions, etc. Developing a production routine for your desired products using your equipment will take a period of trial and error.

The three most-important factors in pressing are time, temperature and pressure. Substrate manufacturers and dealers will often provide customers with recommended times, temperatures and pressures for specific products. Find these for your specific substrate and use them as a baseline.

Time

The harder a substrate's sublimation coating, the longer it will take to sublimate. You can decorate a t-shirt in 45 to 60 seconds, but a large ceramic tile might take 12 minutes. Other factors contribute to dwell time, too. The condition of your heat press equipment, different paper types, the amount of ink saturation and even altitude can affect ideal transfer time.

To determine the optimum results based on your conditions and equipment, you will often have to experiment with dwell times. Dealers usually sell test pieces of sublimation products, and you can always go to a fabric shop to purchase a quantity of 100% polyester fabric for testing purposes.

Use dealer/manufacturer recommendations as a starting place. If the image looks too light, try increasing the dwell time by five or 10 seconds. If the image looks blurry, you might be leaving it under heat for too long. Also, consider making adjustments in temperature and pressure.

Temperature

The temperature at which you press your product is critical for the sublimation process to occur. Typically, the sublimation industry uses 400°F/204°C degrees as a benchmark.

However, it is not unusual for some product manufacturers to recommend a reduced temperature, coupled with a longer dwell time, based on their product.

While you can transfer an image to polyester fabric in 35 seconds at 400°F/204°C, individual manufacturers may have specific recommendations for their products. For example, Vapor Apparel recommends 385°F/195°C and 50 seconds for their apparel to achieve optimum results.

Manufacturers of some sublimation films and other thin, soft products might have you drop the temperature as low as 350°F/175°C, based on a lower melting point of the product. Again, always check with your dealer and the manufacturer to determine recommended temperature settings.

Pressure

How tightly you close the heat press on a product or ratchet a wrap around a ceramic item determines pressure. For the most part, sublimation requires medium pressure for most products. While this might not sound as scientific as the other factors, it means exactly that: not too much, not too little.

So, how do you determine what equates to medium pressure? With a manual, flat heat press, an easy way to determine medium is to loosen the pressure on the press to where there is very little contact with the product after closing. Then, tighten the pressure as much as you can by hand. This usually works best from a cold state or using an extra substrate on hand.

With a pneumatic press, like the one shown above, medium equates to about 30 – 40 psi (pounds per square inch). With some substrates, such as tiles, you may want to lighten the pressure a little bit to avoid breaking the product.

Other Considerations

More than anything, determining the best dwell times, press temperature and pressure is a matter of practicing. Each heat press operates a little differently, so it's a matter of determining what works best for you.

Order some substrate test pieces from your dealer or buy some polyester fabric and keep practicing! Once you get time, temperature and pressure dialed in, it's a matter of consistently following the same rules very time.
In addition to time, temperature and pressure, it's also important to protect your press. Sublimation ink from the transfer

paper can imprint on the heated top platen or bottom rubber platen, depending on which side makes contact with the transfer paper. Placing a sheet of protective paper – non-waxed, non-inked paper works best – between the product you are pressing and both platens will ensure this will not happen.

A Teflon cover for the rubber bottom platen works well, but can allow moisture from the paper and substrate to collect, rather than evaporate, during pressing. Some also use Teflon sheets to protect both platens. We recommend plain newspaper (not printed) or butcher paper, and sometimes fabric, for best results.

SUBLIMATION PRODUCTION TIPS AND TRICKS

Through trial and error with your specific equipment and substrates, you will determine the processes that will work best. Additionally, here are some tips and tricks to help you as you explore how to sublimate.

Heat Press and Substrate Variation

Due to variations in substrates and heat presses, recommended heat press settings may vary for your environment. Recommended time, temperature and pressure settings are a useful starting point, but not an absolute constant.

For best results, test different time/temperature/pressure combinations to find one that works best with your substrate/ heat press combination. You should only change one setting at a time to see the effect of that parameter. Remember, large variations of any setting may lead to poor-quality imaging. Also, keep a log of the times, temperatures and pressures that work best for specific products, so you can easily refer to them when it comes time to start production.

Calibrating your heat press is recommended to ensure an accurate temperature. For this procedure, temperature test strips are more accurate than the use of infrared temperature guns. SEC Accesories has a good YouTube video that shows several methods of checking a heat press' temperature accuracy. Contact your heat press manufacturer or dealer for calibration instructions specific to your press.

Recommended Paper and Substrates

Always use the recommended paper and substrates for sublimation transfers – variations in paper and substrate quality lead to variations in print, transfer and finished product quality. Once you are satisfied with your choice of paper, stick with it. Different papers can have different effects on color, so you should be consistent with the brand you purchase to be consistent with image quality. The same thing can happen with different brands of substrates.

Print Overlap and Margins

Print your images approximately ¼ inch/6 mm larger than the size of the substrate you are transferring to. This allows a margin of error when aligning everything under the heat press.

Preventing Scorching

Higher temperatures generally require less time, which helps prevent scorching. Scorching happens when the substrate and transfer paper become too hot for too long, resulting in browning of the paper, blurring of the image, incomplete transfer and other similar issues.

Preventing Washed-Out Images

An insufficient time/temperature combination could hinder complete transfer of the sublimation inks to the substrate, which may then appear washed out. Try increasing your temperature and/or time to get a more complete transfer. Pressure may also need to be increased, especially if the image is washed out only in specific areas of the substrate, and not the whole surface.

Cooling Sublimated Items

After transferring the image to the substrate, promptly remove the transfer paper while still hot. Once the paper cools, it may stick to the substrate. Do not stack the transferred items with anything else until they have completely cooled. Any paper residue left on the substrate after transferring can be removed with isopropyl alcohol.

Using Software Templates

Software templates are a good idea for substrates that you will be creating repeatedly, such as tiles and mouse pads. You can usually download templates from the dealer from which you purchased the substrate or the substrate manufacturer. Virtuoso CreativeStudio Online Designer, included with all Virtuoso systems, has templates of most types of products available for immediate design. New templates are added monthly.

Dealing with Moisture

The introduction of moisture into the sublimation process can cause unwanted results. During production with a heat press operating at 400°C/204°C, moisture can flash to steam and literally blow the ink away from its intended target. Some of the problems that are attributed to moisture include color shifting (colors lose accuracy), image bleeding and the uneven transfer of solid-filled areas.

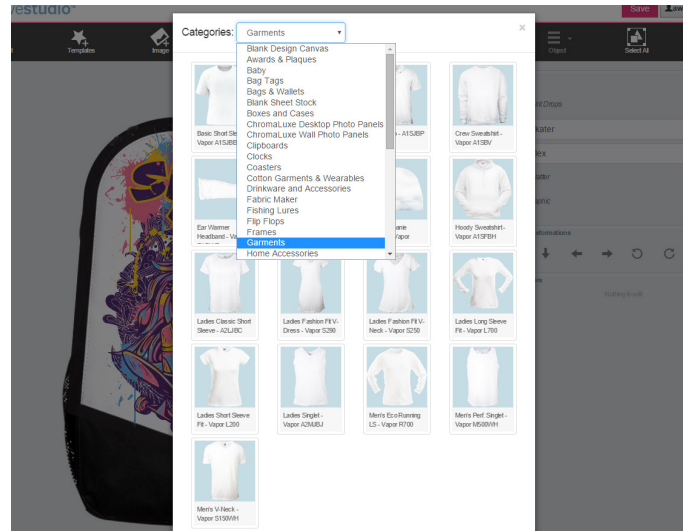**Product templates in Virtuoso CreativeStudio**

Under normal circumstances, a small amount of moisture can accumulate in the transfer paper, and it's usually absorbed directly into the substrate during pressing. However, hard substrates, like metal and ceramic, are unable to absorb excess moisture. Thus, it's important that you take steps to minimize the introduction of moisture into the process.

The first step is to protect the paper from moisture absorption. As a preventative measure, store your paper in dry place. Consider a sealed container. Avoid using a re-sealable bag, as some types can actually trap moisture. If you suspect moisture, set the paper on your press for a few seconds. Do not press it; just expose it to the warmth. The heat radiating from the press should help evaporate most of the moisture.

Another trick is to use newsprint or butcher paper instead of a Teflon sheet on top of the transfer or under the substrate (as protection for the platen). The paper will help absorb moisture from the transfer sheet during pressing and any that is released from the substrate itself. Teflon will not. Be sure to use a fresh sheet of paper for each pressing cycle.

If you are working with garments or fabric, it's also possible that the substrate may contain some moisture. Medium-density fiberboard (MDF) and wood are also notorious for having hidden moisture that releases during pressing. Pre-pressing the substrate for about five to 10 seconds should remove the moisture, as well as any wrinkles in fabric.

Do not overheat your substrate, as you do not want to place a transfer onto a hot surface. The image will begin to transfer before you close the press, resulting in ghosting and issues with transfer clarity.

Dealing with Humidity

In addition to being mindful of moisture in pressing, you should also focus on your work environment. High humidity levels usually contribute to moisture issues. A dehumidifier can help control these issues. However, reducing humidity too much can have negative effects on the inks and your equipment.

It's wise to invest in a hygrometer, and take some readings. The ideal operating conditions for sublimation are 59°F to 77°F/15°C to 25°C, with above 35% relative humidity (no condensation).

Keeping Your Press Clean

It is important to protect the rubber pad that is attached to the lower section of the heat press. The same is true for the rubber pad found in a mug press. Covering the pad with a protective sheet of paper, a paper towel or a Teflon sheet will prevent sublimation ink from being absorbed into it.

- **If You Use Paper:** Choose an inexpensive white bond paper or a roll of white paper (cut as needed), and discard after each pressing. Unprinted newsprint paper is also a good choice.
- **If You Use a Paper Towel:** Choose an inexpensive, white, non-textured brand (the texture will leave a pattern on the substrate), and discard after each pressing.
- **If You Use a Brown Teflon Sheet:** Clean it with alcohol after each pressing.

Preventing Ghosting

Sublimation requires a tight connection between the transfer page and the blank product when under heat. For the best results, you must ensure that the paper doesn't shift. If the transfer page moves during the sublimation process, this could result in a blurry image or ghosting, which resembles a shadow effect (shown to the right).

To prevent this, always affix the transfer paper to the product itself using heat-resistant tape or repositionable (temporary) spray adhesives.

If you apply a transfer to a hot surface, such as a shirt that was preheated to remove wrinkles, it can cause ghosting when you move it to line it up. Never apply sublimation transfers to hot substrates.
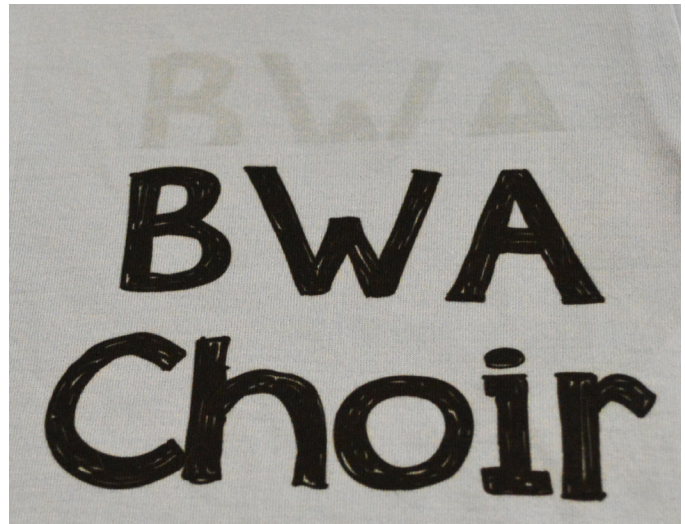
Ghosting on a Spun-Polyester Shirt

Hard Substrates

When decorating hard substrates, use heat-resistant tape to attach the transfer page to the product. Do not tape across the image area, as this can often damage the image quality. Press the product normally, and then remove the transfer carefully. Heat tape can be purchased from your distributor.

Soft Substrates

One of the most-common difficulties in working with soft substrates is having dust, lint and other fibers from the air imprint into the fabric when pressing. This will leave little blue marks on the fabric, which can detract from the quality of your print.

The best way to reduce this is to use a sticky lint roller before each press. A simple tape-based roller that you buy at the local grocery store will lift most of the particles that you can see, and many others that are invisible to the naked eye. It's a good idea to get into the habit of lint rolling fabrics before placing the transfer paper.

It is difficult to tape to soft substrates, like t-shirts and mousepads. Instead, you can use a repositionable adhesive spray to tack the transfer paper to the product.

To use spray adhesive, spray a light mist on the image side of the transfer paper from about 12 in/30 cm away. Do not spray the product. Then, simply press the transfer paper to the product. If you position it incorrectly, you can lift it off and reposition it.

Press the product normally and remove the transfer carefully to avoid any ghosting. The best process is to grasp the corner of the paper in one hand while holding the fabric down with the other hand. Gently pull the transfer away from the fabric. Do not let it fall back down onto the fabric.

Ask your dealer about suitable adhesive sprays.

PART 2

Building Your Sawgrass Sublimation Studio

There are three main components to a sublimation system: a sublimation printer, high-quality sublimation inks and an industrial-grade heat press (as opposed to a crafter's or hobby press).

Printers fall into three categories:

1. **Desktop:** Prints up to 13" x 19" (or up to 51" long)
2. **Mid-format:** Roll-fed printers at widths of 25," 36" or 44"
3. **Wide format:** Roll-fed printers wider than 44"

Depending on the printer, decorators can choose from a variety of ink configurations, from straight CMYK to eight-color, application-specific ink sets. Desktop printers usually work with standard four-color configurations: CMYK. There are some six-color printers on the market that will offer CMYK plus Light Cyan and Light Magenta.

When you jump to mid- or wide format printers, you have eight colors to work with. The standard for these ink sets is dual CMYK (you work with two sets of each color) or CMYK plus Light Cyan, Light Magenta, Light Black and Light Light Black. Sawgrass offers additional, application-focused ink sets for eight-color printers:

- **SubliJet-HD Dual CMYK:** Offers expanded gamut that delivers up to 548,000 colors and is perfect for interior signage, textiles, personalized gifts and promotional products
- **SubliJet-HD Pro Photo:** Enhanced skin tones, deep, rich blacks and smooth gradients for fine art and professional photography reproduction with the VJ 628 printer
- **SubliJet-HD Pro Photo XF:** Delivers up to 659,327 colors, with black cartridges (K, Lk, Llk) for extended lightfastness and use with the VJ 628 printer. Combined with ChromaLuxe aluminum sublimation photo panels, and images have a Wilhelm Imaging Research display permanence rating of 64 years.
- **SubliJet-HD FLEX:** Exceptional CMYK output, plus orange, blue, fluorescent pink and yellow cartridges for the largest color gamut available plus true fluorescent colors that pop and wow customers

Sawgrass is in the business of developing and manufacturing inks. New ink sets are routinely created and introduced to the market for sublimation and other forms of printing. Keep up with the latest ink options and how they can benefit your business by following Sawgrass on Facebook, Twitter, Instagram and YouTube.

The last component is the heat press, which is as important as the other components. Many manufacturers produce industrial-grade heat press equipment and offer many models from which to choose. In the following sections, we take a closer look at how to choose the equipment you need to build a shop for your sublimation business that meets your specific needs. For now, here is a list of the recommended equipment you'll need to get started.

RECOMMENDED EQUIPMENT LIST

In addition to the three main sublimation components mentioned above, you will also need the following accessories to build an effective sublimation studio.

- **Virtuoso HD Product Decorating System**
  - Virtuoso HD Product Decorating System printer (SG400, SG800 or VJ 628)
  - SubliJet-HD ink
  - TruePix sublimation transfer paper
- **Professional graphic design software**
  - Adobe Photoshop, Photoshop Elements or Illustrator
  - CorelDRAW Suite
  - Silhouette
  - Virtuoso Creative Studio by Sawgrass
- **Print and Color Management Software**
  - Virtuoso Print Manager by Sawgrass
  - RIP software (for use with VJ 628 and working with spot colors)
- **Heat Press**
  - Flat press
  - Mug press
  - Specialty press
  - Vacuum Press
  - Convection oven (for volume mugs, used in conjunction with wraps)
- **Layout and Production Accessories**
  - Heat-resistant tape and dispenser
  - Temporary spray adhesive (mainly for apparel)
  - Blow out paper (throw away paper that protects the press)
  - Teflon sheets or skirt to protect bottom platen of press
  - Oven glove (for handling hot items)
  - Paper cutter
  - Scissors

CHOOSING A SUBLIMATION PRINTER

To choose the right sublimation printer, first determine the products you want to decorate. Large designs on apparel? Smaller items like coasters, cell phone covers, flip flops, bag tags and plaques? Full-color graphics? High-definition photography?

The types of products you want to create will have a significant impact on which printer is the right choice for your business. While you always must consider budget and space, there are two critical questions that you'll need to ask when choosing a supported inkjet printer and a heat press:
- What products will you be making?
- What is your anticipated volume?

Once you've thought through these questions, the key factors to consider for choosing a sublimation printer are:

1. Size of printing field
2. Number of ink colors
3. Printing speed
4. Printing cost

1. Size of Printing Field

Sublimation printers can be divided into the following categories based on field size and printing sophistication.

Desktop Format

Desktop sublimation printers are office-style units that print on individual sheets of paper and fit easily on any desktop or tabletop surface. Paper size ranges from 8.5" x 11" to 13" x 19" depending on the unit. Desktop sublimation printers are relatively inexpensive and ease-of-use making them ideal for startup operations.

USA Media Sizes of Sawgrass Printers
- Virtuoso SG400
  - 8.5" x 11"
  - 8.5" x 14"
- Virtuoso SG800
  - 11" x 17"
  - 13" x 19" with bypass tray

EU / Metric Media Sizes of Sawgrass Printers
- Virtuoso SG400
  - A4 x 100 Sheets (29.7 x 21 cm)
  - US Letter x 100 Sheets (21.6 x 27.9 cm)
- Virtuoso SG800
  - A3 x 100 Sheets (42 x 29.7 cm)
  - US Tabloid x 100 Sheets (27.9 x 43.2 cm)

Virtuoso SG400 Desktop Printers – Maximum Media Size of A4 / 8.5" x 14"

This unit is ideal for producing a wide range of photo-gifts, which are typically smaller in size. Items such as coasters, jewelry, mugs, cell phone covers, mouse pads, home décor items, etc. This system uses SubliJet-HD four-color CMYK inks and can print photo quality up to 1200 x 1200 dpi.

With the optional bypass tray, the SG400 can print on media up to 8.5" x 51"

NOTE: Printers typically can only print up to 1/2" from the edge of the paper. Thus, the true maximum image size on an 8.5" x 14" sheet is 7.5" x 13."

Virtuoso SG800 Desktop Printers – Maximum Media Size of A3+ / 13" x 19"

This unit has more versatility because of the larger print format. In addition to creating the same products as the smaller printer, this printer allows you to create larger photo panels, quilts, pillowcases, apparel, flags and more. This system also uses SubliJet-HD four-color CMYK inks and can print photo quality up to 1200 x 1200 dpi.

The standard maximum paper size is 11" x 17." With the optional bypass tray, the SG800 can print single sheets up to 13" x 19"and on media up to 13" x 51."

NOTE: Printers typically can only print up to 1/2" from the edge of the paper. Thus, the true maximum image size for a 13" x 19" sheet is 12" x 18."

Mid-Format

Mid-format sublimation printers are free-standing commercial grade units that print onto rolls of paper. Paper size ranges from 25" to 44" wide, depending on the unit. Mid-format printers are ideal for growing businesses that need to generate larger images and/or higher volume production. The following media sizes are available in the mid-format range of printers:

- 25" / 635 mm roll – VJ 628 printer
- 36" / 914 mm roll
- 44" / 1120 mm roll

VJ 628 Printer – Maximum Media Size of 25" – Roll Feed

The Virtuoso VJ 628 sublimation printer from Sawgrass is significant step up from the desktop printers and is the only printer in its category that has been designed to create prints for sublimation.

The VJ 628 is ideal for product decorators with high-volume orders, who want to create wall panels and other larger-scale photo products such as home items, blankets, signs and banners.

The VJ 628 is also a smart choice for photo studios and professional photographers looking to produce their own sublimated products, and decorators who are looking to provide fulfillment services to these same photography professionals.

Note: The VJ 628 utilizes a roll 25" wide roll of paper and can print a maximum image width of 24.3."

Wide Format

Wide format sublimation printers are free-standing industrial grade units that print onto larger rolls of paper. Paper size starts at 44" and goes up, depending on the unit. Wide format printers are ideal for production facilities with specialized needs such as textile printing, trade show banners, all-over garments, etc. Standard sizes in this category of printers include:

- 44"/1120 mm roll
- 64"/1625 mm roll
- 72"/1830 mm roll
- 104"/2642 mm roll

Print Field Size Tips

The general rule of thumb is to buy the smallest printer that will produce the largest image that you need on a routine basis. For example, 12" x 18" designs are very common with finished apparel, thus a 13" x 19" printer would be ideal. A 25" free-standing printer would work too, but it may not be the right choice if you don't need to routinely print up designs up to 25."

Your printer size should also be compatible with your heat press size. To maximize production, your heat press should be slightly larger than the true maximum image field size by 1-2 inches on all four sides, as a minimum. A 25" roll-feed printer would not be a good choice for a shop with a 20" x 20" heat press.

Buy the smallest printers that will produce the largest image you need on a routine basis.

Another point to consider is your printer's capability for printing multiple images simultaneously. You can typically fit up to six cell phone cover images on a single sheet of 8.5" x 14" paper. That number increases to 12 on a sheet of 13" x 19" paper.

When evaluating printer and heat press sizes, keep in mind that larger images take longer to print. However, pressing time averages about one minute, regardless of image size. To minimize downtime during production, keep printing time as close to one minute as you can. Then you can avoid waiting on the printer before you can press the next round of products.

In some environments, it makes better sense to have multiple smaller printers working at the same time. This generates more images within the same time frame versus using one large printer.

Having two smaller printers feeding one large heat press can be more efficient than one large printer feeding the same heat press. The number and size of printers and heat presses all depends on the needs of your shop.

2. Number of Ink Colors

Inkjet printers generate thousands of colors by mixing a select number of base ink colors. Most printers use four color units: CMYK (C=Cyan, M=Magenta, Y=Yellow, K=Black).

Other printer models are available with six and eight base colors. Examples of additional base colors include: light cyan, light magenta and red. The actual ink set is determined by the printer/ink manufacturer.

For most applications, a four-color sublimation printer will do an excellent job of producing vibrant graphics, stunning colors and high-resolution photography. However, for fine art and/or photographic work, where subtle shades of color make a substantial difference, a six or eight color printer may be the better choice.

3. Printing Speed

Printing speed varies between printer models, with the wide and mid-format units typically being faster than the desktop units.

When considering printing speed, it's important to take image size and pressing time into account. On the surface, more prints per hour equals a higher level of production output. However, if print speed significantly exceeds pressing speed, there is very little advantage gained.

Most products take about one minute of pressing time and one minute of setup time (getting the substrate positioned with the transfer on the heat press). With a single heat press, you can expect a maximum of 30 pressing cycles per hour, with the number of pieces per cycle determined by the size of the substrates and the size of the heat press.

For example, if you were printing 8" x 10" images for plaques on a printer with an output of 82 prints per hour (for that size image), you would greatly exceed the capacity of your heat press if it was only large enough to press one plaque at a time. However, if your heat press was large enough to accommodate two 8" x 10" substrates at the same time, then the higher speed printing pays off.

When taking printing speed into account, it's important to consider all the parameters of the production process to determine how speed fits into the equation.

It should be noted that higher-quality images are attained with slower print speeds. If you set your printer to produce the highest quality images, it will print fewer images per hour than if you select a high-speed setting, which will produce more images at lower quality per hour.

4. Printing Cost

When evaluating printing cost, the focus should be on the cost of image reproduction, rather than the cost of ink cartridges.

A common rule of thumb for sublimation ink cost (for printing) is $0.01 per square inch, though it averages less with many printers. For example, the cost of an 8" x 10" image would be $0.80 using this rule of thumb. However, with Sawgrass Virtuoso desktop printers, ink printing cost of $0.007 per square inch, making the cost of that 8" x 10" example only $0.56.

When you include ink, paper, substrate, labor and overhead in the cost of production, sublimation ink will average 7% or less of the entire production cost. Though sublimation ink printing cost is important, it's one of the lowest costs of any given job, regardless of the printer or ink set that is used.

Wide and mid-format printers have lower ink printing costs than desktop units, but that alone should not be a determining factor of choosing a sublimation printer. These units typically have larger ink containers, which are ideal for high-volume operations. However, fresh ink prints better than old ink, thus the volume of ink that a printer utilizes needs to match production needs, so that the ink is replenished routinely.

Buying Tips

Buy the right printer for your operation based on functions and features, not based on price. Identify the markets you want to pursue and the products that you need to create, then make your choice accordingly. For example, if you want to sublimate images on finished apparel, you will need a printer capable of printing up to 12" x 18" designs. Buying an smaller printer because it was cheaper would limit your capabilities within the apparel market.

A Note about Aftermarket Printers and Ink

Purchasing a less-expensive printer that uses ink bought in bulk and manually filled cartridges may seem like a good business decision because of the lower initial price. However, this approach will cost more in the long run.

Image quality and production speed are key in sublimation and product decoration businesses. If your products don't have high-quality images, customers will not pay as much for your products. Similarly, if you're only able to produce a few products an hour, your production costs increase. Both situations cost you money on a daily basis, even if it may not seem so on the surface.

What does this have to do with aftermarket printers (versus printers built for dye sublimation) and inferior ink? Simply stated, their use results in lower-quality prints, frequent downtime in production and wasted ink, substrates and paper. Consider the following:

- Sawgrass Virtuoso printers are the only printers on the market engineered for sublimation printing. All other printers are made for office use with inks that have very low viscosity. Sublimation inks, which have dye solids in them, have a high viscosity. Using high-viscosity sublimation ink in aftermarket office printers leads to printer damage and voids the manufacturer's warranty.

- The internal components of office printers are not built for high-viscosity sublimation ink. As a result, printed images are oversaturated, and printer lines, nozzles and print heads are damaged. Aftermarket printers use up to 50% more ink per print and produce images with a noticeable loss of detail, based on internal Sawgrass testing.

- Bulk sublimation ink is predominantly used in wide-format printers, where the volume of ink consumption is so great that bulk ink delivery systems are used by most printer manufacturers. These wide-format printers are usually found in high-volume industrial print shops that have a dedicated print technician who runs the printer full-time. For smaller print shops that cannot afford to staff a full-time print technician, refilling bulk ink tanks takes up precious time, and production stops when this is done.

- For print shops using desktop and mid-format printers, pre-filled closed ink cartridges are the most efficient means of production. The only downtime you have is the few seconds it takes to replace an empty cartridge. Conversely, if you are considering refillable cartridges, which require syringes and time-consuming effort for refilling, keep in mind the inevitable lost production time, mess and waste.

- Pre-filled ink cartridges keep the ink delivery system closed system from air, contaminants or impurities, which all but eliminates the chances of damaging printer lines, nozzles or heads. Say goodbye to banding, smearing, extraneous lines, drips or leaks with a Sawgrass printer and inks.

- When aftermarket printers are used for dye sublimation, the manufacturer cannot help you with your print quality, colors or any other technical issues you may have. The manufacturer of the aftermarket ink you use may have some technical support or even ICC profiles to use with their inks – or they may not.

- ICC color profiles do not take into consideration specific ink types, papers, printers and substrates you are using. One approach to overcoming this limitation is to purchase RIP software or create your own color profiles - all of which costs you more money.

When you start a sublimation business or add sublimation onto an existing business, a fully integrated Sawgrass system is the best way to go. You get:

- Reliable printing with little maintenance
- The best-possible prints because the system's components are specifically designed to work together for optimal performance
- The best ink for your money, as printer and software work together for optimal performance
- All the print software needed to produce products that will sell for premium prices
- Graphics software and image assets that work with substrate-specific templates, included at no additional charge
- One place to go for questions, support, education, warranty and service

COMPUTERS, PROFESSIONAL GRAPHICS & IMAGING SOFTWARE

Another key ingredient in the quality of your end products is obtaining high-quality graphic images and being proficient in the software required to enhance and personalize those graphics.

Sawgrass recommends a newer version of either CorelDRAW or Adobe Creative Suite. Both suites provide you with the ability to import expansive color management tools and the ability to manipulate both vector and raster images (see our chapter on Working with Graphics Software).

For the best results, Sawgrass recommends a current-generation computer with a fast processor and plenty of memory. For those working with digital photographs and customer-supplied artwork, you may want to purchase a scanner and a digital camera (the higher the resolution, the better).

Virtuoso HD Product Decorating Systems come with CreativeStudio Online Designer. This program allows you to choose specific products from dealers and manufacturers, access a continuously updated library of graphics, pictures, art templates, fonts and other visual assets, and use them to easily create designs for your customers. CreativeStudio is a cloud-based program that can be accessed from any internet-connected computer, tablet or smartphone.
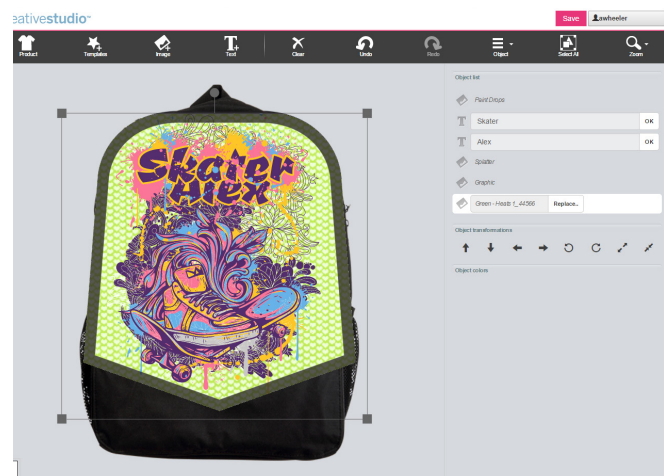
PRINT AND COLOR MANAGEMENT SOFTWARE

You will need software to manage your prints and colors. As you'll learn in our section about color, the colors on your screen are different from what your printer produces. Additional factors, such as the type of substrate and the brand of paper you use play a significant role in what your end-product looks like.

There are three main options for color management:

• **Virtuoso Print Manager (VPM):** Part of the Virtuoso HD Product Decorating System fully integrated solution. This software has been created to optimize print quality and production efficiency based on the capabilities of Virtuoso printers and ink sets. VPM offers easy-to-use RIP-like tools and the ability to choose papers, substrates and other parameters that will generate the best prints possible with these printers.

- **RIP Software (for use with VJ 628 and working with spot colors):** Raster Imaging Processor or RIPs are industrial-grade programs designed for working with wide-format printers and other types of print technology.

- **ICC Profiles:** International Color Consortium profiles are designed by color professionals to convert RGB colors seen on a computer screen into CMYK colors generated by a printer. ICC profiles are usually sold with aftermarket ink and are specific to the ink, substrate and paper you use. Different ICC profiles are needed for different substrates and paper. Sawgrass offers ICC profiles to work with RIP software, so that when customers use our inks, they can be assured the colors will press accurately.

The easiest way to manage color is with a Virtuoso system, because all the components of the Virtuoso system are created to work together to generate most accurate colors. RIP software is usually desired when working with mid- and large-format printers, and can offer spot color management, as well.

CHOOSING A HEAT PRESS

Just as you would choose your printer based on print width, the platen size and style of an industrial-quality heat press should be carefully selected.

If you are going to produce large items or several smaller items at a time, your heat press should be large enough to accommodate these demands. For example, if you plan to decorate t-shirts, keep in mind there are great variances in decoration area between a child's small t-shirt and a men's XXX-large.

Your heat press should accommodate your product in a single pressing (per side). Look for a commercial-quality heat press with an even temperature distribution, a fast recycle time, an accurate thermostat and a platen designed to accommodate your products. When purchasing a commercial-quality heat press, shoot for the top third of the price range, as the higher-priced units are truly the more reliable units.

There are many types and sizes to choose from, depending upon your needs. Sublimation requires precise temperature and pressure, so it is important to invest in a quality unit. Presses come in four basic configurations: flat, mug, cap and vacuum.

Clam Shell Heat Press: The clam shell is the most-commonly used press in sublimation. It opens and closes like a clam, where the bottom platen is stationary, and the top platen moves up and down. These units are ideal for most flat products, such as plastics, metals, ceramics, plaques etc. and t-shirts. Because the upper platen opens at an angle to the bottom platen, these units work best for thinner substrates, as pressure must be consistent across the entire surface of the substrate.

Swing Away Heat Press: The heated platen swings completely away in this type of heat press to allow access to the transferred product. Because the upper platen moves straight up and down in relation to the bottom platen, this style is typically better for thicker substrates, such as wooden plaques, as it provides equal pressure across the entire product. In contrast, a clamshell press may provide unequal pressure due to the upper platen opening and closing at an angle.
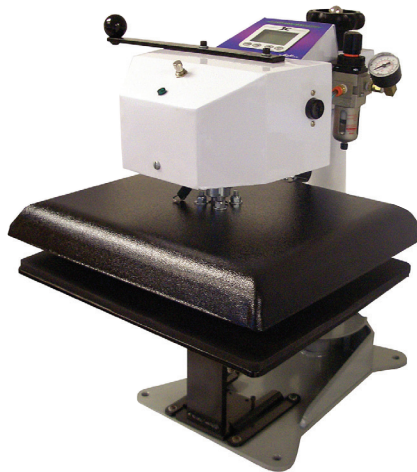
Mug Press: The mug is placed inside of a rounded heating element that provides equal pressure and temperature all the way around. Mugs can also be pressed using mug wraps and a convection oven. Some mug presses have interchangeable heating elements to accommodate different shapes and sizes of mugs.

Cap Heat Press: Heat and pressure are applied only to the front panel of the crown of the cap.

Combination Heat Press: A combination press with various attachments can be the answer to the problem of creating a variety of different products with one heat press.

Vacuum Heat Press: The vacuum heat press is a versatile press that can be used for 3D items such as plates, mugs and phone covers. Wraps and a convection oven can be used to press several types of 3D substrates, such as mugs and pet bowls.

Large Format Flat Heat Press: The large format flat heat press is used for textiles and large form photographic panels. These come in both manual and pneumatic versions.

SETTING UP A WORKSPACE

In addition to choosing the correct printer and heat press based on products and volume, you also need to consider how much space is required to support your production in an organized and efficient manner.

1. **Separate Your Sublimation Equipment:** Separating your sublimation equipment is especially important if you work with other technologies that might pollute your sublimation environment (e.g. fabric dust from embroidery equipment or shavings from engraving equipment). If working from home, you will want to keep pets and small children out of your work area. A separation that includes a lockable door is a good idea.

2. **Set-Up/Staging Area:** Dedicate an area to preparing products for the sublimation process. Place pre-press accessories such as a paper cutter, heat resistant tape, tack adhesive spray, lint roller and other essentials in the staging area. Make sure you have ample room in the staging area to work with your substrates.

3. **Pressing Area:** Heat presses are heavy, so you need a sturdy base for support. Folding tables do not provide enough strength to support the weight or the constant forces from opening and closing the press. A small counter is usually a good choice; something that can be purchased from a store such as Home Depot.

4. **Product Cooling and Packaging Area:** Once substrates are removed from the heat press they need to be set aside to cool down properly. Use a metal work table as a cooling area or a wire rack combined with clip on fans to circulate air around the products as they're cooling. Many mug manufacturers recommend dunking the ceramic mugs in a bucket of room temperature water when done to stop the sublimation process. After the substrate is cool, it needs to be packaged for shipping, so use the cooling area as the packing area also.

5. **Ventilation and Lighting:** While sublimation inks are water-based and very safe, many substrates emit an odor when placed under extreme heat. It is always recommended you work in a well ventilated area. In addition to proper ventilation make sure there is plenty of natural light so that you can hit registration marks and determining the best color match.

6. **Consumables & Supplies:** Other things that are needed in your production area include: heat tape, adhesive spray, scissors, tape measure, ruler, oven mitts and a decent-sized trash can. Some substrates require special accessories, such as foam for shirts and pads for ceramic tiles.

You also need storage containers for your consumables (ink & paper) and accessories. Typically, heavy-duty plastic tubs (with lids) will work fine. The key is to keep things organized and accessible without cluttering your work area.

PART 3

Learning to Use Graphic Design Software

When it comes to pricing the actual cost of your products, the two biggest contributors are the cost of the blank substrate and your time. Your time will be spent printing the image, preparing the substrate, pressing the product and cooling the substrate.

However, before you can perform any of the above steps, you need to design the graphic. If you don't know how to properly use your design software, you are most likely losing money by either spending too much time trying to design graphics for clients or by spending money outsourcing your graphic design.

In addition formalized training, there are ways you can improve your design skills on your own. One of the best concepts to keep in mind, especially after opening your CorelDRAW or Adobe software for the first time, is this: you will never use all the functionality contained within your software suite. Graphic design software is written to provide tools to a wide range of users. Just because your software can perform thousands of design tasks doesn't mean you need to learn all of them.

The most popular graphic software packages and the image formats they are based on are:

• CorelDRAW (Raster and Vector)
• Adobe Photoshop (Raster)
• Adobe Illustrator (Vector)

As with any print production, you must start with a high-quality image to produce high-quality results. Whether you are creating your own designs or working with existing designs, be critical of the original file created. Unless you are satisfied with what you see on your screen, you will not be satisfied with the end result.

Here are some tips for getting started with graphic design software.

Set Aside Learning Time: You will not become proficient unless you practice. Take a couple hours a week to sit down at your computer and get familiar with your software. This includes getting to know your toolbar (keep in mind you will not use all the tools available). Use the Help section that comes with your software. You can often learn how to perform many functions by reading through this information. YouTube also has lots of videos for learning Adobe and Corel programs.

Join an Online Forum: It's good to have peers to rely on when you get stuck or you can't remember how to do something. Consider joining an online forum where you can have access to hundreds of other people's collective experiences. There are many forums to choose from, and they're often specific to a technology (e.g. sublimation, embroidery, engraving, screen printing, etc). If you are a member of a trade association, they often have online forum resources for you to join.

Set Design Goals for Yourself: Do you have an idea for a graphic? Have you always wanted to learn how to do something in your design software? Set short, achievable goals for yourself, then sit down at your computer and learn how to reach that goal. For example, let's say you want to learn how to wrap text around a circle or other shapes.

Whether you are using Corel or Adobe, there are numerous tools available for self-paced learning. The internet is a vast resource of how-to information. Often you can search for a phrase (e.g. "text on a curve CorelDRAW") and find a wealth of information that has been placed on the web for free access. YouTube is an excellent resource.

Once you learn how to perform one function, it becomes a part of your design arsenal. Master one design goal at a time, then move on to another.

The most important thing to remember is not to get discouraged. Everyone must start somewhere, and with a little practice you can greatly improve your skill sets. Remember that your design software is a revenue-generating tool. Just as you'd take the time to learn about a sublimation system, an embroidery machine or a laser engraver, so too should you take the time to learn your software.

WORKING WITH GRAPHIC IMAGE FILES

There are two basic types of digital graphic image formats: vector and raster. The file format will determine how and what you can edit within the image.

Raster Graphics

A raster graphic, or bitmap, is a data structure composed of a rectangular grid of pixels or points of color that represent an image.

Most pictures taken with a digital camera or found on the web are examples of raster graphics. A raster image is technically categorized by the width and height of the image in pixels, and by the number of bits per pixel (color depth), which determines the number of colors it can represent.

The larger a raster image is, the more disk space the image file will take up. For example, a 640 pixel x 480 pixel image requires less space to store 307,200 pixels than a 3072 x 2048 image (from a 6.3 megapixel digital camera), which produces 6,291,456 pixels.

**Digital photos are raster images that you can edit using graphics software.**

Since raster graphics need to store so much information, large bitmaps require large file sizes. Fortunately, there are several image compression algorithms that have been developed to help reduce these file sizes. JPEG, BMP, TIFF, GIF and PNG are the most common compressed image formats on the Web.

Raster graphics can typically be scaled down with no loss of quality. However, enlarging a bitmap image past its original dimensions causes it to look jagged and "pixelated." A raster file is also difficult to modify without loss of information, although there are software tools that can convert a raster file into a vector file for refinement and changes.

Vector Graphics

Vector graphics, unlike raster images, are not made up of a grid of pixels. Instead, vector graphics are comprised of paths, which are defined by a start and end point, along with other points, curves, and angles along the way. A path can be a line, a square, a triangle or a curved shape. These paths can be used to create simple drawings or complex diagrams.

Because vector-based images are not made up of a specific number of pixels, they can be scaled to a larger size and not lose any image quality. Enlarging a vector graphic, yields an object with smooth edges and fine detail. This makes vector graphics ideal for logos, which can be small enough to appear on a business card but can also be enlarged to fill a billboard. Common types of vector graphic files include AI, SVG, DRW, CDR and EPS.
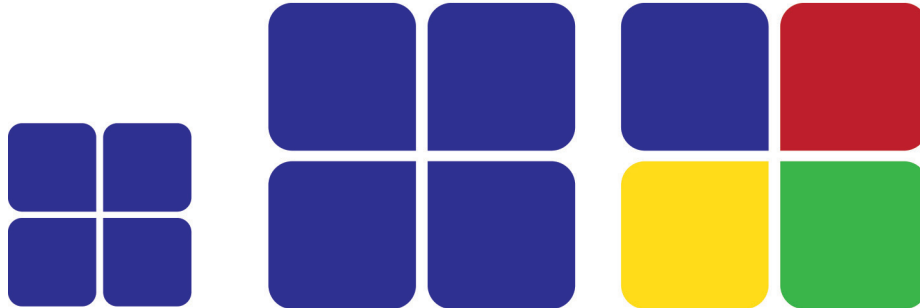
Vector images can be sized up or down infinitely without loss of resolution or quality. Individual elements can also be recolored.

Image File Types

There are many universally recognized file types for storing images. Here is a list of the most commonly used formats as well as specific details about the characteristics of the file type:

BMP

A BMP (commonly referred to as bitmap) file is a raster-based or pixel-based format that only supports the RGB color space and bit depths of 1, 4, 8, or 24 bits per channel. These attributes make bitmap images unsuitable for use in a high-end print production workflow.

Bitmap files have some confusion associated with them as most people refer to any pixel-based image as a bitmap file. However, a true bitmap image file refers to the standard Windows image format. This type of file is mostly used on DOS- and Windows-based machines.

EPS

An encapsulated post script file is a graphic format that describes an image in the Postscript language. An extension of the Postscript graphics file format developed by Adobe Systems, EPS lets Postscript graphics files be incorporated into other documents. The EPS file format supports both vector graphics and raster images, as it can contain two versions of an image: a bitmap used to display the image on the screen and a Postscript description used to print the image.

PSD

Adobe Photoshop (.psd) files are generally written and read by Photoshop exclusively. However, there are several other applications that will read this format. Most page layout applications (except Adobe InDesign), do not allow native Photoshop images to be placed. A Photoshop file will retain all the original files attributes. Saved file characteristics include the following: resolution, color info (CMYK, RGB, grayscale), spot color channels and image bit depth.

JPEG

The JPEG (Joint Photographic Experts Group) file is one of the most commonly used graphic formats. Initially, this raster file format was intended for use in Web applications, but has found a home in the high-end print production markets, as well.

A JPEG file is encoded by using an adjustable loss compression approach. This means that to achieve smaller file sizes, image data is deleted. In small increments, the JPEG compression approach can be very effective and efficient.

However, in larger amounts, the resulting file will contain distortion and blurriness in the image. Caution must be used when preparing JPEG files for use in a print production workflow. The JPEG format will support the RGB, CMYK and grayscale color settings.

TIFF

TIFF is a very flexible format that retains all the image data when edited or resized, as the details of the image storage algorithm are included as part of the file. In practice, TIFF is used almost exclusively as a loss-less image storage format that uses no compression. Consequently, file sizes are quite large. (Sometimes a loss-less compression algorithm called LZW is used, but it is not universally supported.)

Of the file formats discussed, the TIFF is probably one of the best for dealing with high-quality images.

PREPARING RASTER IMAGES FOR SUBLIMATION

One of the most important aspects of producing decorated products from digital images is the quality of original images. You must start with a good source image to produce a high-quality product.

Think of the phrase "garbage in = garbage out." No matter how good your sublimation printer is, it can never print an image that is higher in quality than the source graphic image file. A good measurement of quality, especially with raster images, is resolution.

Understanding Resolution

Resolution is one measurement of image quality. Every raster digital image - whether a scanned image, a printed image or an image displayed on your monitor -is composed of tiny dots. The more dots in a given space, the greater the resolution. In general, increased resolution means that an image is sharper and displays more detail, resulting in a better quality printed image.

When dealing with raster graphics files, there are three properties that determine the resolution of an image file: pixels, dpi and inches.

- **Pixels:** Refers to the total number of 'dots,' both horizontally and vertically, that make up the file. This is the actual resolution of the file. Once a raster image is created, the total number of pixels is fixed.

- **DPI/PPI/PPC:** DPI stands for "dots per inch" and is often used to refer to the number of pixels per inch (PPI) of a printed or scanned document. The more dots, the higher the quality of the image. The metric alternative to this measurement is pixels per centimeter (PPC).

- **Inches/ Centimeters:** A linear measurement that refers to the actual physical size (either printed or scanned) of an image.

Calculating Resolution

The following formulas illustrate the relationships between the different parameters that define resolution:

- Pixels = Inches x DPI
- DPI = Pixels/Inches
- Inches = Pixels/DPI

- Pixels= Centimeters x DPI
- PPC = Pixels/Centimeters
- Centimeters = Pixels/PPC

Example: An image is created in Photoshop at 300 pixels x 300 pixels with a dpi of 100 (39 PPC). What is the actual size in inches or centimeters?

- **Width:** 300 pixels/100 dpi = 3 inches
- **Height:** 300 pixels/100 dpi = 3 inches
- **Image size will be 3" x 3"**

- **Width:** 300 pixels/39 ppc = 7.69 cm
- **Height:** 300pixels/39 ppc = 7.69 cm
- **Image size will be 7.69 cm x 7.69 cm**

If you look at the Image Size Menu in Photoshop, you can see how these parameters relate (see the image on the right). Notice the Resample Image check box. This determines whether you want to resize the image. With this box unchecked, when you enter a new DPI, Photoshop will automatically change the DPI to compensate and vice-versa.
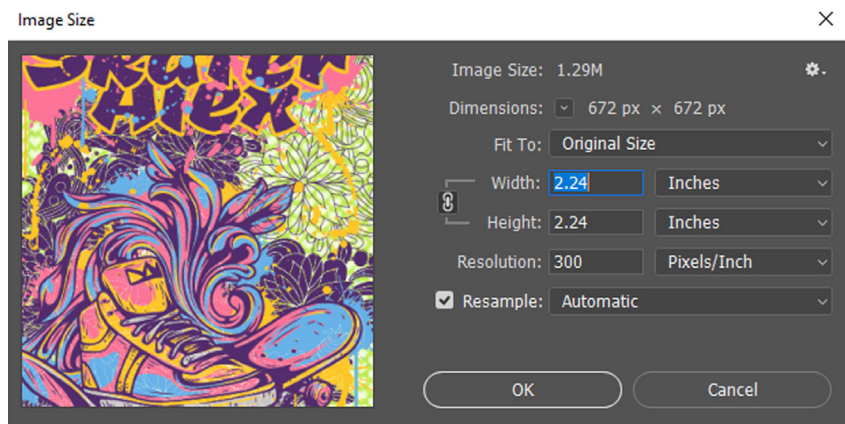
Resolution and Resizing

A digital raster image has no absolute size or resolution. All it has is a certain number of pixels in each dimension. The resolution changes as the image size changes because the number of pixels that make up the image are being spread over a greater or lesser area. Therefore, the resolution changes accordingly.

Suppose you had an image provided to you by a customer that was 4" x 4" (10.1 cm x 10.1 cm) with a dpi of 350 (138 ppc). Using the formula Pixels = Inches(cm) x DPI (PPC), you would see that the image has 1400 pixels x 1400 pixels:

- 1400 pixels = 4 inches x 350 dpi
- 1400 pixels = 10.1cm x 138 ppc

But what if you wanted to make it larger, say 9" x 9" (22.86 cm x 22.86 cm)? Because the number of pixels is fixed for a raster image (after it is created), you would be spreading out the same number of pixels over a wider space, which effectively lowers the dpi/ppc. The result is a lower resolution image. Using the formula DPI (PPC) = Pixels/Inches (cm)

- 155.55 dpi = 1400 pixels/9 inches
- 61 ppc = 1400 pixels/22.86 cm

Conversely, reducing the size of the image will increase the resolution, or at least the DPI setting, as the pixels are compacted into a smaller space. In the case of a new image size of 3" x 3" (7.62 cm x 7.62 cm), the resolution will increase. Using the formula DPI (PPC) = Pixels/Inches (cm)

- 466.67 dpi = 1400 pixels/3 inches
- 183.72 ppc = 1400 pixels/7.62 cm

A good rule is that you can always decrease the size of a raster image without degrading the resolution but increasing it could cause quality problems.

Resolution and Equipment

The resolution of an image is impacted by the device that creates or displays it as each device (scanner, digital scanner, monitor) has a maximum number of dots that it can process and display, no matter how many dots are in the image.

The image above shows a lower concentration of pixels per in/cm - lower resolution - than what is found in the image below. Note the differences in image sharpness and detail.

Note: From this point on, we will refer to image resolution in dpi and printing sizes in inches.

Example: A 300 dpi inkjet printer can print up to 300 dots of image information in an inch. If you print an image that was scanned at 600 dpi, the extra pixels are "discarded" by the printer, since it is not capable of processing them. When an image has more dots than the processing device can support, those pixels are lost. They increase the file size but will not improve the quality of the printed image. In this example the image resolution is too high for the device.

Note: A photo scanned at both 300 dpi and 600 dpi will look the same printed by a 300 dpi inkjet printer.

Example: Pictures on the web are usually 72 dpi because that is the resolution most computer monitors use to display them. If you print a 72 dpi picture on a 600 dpi printer, it will not look as crisp as it does on the computer monitor. The printer does not have enough dots of information to create a clear, sharp. It may be necessary to reduce the physical image size to increase the dpi value to take advantage of the printer resolution.

When creating the image, you should focus on higher resolutions and larger image sizes, so you have enough image data to work with - this is referred to as INPUT or CAPTURE resolution. Through the processing of the image, the resolution can be adjusted to more closely match the specifications of the printing device, which is referred to as the OUTPUT or PRINTING resolution.

Note: In general, the normal resolution at which the human eye can discern details is around 250 dpi or less.

Resolution and Dye Sublimation Printing

A final output resolution of 300 dpi at the actual output print size will almost always give you a high-quality result when printing raster images for dye sublimation.

Take a look at the image size information for two different images. The one on the left is for a mug, while the other is for an 8" x 10" plaque. Notice that the pixel and file sizes for the plaque are much larger than those for the mug.
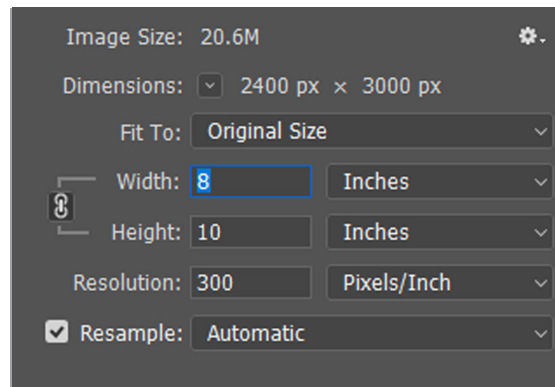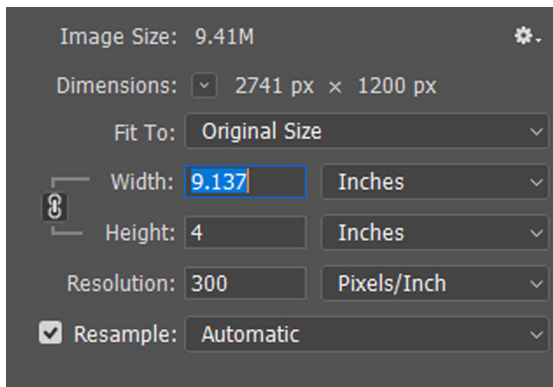
While it is good practice to scan your images at a high resolution, there are certain limitations in dye sublimation transfer that negates the need for a very high dpi setting. Due to the nature of the process, which involves the ink turning into a gas to bond to the polymers of the substrate, resolutions higher than 300 dpi are usually unnecessary.

On fabrics, such as t-shirts and mouse pads, it is often possible to use printing resolutions as low as 150 dpi. However, for hard substrates such asceramics and metals, 200 dpi is the recommended printing resolution.

Let's look at what this does to the sample images from above:
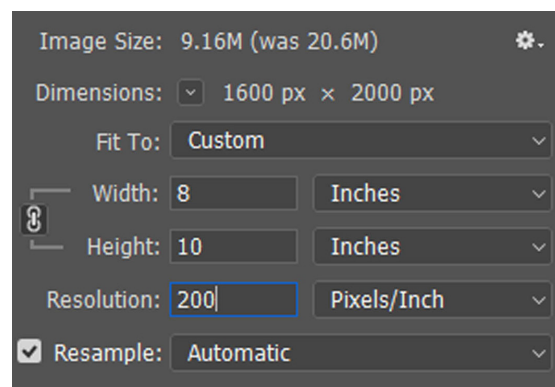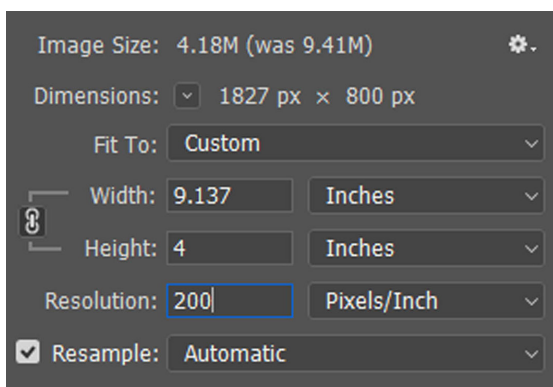
Note that the new file sizes are now less than half that of the original. If these images were going to be used on fabrics at 150 dpi, then the file sizes would be even lower.

Minimizing the size of source files serves several purposes, as smaller file sizes require less processing time. Image editing in Photoshop and CorelDRAW will be quicker and more efficient. Sending image information to the printer (spooling) will be faster. If importing multiple images into a design, the finished file size of the overall design will be much smaller. And of course, each file will take up much less space on your hard drive.

JPEG Compression vs. TIFF Quality

As you apply greater amounts of JPEG compression, an image gets smaller in size, and at the same time, it undergoes a certain degree of degradation of image quality by the process. Look at the images below. The one on the left is an uncompressed TIFF file, while the one on the right is a highly compressed as a JPEG.
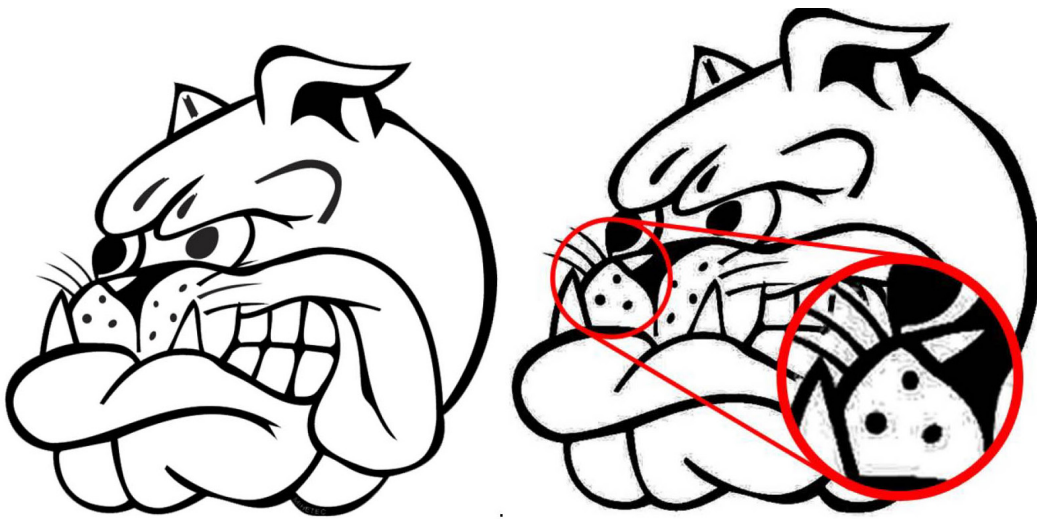
Notice how the TIFF image has crisp and clean edges. This image will reproduce well. The JPEG, on the other hand, has much softer edges that appear fuzzy, plus there is some "noise" (unwanted pixels) in the red circle, which gives the image a "dirty" look. In most cases, the noise is not readily visible on the computer, but shows up during printing.

File Compression Permanently Affects the File

Since the JPEG compression process removes image data, once an image has been compressed, the damage is permanent. Even if you try to convert the compressed JPEG image to a TIFF image, you cannot fix the issues. Unfortunately, there is no repair for an over compressed JPEG image.

Raster Image Color Correction

Ensuring that your raster images reproduce effectively requires an understanding of how to correct color problems and enhance certain types of images. Working with a professional image manipulation tool, you can quickly alter the tonal range and change the color balance —two basic functions that bring extra life into your photographs.

Tonal Range

Many raster images produced by scanners and/or digital cameras tend to have a "flat" look to them. Before using these images for dye sublimation, you may wish to adjust your pictures to add a little 'life' to the image. Depending on the actual image, 1-2 minutes of adjustment can make the difference between a good image and a great image.

Here is an image, which is definitely 'flat' and 'bland'. It looks like it was taken through a haze.

The first thing to adjust is the levels. In Photoshop go to Layer > New Adjustment Layer > Levels. Click on OK
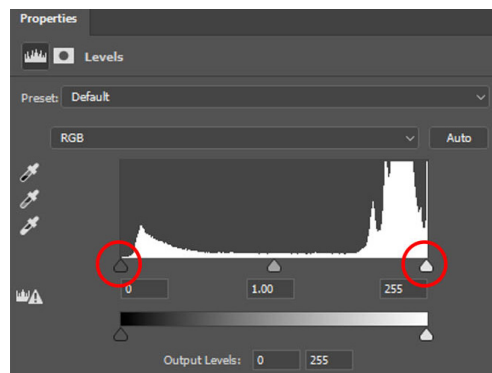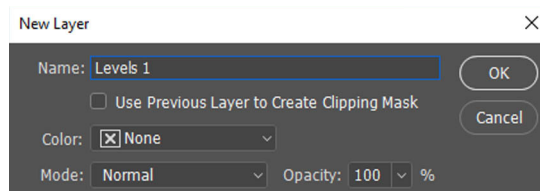
The histogram (the white series of spikes) represents the tonal range of the image. Clearly, there is a large area in the middle where data is missing. If the histogram was concentrated to the left it would mean there was plenty of information in the shadows, while concentration to the right would mean there was plenty of information in the highlights.

A good image has the information spread across the entire histogram.

To make changes, first drag the two triangles towards the edges of the histogram using the mouse pointer (see the red circles). This will produce a significant transformation in the image.

Similar enhancements are usually available in any of the recommended software packages. In CorelDRAW, for example, you would use Contrast Enhancement in the Image > Adjust menu.

Color Balance

Sometimes a raster image may seem ok in the brightness and contrast area but has a strange color cast to it. This is not something that color correction/color matching can cure. Fundamentally, if it doesn't look good on screen, there is a distinct chance it will not look good when printed.

There are many ways to cure color issues within a raster image, some more complex than others (particularly when using a professional package like Photoshop). Here is one fairly simple way using the same process as the previous Tonal Range correction.

The image below has a distinct yellow cast to it making the sky very look muddy and dull.

To get started with this adjustment in Photoshop go to Layer > New Adjustment Layer > Levels. Click on OK.
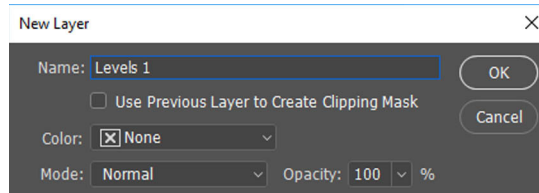
Here we see the tonal range spreads across the whole Histogram (albeit a little weak in the highlights).
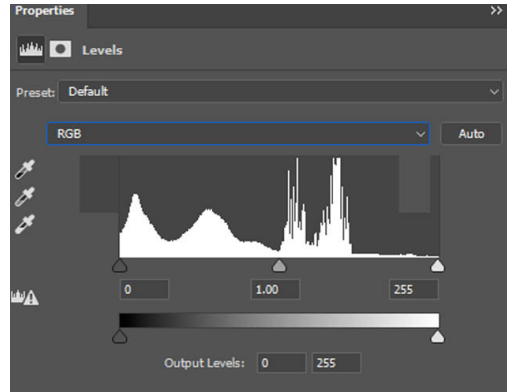
Click on the drop-down arrow for Channel and select **RED**.
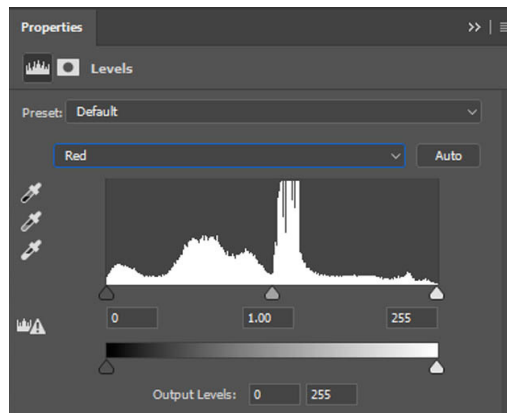
This Channel is fine, and we do not need to move any of the triangles. Next select the **GREEN** channel from the channel list.
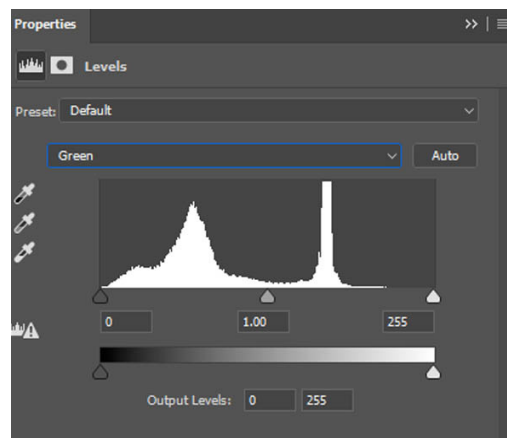
Here, we can see a lack of data to the right, so we move the right triangle towards the start of the data. Next select the BLUE channel from the channel list.
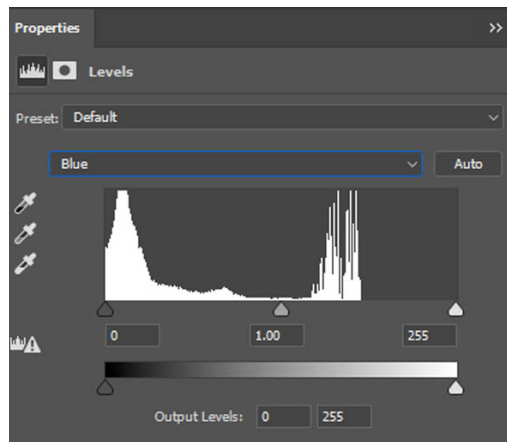
Here there is a larger area of data missing so we move the triangle towards the start of the data. You can see that the "yellow" cast has been removed and the sky is now very clear.

You can tweak the design color even further by using the same approach to adjust the Brightness and Contrast. Just open another New Adjustment Layer with the Brightness and Contrast controller and adjust the image further to get an even more impressive image as shown below.

It cannot be overstated how important it is to make sure your image is as good as it possibly can be before you consider sending it to the printer. If a little care is taken in the production of your images, a great deal of improvement will be noticed at the finished product stage. There is nothing more satisfying than presenting a product you feel proud of to a customer.

Software programs, such as Photoshop and CorelDRAW, may seem a little daunting when you first start to work with them. However, persistence and practice will be rewarded in the long run.

PREPARING VECTOR IMAGES FOR SUBLIMATION

The previous section deals with raster images (BMP, JPEG, TIFF, etc.). Here, we will look at the unique attributes of working with vectors. It should be noted that image resolution does not apply when dealing with vectors.

While color correction usually works very well with raster images, it is sometimes lacking in absolute accuracy for spot colors. Vector designs are often created using a single color for each section (except for filling a section with a gradient or a pattern) and, in some circumstances, the color accuracy can be critical (e.g. company logos).

Working with Colors

If a design is being created on your computer screen, then the accuracy of the monitor itself becomes critical. Setting up a monitor to show accurate colors is difficult enough, but it is also possible to choose a color on screen that is outside the color gamut range of a printer.

For these reasons, we always recommend creating a design using a color swatch that you have created yourself (using the kind of substrate that will be used for your customer's products). The printing industry has always worked with these swatches (e.g. Pantone charts), but these are primarily CMYK charts. We recommend you always work with RGB data, and it is advisable to create your own RGB color swatches for future reference.

Print these swatches using the correct setup for your printer/software package and press them onto the type of substrate you plan to use for the finished item. Use a good-quality white 100% polyester fabric or coated metal sheets to create swatches that produce colors that are within the tolerance for accuracy.

Once you have created color swatches, they can be used as color references for future work.

RGB vs CMYK

When working with vector-based programs, the default palette is usually set to CMYK values. This would be fine if you were sending the print information to a color separations printer. With sublimation, you are sending this information to a composite printer. In practice, you will create more accurate results if you create your designs with RGB values.

One of the most-common complaints with sublimation printers is the inability to create a solid black. There can be many reasons for this, but the first consideration is the image itself. If a design is created without checking the palette values, for example, there is a distinct possibility that the design is using CMYK values.

The "test" word above was created using the CMYK value for black within a CMYK color space. If you look at the properties of the color, you will find this:
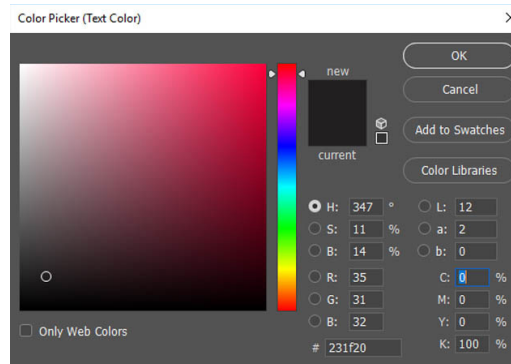
The model is set to CMYK, and the small square showing where the color in the color space is a long way from the bottom left corner (which would be actual black). We can also see the RGB values showing as 36, 32, 29. These values tell the printer that you wished to print gray (and not even a neutral one as the three values are not identical).

To tell a composite printer that you want black, you need to first change the Model/Mode/Color Space to RGB. Then, you can change the RGB values to 0, 0, 0. The small square showing the colors position in the color space is now at the extreme bottom left corner and the printer will print a good solid black.

This is a good example why it is imperative that you use RGB values in your designs when printing to a composite printer. It's a good idea to change your default palette to an RGB one. In Corel, this would be under Window > Color Palettes and then check the Default RGB palette. Here, you can also uncheck the default CMYK palette to avoid confusion.

Applying Colors to a Vector Image

In the following example, CorelDRAW will be used to create some products that will be sublimated with the Sawgrass logo. You can use any other vector image editing package to do this where the principles remain the same.

The first step is to create the vector (wireframe) logo.

An RGB color of gray with values of 161, 161, 164 was then selected for this printer/ink/substrate combination by comparing a printed and pressed color chart to the artwork. On the screen, the colors look slightly lighter than the artwork. This can be attributed to the fact that the monitor color is not an exact match to the actual color.

The next step is to fill each of the gray letters with the chosen color. The quickest way to accomplish this is to choose all the affected elements at the same time. It may also be necessary to remove the outline color.

Now, choose any other colors required for the design and fill those accordingly. Again, reference the color chart, preferably under a bright daylight as artificial light can change your color perception.

Now you have a finished design which, when printed and pressed will give you the colors you chose from the swatch, irrespective of how they look on screen. The accuracy of the design is reliant on choosing the correct color from the swatch. This is also something that can be done with the client before starting the job, so that the colors to be used can be approved for production, which will eliminate any questions about the concerning the look of the finished product.

To ensure the highest degree of color accuracy, you can print and press the chosen logo colors onto the actual material that will be used for the final product, as different substrates may affect the colors slightly, particularly if the white background is not pure white.

If accuracy is critical and there doesn't appear to be a color on your standard RGB swatch that matches closely enough, then a different swatch may need to be used. You can create your own custom swatches from the RGB palettes with most graphic design programs, including Virtuoso CreativeStudio.

One huge benefit of working with vector graphics is the sizing capabilities of the design. Once the design is complete, it can be used on any size product the customer requires without any loss in quality. Whereas with a raster file, enlarging the design will reduce its clarity and resolution.

Color Management & Correction

ESSENTIAL TERMS

Understanding color is fundamental to achieving consistent and high-quality results when printing with sublimation technology. If color management and correction is to be an effective tool, you must create and control consistent, predictable color in the production chain: scanners, software, monitors, printers, etc.

The challenge is that different devices cannot create the same range of colors. It is in the field of color management that this color matching effort comes into its own. These essential terms will come up often as we delve into the world of understanding color, light and how both affect your prints.

Color Gamut: A color gamut is the range of colors that can be reproduced by any given device (scanner, camera, monitor, printer, etc.). Following is a list of color systems in order of large to small color gamut:

- **Photographic Film:** This is one of the best systems available for detecting and reproducing color. Movie-goers are familiar with the difference in color quality between the film projections seen in theaters and the home video versions. This is because the color gamut of film far exceeds that of television.

- **CRT (Cathode Ray Tube) Monitors:** CRT monitors have a roughly triangular color gamut that covers a significant portion of the visible color space. In CRTs, the limitations are due to the phosphors in the screen, which produce red, green and blue light only, and then must be combined to create the desired final color.

- **TFT LCD (Thin Film Transistor Liquid Crystal Display) Monitors:** LCD screens filter the light emitted by a backlight. The gamut of an LCD screen is therefore limited to the emitted spectrum of the backlight. Older LCD screens use fluorescent bulbs for backlights; newer screens use light emitting diodes (LED) as the light source. These monitors generally have a gamut much smaller than CRT screens, though with certain LED backlights, this can yield a greater gamut than CRTs.

- **Television:** Television does generally not take full advantage of its color display properties, due to the limitations of broadcasting. HDTV is far better, but still somewhat less than that of similar products using the same display technology, such as computer monitors.

- **Paint:** Paint mixing, both artistic and for commercial applications, achieves a reasonably large color gamut by starting with a larger palette than the red, green and blue of CRTs or cyan, magenta and yellow of printing. Paint may reproduce some highly saturated colors that cannot be reproduced well by CRTs (particularly violet), but overall the color gamut is smaller.

- **Printing Inks:** Ink printing typically uses the CMYK color space (cyan, magenta, yellow and black). Very few printing processes do not include black; however, those processes are poor at representing low saturation, low intensity colors. Efforts have been made to expand the gamut of the printing process by adding inks of non-primary colors. These are typically orange and green or light cyan and light magenta. Spot color inks of a very specific color are also sometimes used. These examples show that printing using ink offers a very small color gamut.

Color Models: Color models help us define color in a numeric and structured way. The most common color models are:

- **RGB:** The RGB model is the usual method of describing colors on monitors. The actual red, green and blue primaries used depend upon the phosphors used on the monitor. It is not possible to define the complete set of visible colors as defined by the CIE standard with the RGB primaries.

- **CMYK:** The CMYK model is a subtractive model that is used in printing. It uses the subtractive primaries cyan, magenta and yellow. Because it is impossible to produce a pure black from these primaries, a black (K) primary is added, thus giving the CMYK model. When the gamut of this model is plotted on the CIE diagram, it only covers a subset of the interior and will not usually cover the entire monitor gamut either. Thus, the image on a monitor can never be completely accurately captured in print.

  Here we see an example of the different color ranges of two devices. The difference has been exaggerated for clarity.
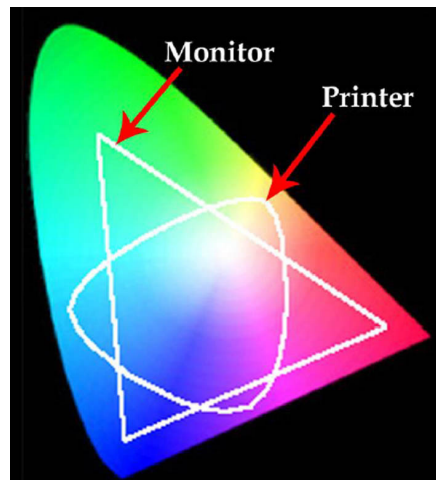
Color Gamut Gauges: The human eye can distinguish about 300,000 colors that have been defined by empirical analysis based on color mixing. For the color mixing analysis process, three colors are chosen to act as the standard primary colors. A common choice is red, green and blue. By mixing these primary colors with varying intensities, many different colors can be produced.

For a given set of primaries, the totality of colors that can be produced is called the color gamut. Unfortunately, whatever the choice of primary colors, the color gamut associated with the primaries can never match the gamut of visible colors using only positive weightings.

The standard, produced by the Commission Internationale de l'Eclairage (CIE) in 1931, is used as a reference and defines three primary colors that can be combined additively with no negative coefficients to produce all visible colors.

The CIE model is very useful as a standard. However, because it is based on three imaginary color primaries, it is not practical to use in hardware devices. Thus, other more practical standard color models have been created for everyday use.

Color Rendering: This demonstrates why the colors of an image on the computer screen never look quite the same as the colors in the final printed image. To try and compensate for this anomaly, we use a rendering designed for handling out-of-gamut colors.

- **Perceptual Rendering:** Perceptual rendering attempts to compress the gamut of the source space into the gamut of the destination space in such a way that the overall relationships between the colors (and hence the overall image appearance) is preserved, even though all the colors may change in the process.

- **Absolute Colorimetric Rendering:** Absolute colorimetric rendering matches those colors in the source space that are inside the gamut of the target space exactly and forces out-of-gamut colors to the nearest reproducible hue, sacrificing lightness and saturation.

- **Relative Colorimetric Rendering:** Relative colorimetric rendering first scales the white of the source space to the white of the target space, adjusting all other colors relative to that white. Then it matches the adjusted colors in the source space that are inside the gamut of the target space exactly, and forces out-of-gamut colors to the nearest reproducible hue, sacrificing lightness and saturation.

- **Saturation Rendering:** Saturation rendering maps fully saturated colors in the source space to fully saturated colors in the target space, sacrificing hue and lightness.

Rendering Recommendations

We recommend perceptual rendering as the one to use for all your printing output. When using this method, the entire gamut of the image is compressed to fit within the gamut of the destination device. This means that all the colors that were actually in-gamut will need to be adjusted to make room for the out-of-gamut colors.

Unlike what happens in the saturation rendering processes, with perceptual rendering, all pixels are treated with respect for each other. As a result, out-of-gamut pixels may not be moved to the closest reproducible color.

You may think that this adjustment makes every color wrong. That assumption, in fact, is correct. Therefore, it would seem that perceptual rendering processes would make things even worse. But strangely enough, that is not the case because all the colors have been adjusted proportionally, even those that the destination device could accurately reproduce.
With perceptual rendering, the chance that a viewer will notice that all the colors have been modified is minimized. This is the most common rendering intent that is used when converting from RGB to CMYK color space.

RGB VS. CMYK

Computer monitors emit color as RGB (red, green, blue) light. Although all colors of the visible spectrum can be produced by merging red, green and blue light, monitors are capable of displaying only a limited gamut of the visible spectrum.

Though monitors emit light, inked paper absorbs or reflects specific light wavelengths. Cyan, magenta and yellow pigments serve as filters, subtracting varying degrees of red, green and blue from white light to produce a selective gamut of spectral colors.

Like monitors, printing inks also produce a color gamut that is only a subset of the visible spectrum, although the range is not the same for both. Consequently, the same artwork displayed on a computer monitor may not match that on a printed publication. Also, because printing processes, such as offset lithography, use CMYK (cyan, magenta, yellow, black) inks, digital art must be converted to CMYK color for print.

Many printers now prefer digital art files be supplied in the RGB color space with ICC profiles attached. Images can then be converted to the CMYK color space by the printer using color management methods that rely on color profiles if present; this helps preserve the best possible detail and vibrancy.

The two diagrams here show just how distinctly different the color spaces are. This also helps to explain the difficulty in accurately converting from one space to another.

RGB - ADDITIVE   CMY - SUBTRACTIVE
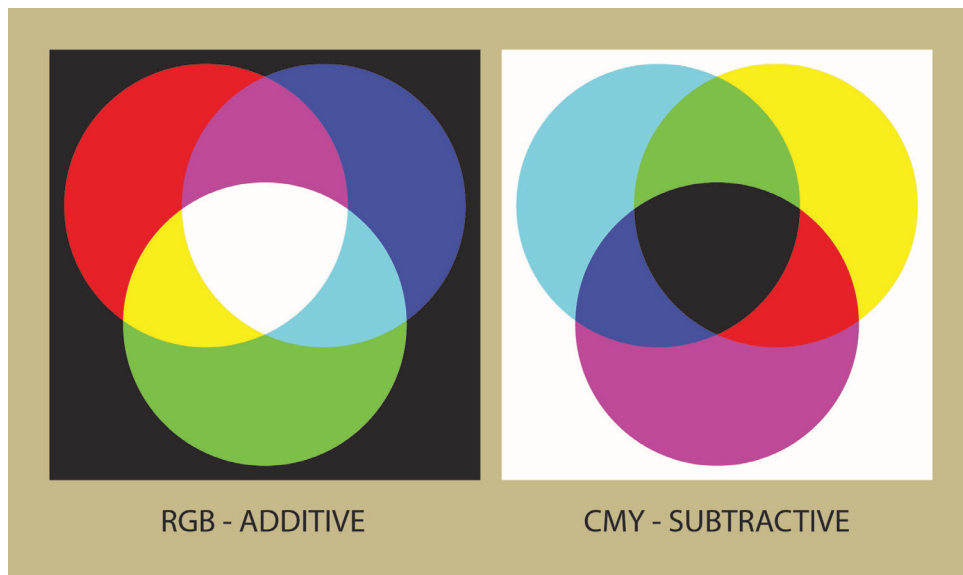
Don't let this information overwhelm you. On a day-to-day basis you will most likely be using either Virtuoso Print Manager or an ICC profile to manage color. These take the guesswork out of color conversion.

COLOR CORRECTION

Color correction is the art of adjusting this color transformation so that you can produce the best quality results on your substrate. With dye sublimation, there is another element of the color control process that must be addressed. When a dye sublimation transfer sheet is pressed onto a substrate, the ink turns into a gas to bond to the polymers of the substrate.

During this "gassing" certain colors will shift, so the finished product will not look like the original image on the screen or the image that printed out on the transfer paper. This is why color correction is needed.

Note: The colors of the ink printed on the transfer paper are very different from the final image that is created when heat and pressure is applied. This is due to the chemical characteristics of the dye sublimation process. There is no need to consider the ink colors at this stage when performing any type of color correction..

When using dye sublimation ink, color correction needs to be addressed for each individual printer and ink combination. In extreme circumstances, color correction may be needed for every combination of printer/ink/substrate and transfer paper.

However, extensive testing has shown that in most cases, good-quality transfer paper does not affect the final color. This is why we recommend that you only use high-quality paper.

Note: Many suitable substrates for sublimation will have white surfaces. However, there are varying degrees of white, which, technically, could have an effect on the colors of the final image. In reality, these varying shades have little or no effect on the finished appearance. This is good news, since it means that it is not necessary to perform color correction for every shade of white surface you come in contact with.

Another factor that must be considered when addressing color correction is that each device that deals with an image – whether it's your scanner, digital camera, monitor or printer – has a unique way of handling color. The subtle differences among these devices must be overcome and replaced by consistency of color interpretation by known standards.

DIFFERENT METHODS OF COLOR CORRECTION

There are three basic methods of color correction for dye sublimation: ICC profiles, RIPs and custom printer drivers. Though both methods are somewhat similar, they have specific differences.

ICC Profiles

An ICC (International Color Consortium) profile is a software file that ensures when a specific color is selected on the computer screen, the designated color is consistently and correctly delivered on the substrate. Think of it as a color matching program, as the screen color rarely produces exactly the same output color. A profile creates a link between specific screen colors and specific output colors. It doesn't change the color. Rather, it ensures the correct output for a given input.

To use this method, you must work with ICC-compliant software (e.g. Photoshop, Corel). The profile will be placed in the output stage of printing, and the manufacturers' (OEM) printer drivers will be set to "No Color Adjustment." This method will correct the image color and then send the data to the printer without affecting the colors further.

Color correction profiles for dye sublimation have their own unique challenges. Under normal profile creation, when a printer has printed out the color swatch for testing, the profiling software knows how to adjust the colors to print out the correct ones. When a dye sublimation transfer is pressed onto a substrate the ink turns into a gas and while in this state the colors change properties.

This change can be quite dramatic (e.g. some blues look like green on paper) and it is therefore impossible to judge whether the print is correct or not. Thus, many sublimation printers create custom profiles that correlate the screen color to the final sublimated color, rather than just to the ink color.

Raster Image Processor (RIP)

More sophisticated users may choose to use Raster Image Processing (RIP) software, which includes ICC profile creation capabilities for managing colors. Simply put, RIPs convert images into individual dots (rasterizing) and sends these rasterized files to the printer.

The process of creating ICC profiles from scratch is time consuming, requires a good understanding of color science and is an art form in itself. It begins with printing a linearized color pallet. A spectrophotometer is then used to measure the colors. From these data points, the software creates an algorithm that calculates the color space and generates the ICC profile. Various types of images are then printed on a variety of substrates, and the profile is meticulously adjusted to optimize the final result.

RIP software also handles workflow tasks, such as nesting images and batching or queuing files to print. RIPs are available from several software companies, including Wasatch and Ergosoft. Sawgrass recommends the use of Wasatch SoftRIP with the VJ 628 for users looking for a more sophisticated color management and production solution, and we provide profiles that work with several RIP programs specific for our inks.

Printer Drivers

These are software programs that have color correction built into the printer control system. The advantage of this method is the ability to use both non-ICC compliant and ICC compliant software, as the color correction is performed at the printer driver stage. In addition, it's easier and less technical to use a custom printer driver than it is to use an ICC profile.

Virtuoso Print Manger is Sawgrass' printer driver for Virtuoso HD Product Decorating Systems and CreativeStudio Online Designer. It greatly simplifies the printing process for accurate color correction based on more factors than an ICC profile can. These include: substrate and paper type, image quality, print speed and color priority (graphics, photos, etc.).

Virtuoso Print Manager allows you to make several custom selections that will impact the final colors of your print. These include substrate, print speed, paper brand, color mode and more.

Additionally, Virtuoso Print Manger enables you to customize and save all print settings for future use. These can include: substrate, paper, hue, contrast, brightness, saturation, mirror and even print quantity. If you have a customer who likes stronger reds or more color saturation, simply adjust the print settings to get the colors to your customer's liking and save them as a custom preset for future use.

You can even create and save custom colors to Virtuoso Print Manager's color palette. This is especially convenient when going through the color matching process with a customer. Once you find the color values to match their desired color, you can create a custom name for that color and save it to your palette for future use.

These are just a few examples of the expanded versatility that printer drivers offer over ICC profiles.

COLOR MATCHING

The reproduction of color from the monitor to the printer output is referred to as color matching. Creating color accurately on paper has been one of the major areas of research in color printing. Like monitors, printers closely position different amounts of key primary colors, which, from a distance, merge to form any color. This process is known as dithering.

Monitors and printers do this slightly differently because monitors are light sources, whereas the output from printers reflects light. Monitors mix the light from phosphors made of the primary additive colors: red, green and blue (RGB), while printers use inks made of the primary subtractive colors: cyan, magenta and yellow (CMY).

White light is absorbed by the colored inks, reflecting the desired color. In each case, the basic primary colors are dithered to form the entire spectrum. Dithering breaks a color pixel into an array of dots so that each dot is made up of one of the basic colors or left blank.

Colors vary from monitor to monitor, and the colors on the printed page do not always match up with what is displayed on-screen. The color generated on the printed page is dependent on the color system and printer model used, not by the colors shown on the monitor.

We recommend printing out and sublimating the entire palette to a pure white substrate, and then retain this color "chart" as a visual reference for working with customers to match specific colors.

Printing RGB Color Charts

We recommend making RGB color charts for both your hard and soft substrates. This is easily accomplished by printing out one set of charts for transfer on to white metal and another set for transfer onto a t-shirt or swatch of fabric.

The printed chart demonstrates the exact color that is created via sublimation (plus the RGB settings), so the graphic designer has an accurate reference when choosing the proper colors for the image being created. Keep in mind that the color of the substrate will affect the transfer color.

There are a variety of ways to obtain RGB color chart files. First, check with your distributor. They should have files available for both CorelDRAW and Adobe products. The file format EPS (encapsulated post script) is a uniform file format that can be opened within both Corel and Adobe environments.

There are also businesses that can provide you with RGB color swatch files (usually for a fee). If you do an internet search for "RGB color swatch files," you can explore these options.

The palette on the left is pressed onto a polyester sports towel, while the one on the right is pressed onto a white ChromaLuxe photo panel.

For CorelDRAW users, there is a useful tool that is bundled with the graphics suite that allows you to make your own printable RGB (or any color mode) color swatches. Refer to the software manual for detailed instructions.

For Virtuoso Print Manager users, you can easily print out the ColorSure palette, add custom colors to your palette and even print out similar colors in a palette for more precise color matching. Learn how at SawgrassInk.com.

Pressing RGB Color Charts

As mentioned earlier, we recommend making at least two sets of RGB color swatch charts: one set for hard substrates using white metal and one set for soft substrates using white polyester fabric (t-shirt or piece of polyester material). Once you've printed the RGB color charts transfers, you need only press them on to the two types of substrates.

Under a heat press, face the mirrored transfer against the blank substrate. To avoid ghosting the image through shifting when opening the press, you should fix the transfer to the substrate using heat resistant tape. Place the substrate under your heat press, transfer side up, and press for the allotted time based on the material (refer to the substrate manufacturer's guides for optimum time, pressure and temperature settings.

The palette on the left is pressed onto a polyester sports towel, while the one on the right is pressed onto a white ChromaLuxe photo panel. Notice the difference in the colors.

Using Your RGB Color Charts

After you've made your color charts on a hard substrate and a soft substrate, you are now able to determine what your colors will look like after being pressed. To hit specific spot colors, simply change the RGB value of vector graphics (e.g. logos, text, etc.), print it using your sublimation system and transfer the image using the same time, temperature and pressure you used to make the RGB color chart.

The Business of Sublimation

All of the information we have provided so far has focused on the mechanics of sublimation production. Now, let's look at how to turn this technology into a viable business.

Many people start out sublimating as a hobby. They are involved with similar product decorating methods and want to try working with digital images. This is a great way to learn the ins and outs of the process of decorating with sublimation, experiment with designing and making custom products for friends, family and local customers.

Some stay in the hobby space, while others branch out into building full-time businesses around sublimation. Others are already successful business owners who are looking to add sublimation to their offerings. In this section, we offer advice to those who are looking to make the leap into the business end of sublimation.

IS A SUBLIMATION BUSINESS RIGHT FOR ME?

Starting a business, any business, is a challenging prospect. The success of the endeavor will be dependent on proper planning, market research, sufficient capitalization and a variety of other factors.

But perhaps the most important factor in determining the success of a new business is the drive and determination of the business owner. Thus, the business opportunity itself must be enjoyable, appealing and engaging to the entrepreneur. Figuring out whether the sublimation business is a right fit for you is an essential first step in getting started.

Sublimation as a Business Opportunity

In basic terms, sublimation is simply a process for applying images and graphics onto products that can be sold for a profit. It's who you choose to market to and how you plan to deliver those items that will define your business.

For example, using sublimation as a production tool, you could create a business that was geared to awards and recognition products to sell to teams, businesses and schools.

Perhaps you have an interest in personalized products. Sublimation is an excellent method for creating high-margin items such as photo gifts that allow your customer to capture special memories and preserve them forever.

Sublimation is also the perfect path into the lucrative promotional products market, making it easy to create valuable and unique advertising merchandise to sell to businesses, corporations and events.

The custom decorated apparel market is growing rapidly, and sublimation is an excellent method for creating full-color images that won't fade, crack or peel when laundered.

Regardless of your interest, sublimation can be used to launch and grow your business enterprise. But is right for you? Here are some things to consider:

The Mechanics of Sublimation Production

Sublimation production revolves around adding text, graphics, and photos to products. You don't have to be a graphic designer, but you will need to be comfortable manipulating images on a computer to create exciting products.

In many cases, the design files will be supplied by the customer. In other situations, you may need to find images online. Either way, you will need to do some hands-on work for every job using standard graphics software like CorelDraw, Photoshop or Virtuoso CreativeStudio Online Designer. The next step is printing the image on sublimation transfer paper using a printer that is capable of processing sublimation inks, and then pressing the designs onto a product.

KEY QUESTIONS:
- Are you comfortable with this process of production?
- What kind of room will you need?
- Can you set up a shop at home, or will you need to rent a production space or storefront?
- Does a mobile operation make sense?

Cost of Start-Up and Operation

Any new business is going to have expenses. The key is finding a business opportunity that fits your budget, yet allows you to generate a decent margin on your products and/or services. And it's not just about margin; it's also about new products and new markets, which in turn yield an expanded customer base and increased profits.

A startup sublimation operation consists of production equipment, a computer with graphics software, a desktop sublimation printer, ink, transfer paper and a heat press. If you don't need a heat press, then you are looking at a price range of $500 - $1,800 to get started. If you need a heat press, buy a good one and expect to spend another $1,000 to $2,100 depending on unit size.
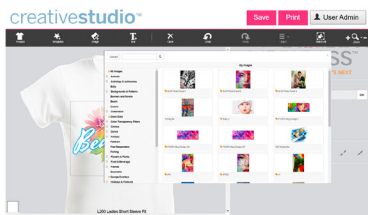
What does it cost to create a personalized sublimated product? There are a lot of considerations when calculating costs. Whether you have a home-based business or your own shop in town, your cost formula is the same: divide all the operational costs for a given period by the number of units produced during the same period.

Operational costs – or overhead – includes ALL your anticipated costs: rent, power, insurance, phone, website, e-mail, advertising, marketing collateral, chamber and professional association fees, depreciation on fixed assets (printer, heat press, computer), accounting fees, etc. They should also include your ink, substrates, paper, software and artwork expenses.

Then there are labor expenses. Even if you are a solo operation, you need to pay yourself. Your time and expertise are valuable, which is why it's so important to establish an efficient system of sublimation production. The time spent doing anything other than making sublimated products for sale is a missed opportunity for more revenue.

How do you begin to calculate overhead? Start by projecting your all your anticipated costs for the year, including a desired paycheck. Then decide how many weeks you want to work per year (typically 48). Finally, divide your projected annual overhead cost figure by that number. This will give you a rough weekly overhead figure to either meet or work toward. Then divide by 40 hours to come up with an hourly overhead figure for your business.

For this example, assume that your hourly cost of operation worked out to be $30.00. If you could print and press 30 items per hour, then each one costs $1.00 to produce – regardless of cost of ink, paper, substrates or shipping. If you could make only two units per hour, then the cost per unit is $15.00.

This example may seem elementary, but it very accurately illustrates how important efficiency is for turning a profit. The more you print and press in a given period, the lower your actual costs are, when you take in all of your expenses. Small and new businesses often fall in to the trap of simply looking at the percentage of profit on a single item based on the tangible costs, rather than forming an overall business strategy that looks at the big picture of all costs involved in doing business. We will discuss the topic of pricing later in this guide.

KEY QUESTIONS:
- What kind of budget do you have to invest in start-up expenses?
- What kind of products are you planning to sell?
- What kind of demand is there for them?
- How long will it take to recoup your initial investment?
- What kind of production schedule do you need to have to sustain and grow the business?
- Are you comfortable with the answer to all these questions?

If, after considering all the questions we've posed, you feel good about starting a sublimation business, then that's a good indicator that this is a right fit for you.

STARTING A NEW SUBLIMATION BUSINESS

Sublimation makes for an excellent home-based or bricks-and-mortar (storefront) business opportunity. All you need is a heat press, computer, one of the Sawgrass Virtuoso HD Product Decorating Systems, sublimation transfer paper, sublimation substrates, a little bit of elbow room and you're set.

On the surface, it may seem simple, when in actuality, there is a lot more to setting up a legitimate sublimation decoration business. Yes, the equipment is the core of the operation, but there is more to it than purchasing and setting up equipment. Before starting your business, there are four areas that need to be investigated:

- Administrative Equipment, Supplies and Functions
- Physical Location
- Sales and Marketing Solutions
- Pricing for Profit

Administrative Equipment, Supplies and Functions

It's quite easy to assume that once you buy production equipment, you are in business. Wrong! You must understand that you are creating a business that does product decoration, rather than a product decoration business.

The focus must be on the "business" aspects first, everything else second. You must develop methods and systems to track leads, take orders, process jobs, order merchandise, pay bills, etc. To ensure that you set up the business aspects of the business, you need to invest in some non-decoration equipment.

Essential Tools

The first item is a computer for administrative functions. It should be separate from the one that does production and art functions. There are several reasons for this separation. First, graphics software is very sophisticated and demands a lot of the computer resources. Second, when it becomes necessary to do two things at once (a frequent occurrence), having only one computer becomes totally inefficient. Imagine you are invoicing customers and your spouse decides to help by setting up some designs. One computer doesn't work!

Along with your computer(s), it's necessary to invest in a good-quality scanner and a photo-quality printer. This allows you to process artwork, create flyers and brochures, etc. And of course, you will need the proper software to make everything work.

As a business, you will need programs that create files that others can easily read. The business standard for spreadsheets is Excel, while the business standard for documents is Word or PDF.

For example, if you wish to email documents, quotes, price sheets, etc., to a customer, chances are that your customer can read MS Word or PDF format. If you send anything else, your customer may not be able to read it. It's important that you are using the same office productivity software as the rest of the business world. Most business invest in Microsoft Office, which includes these two programs, in addition to many others that may be helpful.

Database programs are great for tracking leads, keeping up with customers, etc. There are many programs available for this function, but for a new business, MS Access (part of Office) might be fine. Excel can be used as well. You may also want to consider a system such as SalesForce, which is a more comprehensive solution that can grow with your business.

Along with office software, you will need accounting software. There are many programs to choose from. QuickBooks is very popular among small businesses. Ask your accountant for recommendations which will save you money come tax time!

Desktop publishing is a must for a new decoration business as well. This will enable you to create flyers, brochures, mailers, etc. MS Word and MS Publisher are both popular programs for this task.

With a full complement of software, you will be able to manage your business affairs much more effectively than if you use paper and pencil, combined with manila folders (though you will still use paper files to some degree). You make money in this business through sales and production, not "paper-pushing." By setting up good systems for managing vital information, you will spend less time playing clerk and more time producing revenue.

In addition to the more complex pieces required to manage your business, there are the small everyday items that go with it. Don't forget the routine office supplies such as pens, paper, pencils, whiteout, stapler, staples, tape, post-it notes, rubber bands, markers, shipping supplies, paper clips, binder clips, file cabinets, file folders, envelopes, letterheads, calculators, etc.

Customizing Forms

Along with having the proper resources, there is the art of making your processes of your business work properly. For example, order forms. What is the perfect order form? Each business is different, so there is no single order form that is perfect for every business.

The problem is that much of product decoration is custom, so it's hard to cover every possible variation of every detail within a printed form. Some shops use elaborate multi-page documents, while others use a blank sheet of paper. Ideally, you should start off with something simple that ensures you gather the needed details. Over time, you can fine-tune the order form into a smooth working document.

A beginning order form consists of a blank area at the top, followed by a series of questions to ask the customer. Use the blank area to attach artwork or draw a sketch of the design concept (or both).

The questions at the bottom are to ensure that you get all the required information. Example:

- What is the customer's contact info?
- What date is the finished order required?
- What substrates are going to be used?
- Does the same thing go on each substrate? If not, create a separate order for each item.
- If a garment is involved, where will the design be applied?
- What are the proper colors?
- Are stock images being used? What is the image source and ID?
- Are photos being used? Is the customer supplying them? Is a release needed?
- If keyboard lettering is required, which font? What letter height? What color? Arc or straight? All capitals or upper/lower case?

No matter how simple the job, it's imperative that each work order can be produced by simply looking at the form. Make sure all the information is legible and to save notes about the setup. Most shops use the work order form to create a design information sheet that details all the parameters necessary to recreate the design.

Forms are a big part of the decoration process. As your business grows, you will no doubt find that you need a variety of forms to cover a variety of issues. Using your business computer system, you will be able to create, modify and output forms for every occasion.

Physical Location

Now that you have production equipment, samples, consumables and administrative supplies, etc., you will need to find a place to set up your production area.

If working from home, a key factor is separation. You need to maintain a physical and emotional separation from your business. Though your business will become your life, you do need to spend some time away from it. But just as important, you must keep certain elements of your home environment away from your business operation.

For example, a production shop holds many wonders for a small child. Unfortunately, danger lurks just beneath the surface. Sharp objects, moving parts, hot heat presses and electrical devices are just a few of the things that can easily hurt a child.

Another element to contend with is household odors, such as food smells, cigarette smoke and cleaning solvents. All these items can permeate the merchandise in your shop that is awaiting delivery. Your customer will reject the order if it smell like cigarettes.

Pets can also be a problem. In addition to physical dangers that might cause injury, a pet can leave behind odors and hair, which can also permeate products, especially garments awaiting production.

Another thing to consider when choosing a location within the house is physical environment. Can you get your equipment where it needs to go? Heat presses can be heavy and bulky. Is there adequate heating and cooling? Damp basements and dusty garages are a no-no. Is there adequate electrical power? A heat press draws a lot of current.

For a storefront, you will need to find something that has an area for production and a separate area for displays to show walk-in customers and woo new clients. A small storefront in a strip mall can be a great location, as you should be able to separate your customer-facing area from your production area pretty easily. You'll also need to investigate what licensing, insurance and other legalities you need in place before you open up for business. These can be markedly different than those for home-based businesses.

As you can see, starting a sublimation business does involve more than just purchasing the right equipment. It takes careful thought and planning. The main difference between a homebased business and one in a commercial location is just that: location. The rest of the details that make a business a business is pretty much the same. Identify and manage the details that drive success, and you will do well. Ignore them and you may fail.

ADDING SUBLIMATION TO AN EXISTING BUSINESS

As a small business owner, your greatest challenge is to ensure a steady flow of work that keeps your shop running smoothly and your balance sheet in the black. This means always searching for new clients to supplement your existing customer base and replacing those who drop off as part of the normal attrition process.

For those in the screen printing, heat transfer, embroidery, awards and engraving, sign or print-on-demand business, adding sublimation technology can be great solution to expanding into new markets and growing sales.

How so? It enables you to offer new products that complement what you already sell, deliver increased convenience and value to existing customers, attract new customers and enter new markets. In a word, adding sublimation to an existing business brings DIVERSIFICATION to your product lineup and sales strategy.

The Value of Diversification

Diversification is fast becoming a power word in the product decorating industry. It used to be that you were identified by your specialty – screen printing, embroidery, transfers, sublimation, sign making, etc. But the new reality is that specialists are losing revenue opportunities because they cannot handle all the needs of their clients due expanding customer expectations and buying habits.

Diversifying your business doesn't mean running out and buying the latest and greatest equipment in hopes that you can put it to use. Instead, you should take a close look at your strengths and weaknesses, followed by an in-depth assessment of buying trends.

What products are your customers wanting that you can't deliver? How often do they order? What are the expected turn-around times? What are the preferred quantities?

Without a doubt, the state of the economy alters the spending habits of consumers and businesses alike. For example, when money is tight, people hold onto it for as long as they can. In many cases, clients will break a single large job down into multiple smaller ones spread over several months.

Another challenging trend is the greater number of customers waiting until the absolute last minute to place orders. More and more, people are looking for one-day service, as well as smaller quantities, to conserve money and control their cash flow. Thus, decoration diversification might help you to respond to those trends, depending on what type of capabilities are added.

If you are going to go down the sublimation path - and it certainly warrants some exploration – then think beyond just modifying your current production limitations. Also think about expanding the types of products you can produce and the

markets you can pursue. Any additional technologies you choose to put in place, should by generate enough new revenues and profits to justify the cost.

For example, let's say that you do work for a special events promoter. There is a good chance that you produce a lot of t-shirts, and maybe some polos and sweats as well. If you look deeper, you will see that an event has a lot more opportunity for sales in terms of decorated products than just apparel (cross-selling). Things like awards, signage, promotional products, gifts, souvenirs - none of which lend themselves to other methods of decoration, such as screen printing.

The question is what process would give you the most capabilities in terms of diversification, and still allow you to handle small runs and quick turn-arounds when needed? The answer is pretty simple – sublimation.

The Perfect Complement

Sublimation is a complementary technology for just about any business that already decorates products – especially if you're already using a heat press. There are several reasons for this. First, you already have a good idea of the market for product decoration in your area. Second, you also have an existing customer base. These two factors alone make adding sublimation a good investment if you're looking to grow your business.

Finding the right market for any product is key to business success. Let's use an awards retailer as an example. Within a local market, they can expect to get steady business year-round, as schools, local sports, organizations, companies and events always have some need for award products.

Each of these niche markets has needs beyond awards. However, laser and rotary engraving technologies focus on awards and commemorative products. This limits what an awards shop can sell to these customers. Now, when you add sublimation technology to the mix, the whole game changes.

With one sublimation system, an awards retailer can now offer engraved awards, full-color awards on acrylic, slate, aluminum - even glass. In addition, award retailers can upsell customers on promotional products, apparel, personalized gifts, and signage.

Now, when the local school comes looking for their annual order of teacher recognition plaques, the awards shop with sublimation capabilities can offer more value: photos of the teachers on the plaques, full color imaging, personalized mugs or water bottles for teacher gifts, signage for the annual recognition dinner, etc. The school gets everything they need for their event in one place, and the awards shop increases its sales and profits.

Adding Sublimation to the Mix

Sublimation is one of the least-expensive decorating technologies available. If you already have a heat press, your cost-of-entry can be as little as $600 for an SG400 Virtuoso System. Compare that to the thousands of dollars investment for screen printing, embroidery or engraving machines, direct-to-garment, laser or even wide-format vinyl printers, and you're talking about a fraction of the cost to get into sublimation.

Before making any decisions, do some research and strategic planning. Ask the key questions: What do my customers need? What do they want? Where do they get these things now? Can I produce these products for my customers instead? What kind of volume would they demand? What additional markets could I sell to? Who am I competing against? What can I offer that others can't? How will I differentiate myself? What kind of business model makes sense? Should I carry stock or only focus on custom orders? What do I already have that I can use to support sublimating products? What additional equipment will I need?

The answers to these questions will guide you to the right size system for your shop. You should also evaluate the size of your production facility. If you are running a home-based business, do you have enough room to accommodate a new printer, heat press, production area, storage, etc.?

While sublimation printers have a small footprint, a heat press for a 25" printer takes up considerably more space than a 16" x 20" press that can fit on a table top. If you own a storefront with production space in the back, how much space will you need to allocate for the printer, press and other supplies? You may find that your sublimation system fits right in...or that you may need a larger space.

It's important to evaluate the size of your production area before deciding on what equipment to buy. A 25" printer and accompanying heat press needs a larger production area than would a desktop system with a 16" x 20" press.

Finally, you have budget considerations to evaluate. How much money can you afford to invest? Sublimation systems come in many different sizes, and sometimes it is more affordable to purchase several smaller printers to handle a high volume of printing, rather than one larger printer.

A good business strategy may be to start with a small printer to learn on and build demand for sublimated products. Then, when you are getting a higher volume of orders, add a printer the next size up so that you can print more on a single sheet and offer larger products. Or, you could add two or three more of the small printers to optimize production capacity. Just make sure you think production speed and efficiency when evaluating your purchase choices. The profit you make is directly linked to how many units you make within an hour.

SALES AND MARKETING SOLUTIONS FOR YOUR BUSINESS

Working from your home offers a lot of advantages: no rent, no commuting, no dress codes, flexible hours, etc. But it also has some disadvantages as well, with perhaps the most significant one being a lack of visibility. If customers can't see you, then they aren't going to know that you exist.

Due to local zoning laws, ordinances and even HOA regulations, it's unlikely that you can put out a sign or a billboard. The fact of the matter is that if you operate from home, you are probably totally invisible to prospective customers.

Further compounding this matter is that many corporate entities view home operations as hobbies, rather than serious business operations. Making it known that you are working from your house can be detrimental in some cases.

All this means that you will have to go to your customers, rather than having them come to you. That's where building a sales and marketing program for your new business comes in. This sounds expensive, but it doesn't have to be. Begin by creating a sales kit that enables you to work successfully away from your house.

Creating a sales kit is also important for a bricks-and-mortar sublimation business, with a storefront where people shop. You will get more visibility simply by being in a location that is accessible to the public, as well as public signage. However, you also need to drive customers to your store in other ways besides simply hanging your shingle. Plus, you also have increased overhead costs to consider.

Sales calls, sample kits and creative marketing are all best practices for building a sublimation business from the ground up.

Get Creative

If you don't have many – or any – customers at this point, create some exciting ideas using stock images and lettering. Sawgrass offers lots of stock images and even sample kit graphics at SawgrassInk.com. You can also create sample product graphics using Virtuoso CreativeStudio Online Designer. Once you finalize your designs, sublimate them onto a variety of different types of substrates, so that you can easily show the full range of what you can do.

Don't be random in the designs and substrates you choose. Rather, think about specific markets you wish to pursue, then build sample kits that will appeal to those markets.

For example, if you have an interest in the school market, create a collection of items that target schools. You should create your own fictitious

Think about specific markets you wish to persue, then build sample kits that will appeal to those markets.

school rather than using a real one, so as not to show any favoritism. Your collection could include several sub-categories of products such as spirit apparel, fundraiser items, awards, kid's artwork, etc. SawgrassInk.com offers lots of sample designs for schools.

Whether you wish to pursue corporations or small businesses, create samples that focus on specific vertical markets such as: realtors / golf courses/ healthcare/ fire & rescue/ souvenirs/ memorial, etc. The idea is to have good-quality items that generate ideas and stimulate sales. Plus, it's a chance for you to show-off your abilities and creativity.

A good quality sample kit will do a lot of the selling for you. Take the time to create exciting designs and unique product ideas that will grab the attention of your potential clients.

These ideas work for both home-based and storefront businesses. Gaining a steady clientele that will become your bread-and-butter for your business is an important first step toward success.

Make Your Sample Kit Easy to Work With

Make sure you identify each sample clearly. For hard substrates print out labels and attach them to the backside.

For apparel, obtain clear name badge holders and name tags from an office supply store. Create an ID tag for each garment including item number, brand, available colors and sizes. Then place this tag inside the name badge holder and clip the holder to the shirt.

Be sure to invest in good-quality containers for your products, to make them easy to transport and to keep them from getting dirty or banged up in transit. Use garment bags for apparel, and totes or knapsacks for hard substrates. You might consider a rolling suitcase as well. Keep in mind that you don't need to take every sample on every sales call. Select the right collection for that prospect and stick with it.

In addition to real samples, it's also useful to create a portfolio with pictures of orders you have completed. Group the items and take pictures, then put this into a slide show on a tablet or laptop for easy reference.

Substrate catalogs are useful as well. Many suppliers offer an unbranded catalog without prices, so that customers can present their products to prospects without having to design their own catalog. However, if you buy from a lot of sources, catalogs can be cumbersome to lug around.

In many cases, supplier catalogs also list wholesale prices. And even if they don't have pricing, if the customer can identify your suppliers from their catalogs, they can pursue them online. Therefore, be careful what you show.

In addition to real samples, it's also useful to create a portfolio with pictures of orders you have completed. Group the items and take pictures, then put this into a slide show on a tablet or laptop.

Many decorators create their own catalogs using desktop publishing programs. Most suppliers will give you permission to use their catalog images and some will even supply you with those images. This gives you the ability to make nice catalogs of your own. Be sure to use good quality, heavyweight paper and consider a three-hole binder for easy page change outs.

The next item in your sales kit is a price sheet. It's imperative that you create a pricing system for your goods that considers quantity discounts. You don't want to spend too much time in front of the customer fumbling with a calculator. It looks suspicious, as if you don't know what to charge. In the customer's mind, this is a perfect invitation to negotiate the price.

Ideally, you will have a printed price sheet, at least for your merchandise. Some Suppliers are making their wholesale price lists available in MS Excel format, so that you can download it, create your own markup formulas and easily create a printed retail price list.

Promote Your Business Everywhere

Now that you are ready to show your wares to your customers, you need to line up some potential clients. This is where you need to develop a marketing and promotions campaign that lets the world know you exist. The world is full of potential customers, so be prepared to promote yourself anytime, anyplace.

Start by creating business cards, which are so simple, yet so critical. Carry them with you everywhere you go and hand them out in huge volumes. Be sure to include as much contact information as possible. Design a card that is clean and easy to read. Don't clutter it up with useless information and avoid fonts that are hard to read.

Many home-based businesses shy away from including a physical address to disguise their location. However, the lack of a physical address or the use of a PO Box is a clear indicator that the business is operating from a home location. Some businesses get a commercial box from a business like The UPS Store, as it comes with a physical location and uses the term "suite" instead of "box."

The second step is to ALWAYS wear something embellished, preferably with your logo. A lot of people simply do not understand what sublimation is. By wearing it, you have the perfect example to show. Plus, spectacular designs always garner comments. Be prepared to take advantage of such comments by handing out a business card and expounding on the virtues of what you have to offer. Anyone can be a customer and you never know to whom you are talking.

Here's an example. As you are checking out, the cashier in the grocery store notices your decorated shirt. "Nice shirt," she says. You respond with "Thanks. I own a business that does this type of work," and hand her your business card. "I'm Jane Doe with ABC Company. We specialize in all types of imprinted products including company shirts and caps, school uniforms, gift items, etc. If you ever need our services, please give me a call."

Keep it simple and to the point, as the checkout line is not a great place for a full-blown sales presentation. It may be that the cashier simply drops your card into the circular file (trashcan). On the other-hand, she could be the president of the PTA – a very lucrative customer to have.

Always have something you make on hand. Shirts and phone cases are great, as they get a lot of attention. When someone asks about where you got them, take the lead and introduce your business.

This strategy goes beyond apparel. There are plenty of sublimation products such as mobile device covers that are ordinary accessories of life and accomplish the same task of showing off what you can do with sublimation.

The rest of the strategy for marketing your business simply becomes a process of finding ways to put your name in front of key people. Supply products for door prizes at a school carnival. Join the local chamber of commerce and participate in all events. Sponsor a local team of some sort. Typically, this can be done for a very low investment. Send out press releases to the local newspaper. Show your products at local craft shows or festivals. There are lots of creative and fun ways to reach people.

Don't Forget the Web

A business website and social media accounts are no longer just nice to have. They have become essential business tools and a must-learn for any business owner.

While the heart of business lies in building relationships, the nature of relationship building has changed dramatically as a result of advancing technology. Fifteen years ago, an e-mail or social media campaign to reach existing and prospective customers would not have been a mainstream consideration. However, as digital media has become more and more integrated into the day-to-day routines of business, communicating through these channels has become vital for success.

Content marketing has become so important to building perceptions and relationships, especially for small businesses who must reach a variety of markets to stay competitive. And the easiest way to generate content that can be tweaked to fit the needs of many types of customers, and reach them through the media they consume regularly, is through mobile and mobile-friendly channels. This means having a Facebook page, Twitter account, Instagram feed, Pinterest boards, etc., building a following, providing quality content and creating fans. It's brand building at its foundation.

E-newsletters are a simple and effective way to communicate with customers and steer them toward new purchases using content marketing strategies.

Product decorators have a variety of different audiences they want to communicate with – from big corporate clients and organizations to local schools and sports teams. Most of these audiences are connected in one way or another. Having a mobile marketing strategy that hits as many of them at the most meaningful time as possible is what helps build brand recognition and keeps your brand top-of-mind. When you present helpful information to your audiences using the channels they prefer most, you're building familiarity and an intangible connection, which makes the customer more likely to consider your products over someone else's.

To develop an effective digital marketing strategy, consider first who you are trying to reach, and which mobile channels are most important in reaching them. For customers who are not very tech savvy, this may mean just having a simple e-mail marketing strategy; even if a customer doesn't use a smartphone or a social media account, they most likely have an e-mail address.

Collect email addresses of people who opt-in to learn more about specials and deals, and build a distribution list through a free service, like MailChimp, or a pay service, like Pardot or Constant Contact. Both give you options to build visual e-mails and newsletters with little effort, which helps deliver messages more effectively.
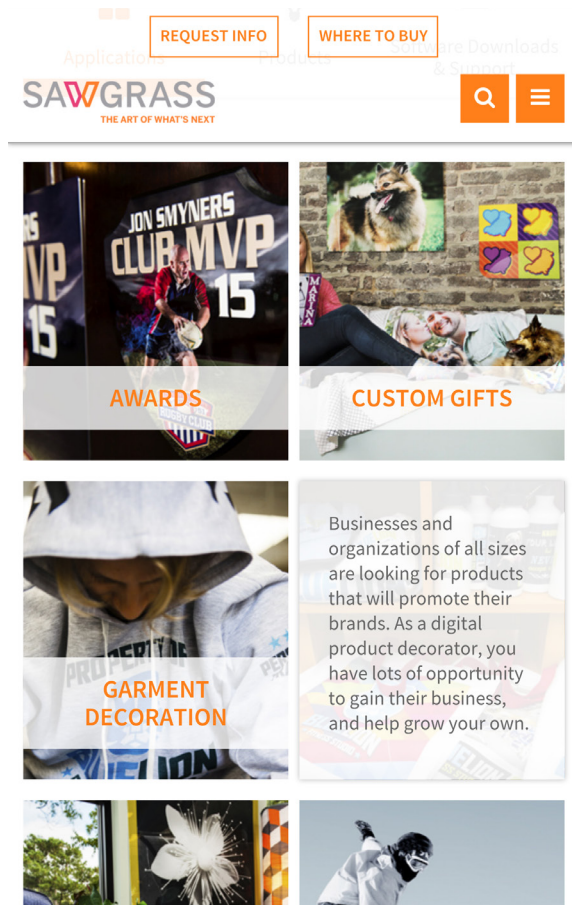
When designing or re-designing your company website, keep mobile devices in mind. More and more people access the web through their tablets and smartphones. Make sure you go with a responsive design that will make your content easy to consume and navigate on mobile screens.

Redesigning your website to be mobile friendly is also a simple move that every product decorator can accomplish, as this will enable customers to get to the information about your products and services whenever their tablet or smartphone is near.

Social media marketing is a long-term, mobile marketing strategy that every retailer should become familiar with. Using social media in the name of your business is free and effective, if you follow the proper rules of engagement. Social media users don't want to feel like they're being sold. The atmosphere on Facebook, Twitter, Instagram, etc., is one of information, content and community. If you do it right, you can engage current and potential customers and inspire them to share your content within their own connected circles, thus amplifying your original message.

Develop a communication strategy that speaks to the wants and needs of your followers (or the followers you want) and deliver messages that provide value. Sure, you can announce promotions and sales from time to time, but people will engage with your social media accounts and share your information if it's engaging, informative, visual (pictures and video are key!) and provide real value.

You also want to design messages that are consistent with the overall design of your brand and marketing campaigns, but also fit the channel you're communicating through. Make sure you strike a balance between your sales goals and the wants/needs of your target audience.

For example, say you want to sell photo mugs this fall, and you want to develop a mobile marketing campaign aimed at the schools and fall sports markets. You identify administrators, PTAs, boosters, coaches, parents and photographers as potential targets for your communication.

From there, you can identify the types of media they regularly consume: e-mail, Facebook, Twitter and Instagram are your best bets. Do research and comb through your existing contacts before reaching out through these channels to build new contacts. Follow your potential customers on social media (they'll most likely follow you back) and get them to opt into your email communications. Take the opportunity to network and do some market research, so you can build communications that will be as effective as possible.

Once you have these touch points mapped out, then you can design your communications strategy. With photo mugs, most people are awed by the final product and the sublimation process itself. Your content could focus on showing photo mugs you've recently completed, taking a video of making a mug yourself and explaining how you work your magic, etc.

Your longest communication should be the newsletter, with full-length articles. Your content should educational about your product and how they are made. Feature a short success story and make your newsletter design as visual as possible. Include a gallery, even! Then make sure you have a call-out to your promotion and maybe a link to templates for download.

After your newsletter is out, promote specific stories through Facebook posts and Tweets that have an accompanying image and link to your content. Post images of your production process on Instagram. Then follow up messages about the promotion and free downloads. Do all of this, and you have a very simple, yet effective mobile marketing campaign.

MAKING MONEY IN JUST ABOUT ANY MARKET

As a small business owner, your greatest challenge is to ensure a steady flow of work that keeps your shop running smoothly and your balance sheet in the black. However, if you are like most new product decorators, you spend much of your time running from one customer to the next, accepting any order you can get. While this is not a bad approach when you're just starting your business, it rarely leads to long-term growth.

You need good-quality, repeatable sales to keep money steadily flowing into your business. To get this, you need to be proactive rather than reactive when it comes to creating and managing a customer base. Without doing so, you will never gain a proper understanding of who your customers are and what they really want. Remember that getting an order doesn't necessarily mean making a lasting connection.

Now, what happens if you do manage to open a few doors along the way? Do you have a compelling sales pitch, and the right samples and pricing to make the sale? Probably not. Most of us tend to use a generic sales approach with no real focus, such as: "Hi. I'm Jimmy. I can put your logo on all kinds of great things like phone covers, coasters, flip-flops, t-shirts and more. We do great work and have awesome prices…"

A pitch like this doesn't differentiate you from any other business that provides sublimated products. When you deliver this pitch, you really aren't doing much more than presenting something that isn't unique and may have very little appeal to the customer. Sometimes it works, but most of the time it doesn't. And if you are doing the same thing as your competition, then about the only thing that will make the difference is price – and that is not where you want to be.

If you concentrate on a whole market, such as the tourist market – as opposed to a single company or customer – you can put all your energy into developing a single strategy that can be applied to multiple clients.

So, what should you be doing? They key to success is really getting to know your customers so that you can offer them items of value that also get them excited. Unfortunately, gaining this knowledge can be very tedious and time consuming if you simply research on a client-by-client basis. However, if you concentrate on a whole market – as opposed to a single company or customer – you can put all your energy into developing a single strategy that can be applied to multiple clients.

Targeting an entire market enables you to develop a sensible marketing strategy that focuses on creating and delivering a saleable product to those who want to buy. By putting your energies into a targeted market, you are better able to understand:

- Who are your customers
- What they want
- What they are willing to pay for your products

What Is a Niche Market?

In general, a niche market is simply a focused group of similar people or organizations that share common bonds. Niche markets can be business, civic or leisure oriented. Some niche markets include: real estate agents, firefighters, hunters, car dealers, cheerleaders, florists, pilots, art lovers, tourists, etc.

Niche markets are all around you and can be big or small. Size doesn't matter as much as the quality and strength of the market. An ideal niche is untapped, which means there is plenty of growth potential for your business. However, it's more likely that you'll face at least some competition in any given niche. Nonetheless, there will also be realistic opportunities to offer a unique product or service.

Familiarity is one of the most important traits of a successfully targeting a niche market. Knowing the subjects or organizations involved within that market enables you to understand the needs of potential customers and communicate on a personal level. It also makes it much easier to create unique products and services that have instant appeal to the market, and position yourself as an exclusive provider.

Even though tapping into niche markets is not a guaranteed profit booster, doing so does have several advantages, including:

- Increased profit potential
- Higher margins
- Less competition
- More visibility
- Customers come to you instead of you looking for them

A niche market is simply a focused group of people or organizations that share common bonds. For example, the wedding market spans lots of businesses - from catering to photography - and offers many opportunities for you to sell sublimated products.

Let's look at how you can get started finding and developing a unique niche for your business.

Step 1: Identify A Specific Market of Interest

It's important that you choose a market that you have a special knowledge about. It may be related to a hobby or a previous job. Ideally, if you can "walk the walk and talk the talk" you'll ultimately be better prepared to face this market head-on. The more you know about the organizations and/or people within this market segment, the more prepared you will be to develop a sales and marketing approach. The key is having a unique perspective in terms of your products and services.

The more specific a niche market is, the better, because you can focus your efforts on a clear set of characteristics that define the targeted group. Take, for example, the case of Jimmy, a product decorator with a love for boats, water sports and fishing. His dream was to own a marina but starting a product decorating business was more in line with his budget.

Initially, Jimmy focused his sales and marketing efforts within these outdoor niche markets, spending almost every day working with businesses within markets with which he was comfortable. He catered to boating and fishing businesses, offering them products that featured their logo.

Although most of his customers were asking for apparel, that was too common of a product category for Jimmy's company to stand out (though he never turned down an apparel sale). Jimmy searched for more unique products to set his company apart and increase its profits. Soon, he learned that boaters would pay top-dollar for personalized products, if they were unique enough.

One such unique product was personalized floor mats (see right). The blank substrate cost about $6.00, and Jimmy would spend about $1.00 worth of ink on imprinting for a customer, who would pay $35.00 retail for the finished product - a nice markup for a useful product that people loved. The mats offered non-slip rubber backing (perfect for the wet environment on a boat) and washed without fading the design. These mats became very popular in Jimmy's target market and enabled him to develop an entire line of products targeted to a wide variety of boat owners.

In this example, Jimmy initially targeted this specific niche market based on his interests. You can also target markets based on unique products that appeal to several markets. Custom floor mats are a good example. They appeal to boaters, RV owners, business owners, home owners, etc., and can lead to selling products other than floor mats.

Once you have an idea of the specific market that you wish to focus on, look at the size of the market and determine if it is worth the effort. Don't limit your scope to the local area. Think on a national or global scale. The idea is to grow this niche into something that can provide a positive stream of good-quality revenue for many years.

One of the key things about a niche is that as you immerse yourself into it and develop some exposure, so that people will spread the word about who you are and what you offer. Most niche markets have internal networks, so if you really do have unique products that are niche centric, your clients will share information about them with other members of the market. Eventually, people will start coming to you instead of you having to approach them (which is the ultimate goal).

Step 2 – Make a List of Related Sub-Markets

Almost every niche has sub-niches – other related markets that you can pursue. Identifying sub-niche markets transform what initially appeared to be a tiny marketplace into a much broader scope of sales opportunities. Make a list of other prospects that you can go after using the same or similar samples and sales presentations.

For example, when Jimmy first targeted the recreational boating market, he envisioned boat owners as one group of people. Then, he found that they really fall into several distinct sub-groups: fishermen, sailors, water sports enthusiasts, cruisers, liveaboards and charters.

Once he developed a solid strategy for boaters, he started to focus on fishermen. Jimmy discovered freshwater fishermen in the U.S. had a completely different set of characteristics than do saltwater fishermen. Those in the saltwater group typically name their boats and invest a lot of money in buying products personalized with their boat name. This was right in line with what he was already doing.

Once you find success with one product in a market, let your offering evolve as you learn more about what your customers want.

However, freshwater fishermen rarely name their boats, which took out personalization as a sales pitch angle. Most of them belonged to clubs and enjoyed showing off their prized catches. This information enabled Jimmy to focus on pitching club-branded apparel and photo products to this market.

While Jimmy's initial offerings were successful, they have evolved as he learned more about these clients. Both groups want realistic fish designs that can be applied to a wide variety of products. Photos rarely capture the details they're looking for, because fish change color after they come out of the water. To address this, Jimmy enlisted a graphic artist to create designs that were unique to the niche and unique to his company.

In many cases, these images were applied to common products, like coffee mugs or t-shirts, which aren't unique substrates. But because the artwork was unique, it made the product unique. The artwork itself is the product and the substrate is just the surface that displays the artwork.

The ends result was that Jimmy developed a kit of different samples, sales pitches and pricing for each sub-group of fishermen. This, in turn, generated higher margins and more sales.

Step 3 – Create a List of Unique Product Ideas

Growing niche sales means constantly having fresh new product ideas to show your clients. Essential questions to ask: What are their needs? Where are the product gaps? Can you develop a new product that appeals to the clients in the market?

If you are selling products to retailers, do your products help bring new customers into their stores? If you can show retailers how to make more money with your products, you will make more money for yourself. Thus, you always want to have new, unique and different products to offer.

Niche products can include unique substrates, designs or even services. In the world of sublimation, there are literally hundreds of blanks that can be decorated quickly and easily – everything from flip flops to thermometers to cookie jars. The question is, which are right for YOUR business.

If your niche market is saltwater fishing, you might consider offering boat names on fishing lures as one of your products (Yes, they exist! See the picture to the right). A similar product that features the name of a business – most likely one that engages in fishing activities or sells fishing products – could work for the promotional products niche, too.

If your niche is pet products, then personalized food bowls would be a big hit. You could easily create packages of personalized items that might include bowls, collars, leashes, pet clothing, etc. Make sure you don't forget about the humans who love their pets. Owners like to show off their furry babies. Personalized products like apparel, holiday ornaments, photo gifts, mobile device covers, coasters, mouse pads, laptop sleeves and more, let them celebrate their pets at home, work and play.

Some niches will be design or artwork oriented. The souvenir market is a good example. While substrates may be important, it is typically the graphics that drive the sale. In the case of souvenirs, the end-user is looking for a memento of their trip. A photo or graphic that captures that moment is essential. Typically, text will be used as well, but ultimately, it's the image that is the center of focus.

When choosing substrates, many of them can be repurposed for different types of applications. For example, with the memorial products niche, jewelry boxes can serve as personalized cremation urns. It should be noted though that manufacturers are now offering substrates that serve this purpose based on the jewelry box concept.

Once you have some ideas about the types of products that will appeal to your niche, it's time to consider profitability. The key for making a good profit is to have images that are unique to you – meaning the client can't buy products with those images from anyone else. This is where creativity and artistic ability can make a real difference.

For example, anyone can take a picture of the Spanish countryside and put it on a mug. How can you do this same thing uniquely AND in such a way that stands above the rest? Keep in mind, if you are selling this to a souvenir shop owner, they, too, are looking for something that sets them apart from their competition. The more unique your product is, the more likely it will catch their attention.

While you could conceivably make money with a unique interpretation of a world-famous structure, like the Eiffel tower, it is also very limiting in terms of market size.

Obviously, it only works for souvenirs in Paris, and you will be in fierce competition with others who are constantly taking new pictures with different interpretations of the structure.

Some of the best images for making a profit with a niche are ones that can aren't necessarily limited by geographical regions. If you have great images of horses, they can be used across the entire spectrum of the equestrian market. Images of aircraft also have very few limits in terms of geography. Guy Harvey created an empire based on fish designs. While the products are important, it's the images that make his company so unique and more importantly, profitable.

Step 4 – Develop Sample Kits

Regardless of what your niche is, one huge key to making sales is having a high-quality set of samples focused on showing what you offer. In addition, your samples should encourage larger orders by having multiple unique pieces that are interrelated. Remember, your clients don't know what you can do until you show them. Even if they only ask to see a single piece, make sure you show several other products to open their eyes and expand your sales potential.

Once you have a good-quality list of product ideas, start turning them into samples. Focus on samples that can be shown to multiple customers and be prepared to modify or update your samples as you develop your niche. Though you may have to invest a sizable amount of money and time into your sample kits, this is a critical step for making sales.

Let's use a real example. Going back to the niche of personalized boat products, here is a list of samples that could be put together based on a single boat logo: coffee mug, serving tray, hand towel, wine bottle caddy, beverage insulator, coaster, baby bib, soap dispenser, etc. This product assortment allows customers to see a nice collection of items available for their boat and encourages customers to buy more pieces.

In our example, there were many more products Jimmy could have showcased, but this was a good starting point. Each of these products had the same logo because the intent was to broaden a sale by letting the client see how the graphics tied all the product ideas together.

Ultimately, you want to create targeted groups of samples for each niche and sub-niche that you pursue. Always be on the lookout for new products you can add to the initial base set. Your samples need to be fresh, exciting and different. The graphics need to be eye-catching and should include photo images where possible to help set sublimation apart from other forms of decoration.

When creating samples, you should avoid using real logos and/or brands, as this can work against you in some cases. For example, if you had the business logo of a well-known company on a group of promotional products and then showed them to a competitor of that company, it might have a negative effect on the client. The same principle is true for fan wear and spirit products. In most cases it's best to create a fictitious entity for your product samples.

On the other hand, it's ok to have a portfolio of completed client projects, provided your customers approve. This can be showcased via pictures in an album or an online slideshow.

Step 5 – Develop a Sales Pitch

Just as important as showing your products is developing the right pitch. Many times, your words alone will determine the perceived value of the product, so invest time creating a script that positions your product at the highest level of value possible. There are no magic words here. What you say and how you say it will be determined by the niche itself, which is another reason why research is vital successful selling.

It has been said that a product is only worth what someone will pay for it. These are words to live by when crafting your sales pitch and setting prices. Margins are controlled by the customer's perception of value. If a customer thinks your product is worth $100, then they may be willing to pay that amount for it. If they think it's only worth $10, then that is the maximum they will pay for it. Your challenge is to identify the perceived value for specific products in your markets.

Image courtesy of Coney Island Transfer

Margins are controlled by the customer's perception of value. This value increases with the amount of personalization you include, such as names and photos.

If you know your customers, because you researched the market, then you are in a better position to create appealing products that generate higher markups. Higher markups come from catering to the wants and needs of customers. And by the same token, you can generate the right sales pitch to ensure the highest perceived value of the product and/or service by matching the attributes of your product to the needs of your customer.

The first thing to understand is that you are not selling sublimation – and for the most part, you aren't selling products either. You're really selling something that fulfills the needs of the niche.

A sublimated water bottle is not just a water bottle when it has a company logo on it. It is a billboard for promoting someone's business, summed up in one simple word: advertising.

Often, the wrong emphasis is placed on simply the product being sold. A mouse pad is a boring product. Saying you sell sublimated mouse pads means nothing to the customer. However, saying you sell products that promote and advertise your potential client's business fulfills a need, because promotion is an essential part of growing any business.

In marketing terms, this approach is referred to as "spinning," which basically means elevating an everyday item to superstar status by changing the context in which you frame it. A customer needs a good reason to spend money with you, so you must come up with a compelling reason why they should.

Simply saying you produce good-quality products at a great price is not usually an exciting sales approach. Just putting a customer's logo on an everyday promotional product may not make you unique. Your goal is to figure out how to set yourself apart. If you target small businesses, you need to find unique approaches and that means digging deeper. So, let's do that.

Most businesses already use promotional products as advertising tools. The concept is giving out products to their customers and potential clients gets their name in front of people. Giving away promotional products is an effective approach, IF those products get seen by other people. Thus, the first characteristic of a good-quality promotional product is that it gets noticed. Look for products that serve a need, are usable and does not get shoved into a desk drawer or discarded.

Effective promotional products also need to make a connection to a company, brand or product. Most are nothing more than a logo, which may mean nothing to someone not familiar with the organization. For example, what does Hillside, Inc. do? They happen to be a real estate company, but their name and logo don't convey that very well. If you integrate a photo onto the product along with the logo, then the product would tell a story, which elevates the perceived value.

Sally Anne's is a fast food restaurant that delivers. The company name says very little about what it does, but an image of a burger says a lot. In fact, the image can make the user of this mouse pad hungry just by looking at it.

To capitalize on this reaction, Sally Anne's has provided a menu and contact information right there for users to act upon when their bellies start to rumble. The combination of a menu and contact information is a "call-to-action," and putting that combination on the mouse pad makes this a very powerful promotional product.

Another way to guarantee products get used (and therefore seen) is to personalize it with a name. Something like a coffee mug with the company logo and the client's name on it is a fantastic personalized, promotional product, as it will likely get used for many years.

Focusing your sales pitch around concepts like these helps you sell your products. And the only way to develop these angles is to understand the market and create unique solutions to fulfill its needs.

Step 6 – Reaching Your Niche

Knowing exactly who you want to reach and what the appropriate message should be enables you to spend your promotional time and money wisely. Instead of spending a lot of time and money on hit or miss options that are spread out across a large segment of clients with no common thread, you're targeting exactly whom you need to hear your messages.

Face-to-face sales are always one of the best solutions for reaching your niche, when practical. Ensure you have a specific set of samples with a specific pitch, then search for individuals or organizations that fit your niche.

Work on approaching them, even if it means "cold call" sales. And remember that your chances will be improved because you have a focused approach, rather than a general pitch.

Trade shows and events that cater to your niche are also useful. One of Jimmy's best approaches for the boating niche was mobile production at major boat shows. He provided "while-you-wait" personalization services. Not only did he make money, but he also generated great exposure. Jimmy was able to talk one-on-one about his products and services. In addition to bringing in new clients, this approach has also helped him land some major accounts with large corporations.

However, it should be noted that the effectiveness of mobile production is only as good as the event. Some events net very little return on our efforts/investment, while others were considerably more profitable. Over time, you can try different venues and eventually find some excellent events to participate in repeatedly.

Exposure and acceptance work together. With the boating and fishing niches, Jimmy donated items to nonprofits associated with the niche. This earned him a spotlight and widespread appreciation for "giving back." His goal became total immersion in the market, so that his company was a part of it, not just a vendor. It took years of effort, but it definitely paid off.

Joining your local chamber of commerce is also a simple task that can have some nice benefits – if you pursue it correctly. First, get a member list – which equals sales leads! But to really make it pay off, be active in the affairs of the organization so that you get your name out in front of other people and organizations.

You can also use online methods, as most niches have active networks and are engaged in social media. Finally, don't expect overnight results. Utilizing these online resources should be seen as one of many tools to keep your name in front of people.

Summing it All Up

There are many entrepreneurs doing quite well with niche markets. In fact, most of the successful companies got there via this route. Targeting niche markets is not a magic solution, but it is a realistic approach for utilizing your resources. There are so many great markets, products, applications, etc., that can pay off if you take the time to research, develop and test market your ideas.

Look, listen and implement! Nothing is an overnight success. Start somewhere and learn from your mistakes. Most niche markets will guide you if you have an open mind and plenty of patience.

PRICING FOR PROFIT

How much should I charge? This is one of the most common questions we hear from customers. Pricing is a delicate balance between making a profit and the price people will pay. Set your prices too low, and your cash flow and profitability will suffer. Set them too high, and your sales will suffer. There are several things to think about and to add into your calculations when setting prices.

Know Your Market

Identifying trends and introducing new products is a great business strategy. To be successful with new products, find out who else is selling similar products in your target markets and what prices are being

charged. Look at what the products are, how they are presented, and any other information such as sales volume.

Once you have evaluated the market, ask yourself some essential questions: Is there enough room for another business? What new and innovative ideas can you bring to customers to make yourself stand out? What range of pricing is there within the market now, and how well can your company work within those parameters?

Calculate Your Costs

Whether you have a home-based business or your own shop in town, your cost formula is the same: divide all the operational costs for a given period by the number of units produced during the same period.

Operational costs – or overhead - includes ALL anticipated costs: rent, power, insurance, phone, website, e-mail, advertising, marketing collateral, chamber and professional association fees, depreciation on fixed assets (printer, heat press, computer), accounting fees, etc. They should also include your ink, substrates, paper, software and artwork expenses.

The more you print and press, the lower your actual costs are, when you account for all expenses.

Then there are labor expenses. Even if you are a solo operation, you need to pay yourself. Your time and expertise are valuable, which is why it's so important to establish an efficient system of sublimation production. The time spent on doing anything other than making sublimated products for sale is a missed opportunity for more revenue. Remember, it's the product people are paying you for.

How do you begin to calculate overhead? Start by projecting your all anticipated costs for the year, including desired paycheck. Then decide how many weeks you want to work per year (typically 48). Finally, divide your projected annual overhead cost figure by that number. This will give you a rough weekly overhead figure to either meet or work toward. Then divide by 40 hours to come up with an hourly overhead figure for your business.

For this example, assume that your hourly cost of operation worked out to be $30.00. If you could print and press 30 items per hour, then each one costs $1.00 of overhead to produce. If you could make only two units per hour, then the overhead cost per unit is $15.00. That's a big difference.

This example may seem elementary, but it very accurately illustrates how important efficiency is to profitability. The more you print and press, the lower your actual costs are, when you take in all your expenses. Small and new businesses often fall in to the trap of simply looking at the percentage of profit on a single item based on the tangible costs, rather than forming an overall business strategy that looks at the big picture of all costs involved in doing business.

Don't Forget Hidden Costs

Downtime is something that is a given in any kind of production environment, yet most business owners don't realize how much money this costs them. Let's consider these figures for the production of 12 award plaques, based on the $30/hour cost of business established earlier:

Cost of Operation:
$30/hour = $.50/minute

Production Costs:
- Print and Press Cost: 2 minutes x 12 x $.50 = $12
  - **Total: $12.00**

Downtime Costs:
- Setup Time: 15 minutes x $.50 = $7.50
- Post-Production Time: 15 minutes x $.50 = $7.50
- Substrate Swap: 12 minutes @ $.50 = $6.00
  - **Total: $21.00**

True Production Cost (Beginning to End): $33.00

Production Cost Per Unit: $2.75

In this example, you see that the time it takes to simply print and press the plaques is only $12, or about $1 per unit. However, there is a lot more going on than simply printing and pressing in the production process.

Setup time includes preparing artwork, substrates, press and other equipment for printing and pressing. Post-production time includes taking the plaque off the press, removing the transfer, inspecting for quality and setting down for cooling. You could also include packing for shipping in there, too. Substrate swap is the time it takes to prepare a new substrate for pressing and getting it into the press.

All of these steps takes time, and as you can see, time is money. The true overhead cost of sublimating 10 plaques is not $12 for the print and press time. It's $33 and includes all the time devoted to fulfilling the order. When you're looking to increase your profits, speeding up your production operation is a smart first step.

Forget the Old Formula

The rule of thumb for most retailers is to multiply cost times two or three, to ensure profit. With sublimation, however, this formula can leave a lot of money on the table. The reason is that using the cost of sublimation production in this formula produces a price that is far less than the market will bear.

Take the plaque example from earlier. We determined the real cost of that job was $2.75 per plaque, plus the cost of the substrate. If the substrate cost $8.00, the final product cost is $10.75. Using the x2 rule, the retail price for the plaque would be between $21.50. However, the going price in most markets for a sublimated plaque is between $30 and $40. That is quite a bit

more than $21.50. Don't leave money on the table by using formulas that don't consider the perceived value of the product.

Adding pictures, names and custom colors always add value to a product in the eyes of the customer, but not much to your expenses. To keep design time down to a minimum, focus on creating designs that can be quickly and easily edited to includes these little premium additions. The result will be more cash in pocket, with minimal time added to your production.

Sawgrass offers a spreadsheet to help you with calculating costs and setting your prices, along with a webcast completely devoted to the subject.

PART 6

Troubleshooting and FAQs

TROUBLESHOOTING COMMON ISSUES

Colors are Not Correct
- **Symptoms:** Colors are not reproducing the way you expect when pressed
- **Reason:** Color management profiles or software was not used during printing
- **Solution:** Choose Virtuoso Print Manager as the printer when prompted after selecting "Print" in your graphic design program

Image is Dull or Faint When Pressed
- **Symptoms:** The colors are not as vibrant as expected; image is faint in one or more areas
- **Reason:** Time, temperature or pressure is too low
- **Solution:** Increase time, temperature and/or pressure

Image is Vibrant when Pressed, But Blurred
- **Symptoms:** The colors are vibrant, but the image is soft or blurred
- **Reason:** Oversaturation of ink in the print or too much time in the press
- **Solution:** Choose a different print speed and/or color mode in Virtuoso Print Manager to address saturation. Reduce press time.

Image has a Brown Cast
- **Symptoms:** Colors, especially black and red, have a brown tinge
- **Reason:** Overheating of the ink
- **Solution:** Reduce temperature

Blurring During Transfer
- **Symptoms:** Blurring of all or specific areas of the image
- **Reason:** Transfer paper is not tightly wrapped around the substrate
- **Solution:** Use both adhesive spray and heat tape to more securely wrap the paper to the substrate.

Gassing Out
- **Symptoms:** Areas of distinct blurring
- **Reason:** Transfer paper has creases or wrinkles
- **Solution:** Careful and consistent application of the transfer paper

Blurring After Transfer

- **Symptoms:** Blurring at the edges of the image or ink rising/creeping upwards away from parts of the image after transfer paper is removed
- **Reason:** Substrates retain heat so ink may continue to "gas" for several minutes after transfer
- **Solution:** Swift removal of transfer paper after imaging, and/or increase speed of cooling; use a fan if air cooling. Do not stack hot substrates as the sublimation process may continue which will reduce image quality.

Inconsistent Image Quality across the Substrate

- **Symptoms:** Image quality is inconsistent across the substrate resulting in blurring/light or dark patches
- **Reason:** The substrate is not in the center of the press. The pressure applied needs to be increased. The press is faulty or has uneven temperature distribution.
- **Solution:** Ensure the substrate is centered and pressure applied is even. Increase pressure (incrementally) until you reach the desired result. Refer to the manufacturer for service.

Blue Flecks on a White Surface

- **Symptoms:** After pressing a white substrate, small blue threads and speckles appear on the white areas
- **Reason:** Dust, particle fibers were on the surface of the substrate or the print during pressing
- **Solution:** Use a lint roller to thoroughly clean the substrate before affixing the transfer. Use compressed air to blow away particles from the transfer before affixing to the substrate.

SUBLIMATION FAQS

Can dye sublimation be used on ceramics, glass, wood and metal?

- All of these products need a polymer coating for sublimation to take place
- Sublimation dyes need polymers to bond with for color transfer and permanent coloration

Can I sublimate plastics?

- Yes and no
- You cannot sublimate onto just any piece of plastic. Many polymers cannot withstand the amount of heat needed to achieve sublimation
- Even if they could stand the heat, the added pressure and press time will deform them. Many of them melt and shrink.
- Fiberglass Reinforced Plastic (FRP) is the plastic of choice for sublimation

Image courtesy of My Imprint Studio

Metal, like these aluminum panels, can be sublimated if they have a polymer coating.

Can I sublimate onto cotton?

- Sublimation only takes place with polymers. Using regular sublimation paper to transfer a design to cotton may result in some coloration. However, this will wash out because the dyes have not bonded to the fabric.
- There are some films and transfers on the market that will enable you to transfer a sublimated design to cotton
- Fabric enhancers, preparation sheets and sprays are also used to add a layer of polyester to non-polyester fabrics so you can sublimate onto these fabrics
- Sawgrass also offers the Virtuoso HD Product Decorating solution with ChromaBlast-HD inks and transfer paper

- Though not sublimation inks, ChromaBlast-HD is a formulation of commercial-grade pigment inks with binders that react to binders in ChromaBlast transfer paper
- Together, they enable customers to apply permanent digital transfers to cotton

Can I sublimate onto cotton/poly blend?
- You can, however the dyes will only affix to the polyester fibers
- The inks that attach to the cotton fibers will wash out
- Your colors will not be as vibrant as they would be with 100% polyester
- You can use a cotton/poly blend to create a distressed look for your artwork

Can I use any printer with sublimation inks?
- Not all printers can work with sublimation inks
- Some produce heat internally, which can cause early gassing of inks, damage to the hardware and unreliable prints
- Most printers that are compatible with sublimation inks have been engineered for office use with thin, pigment-based inks. Using sublimation inks, which are highly viscous rather than thin, is an aftermarket use for the printer. As a result, these printers do not typically last long, as the dye solids in sublimation ink damage internal hardware. They also use much more ink to achieve rich colors.
- Sawgrass' line of Virtuoso printers are the only ones manufactured specifically for sublimation printing. They produce the highest-quality prints with the least amount of ink spend.

Why are my colors washed out on the transfer when it comes out of the printer?
- This is perfectly normal
- The heat and pressure of your heat press will activate the sublimation process, which allows the true colors of the design to imprint

Where do I go for support?
- Your dealer should be the first stop in troubleshooting issues
- You can also get support at SawgrassInk.com:
    - https://www.sawgrassink.com/Portal/Tech-Support/Tech-Support-Wizard.aspx

What images can I use for sublimation?
- You can use any image that you can import to or create on your computer with such popular programs as CorelDRAW and Adobe Photoshop
- You can also use images and designs you create in CreativeStudio Online Designer
- Any images that are of high-resolution (min of 200 dpi) is suitable for sublimation reproduction

Why are my colors not coming out right, especially reds and blacks?
- Check that you are using Virtuoso Print Manager, ICC profiles or RIP software to manage your colors
- Make sure you are using Sawgrass inks that are not past the use-by date
- Make sure you are using high-quality transfer paper
- Experiment with times, temperatures and pressures
- If you complete all of these steps and are still having trouble, contact your dealer's technical support or Sawgrass Technical Support:
    - https://www.sawgrassink.com/Portal/Tech-Support/Tech-Support-Wizard.aspx

Why are there little blue flecks on my shirt after I sublimate onto it?
- These are dust and fiber particles that were on the shirt before it was pressed
- To avoid this in the future, make sure to heavily wipe the fabric with a sticky lint roller before pre-press and your final press
- You can also use pressurized air to clear the transfer of any fibers you can't see

Why does my design look smudged or like there's another copy on my substrate after pressing?
- This is called ghosting
- Sometime during the sublimation process, the transfer shifted in its contact with the substrate
- This causes smudging and additional imprinting in areas that were not intended to be decorated
- Use of both spray adhesive and heat tape to secure transfers can help prevent this
- Flat heat presses can also cause a vacuum effect with some substrates. The substrate will stick to the top platen when you open the press and fall down once the vacuum seal is broken. This movement can cause ghosting.
- Open your heat press slowly to check for vacuum sealing. If it's happening, close the press only enough for the substrate to meet the bottom platen. Wait for the seal to break, which should only take a few seconds. Once it does, then open the press and remove your substrate.

Do I need color management software or ICC profiles to print?
- Yes. One or the other is needed to convert the colors you see on your screen into similar colors on paper.
- Sublimation takes this a step further, in that the colors printed on your transfer paper have to become the colors you chose on screen, and variables, such as the paper, ink, substrate and press time/temperature/pressure, all affect the end colors
- Virtuoso Print Manager is a custom driver that enables you to select print quality, speed, substrate type, transfer paper and other variables that can impact your colors
- ICC profiles and RIP software act similarly, but cannot take the environmental variables into consideration in calibrating colors
- Each of these options have their uses in sublimation printing

Why can't I sublimate onto dark-colored substrates?

- Sublimation inks are semi-transparent, and the color of the substrate will have some effect on the color of your image once pressed
- For example, if you press a blue heart onto a pink shirt, the heart will have a slightly purple hue to it, as the pink mixes with the blue
- White substrates result in the most vibrant prints, but prints can also be vibrant and colorful on light-colored substrates, such as fabrics
- A very dark color, like black, can be used to imprint on a darker blue or red substrate and still be visible
- Some metallic substrates, such as ChromaLuxe photo panels, have a clear coating on them. When you press your image onto these substrates, your color may not be as vibrant as it would be on white, but the sheen from the substrate will add a new metallic aspect to your design.

I've seen lots of sublimated products with white in the designs. How is that accomplished?

- The designer works white into the design where it's needed
- The printer does not apply ink to those portions of the design. It is blank space on the transfer paper
- When the design is pressed onto a white substrate, the natural color of the substrate is seen in the places of the design that are supposed to be white
- If you include white in a design and press onto a colored substrate, the color of the substrate will show up where the white is supposed to be

Why should I use Sawgrass products when there are less expensive printers and inks available?

- Sawgrass delivers more value for your dollar. You get a complete system with full company support and proven, award-winning print quality.
- Sawgrass offers reliability. In a business where time is money, Sawgrass systems keep you printing with very little maintenance. Other cheaper printers take a lot of time to maintain.
- Investing in cheaper products can end up costing you more in the long-run. Lost time refilling cartridges, ruined prints because of smudging or banding, broken print heads that make your printer unusable, ink carts that are drained dry instead because you're not warned you need to refill your ink and cause print head damage...these are the hidden costs of "cheap" printers and inks.
- Cheaper printers and inks oversaturate prints, using up to 50% more ink than Sawgrass printers do. So, you may pay less for your ink, but you ultimately use more AND lose image quality in the process.

CREATIVESTUDIO FAQS

How do I save my design?
- Click on the pink "Save" button on the upper right-hand corner of the screen. A new screen will open.
- Choose a file name for your design, and whether you want to save it as a template (you can use in the future and edit) or an image (you can access through "My Images," but can't edit)

How do I upload a file (image)?
- Select "Image" from the top menu. This will open up a new screen where you can search for images in the CreativeStudio library, or click the "Upload" button in the upper-left corner.
- Once you click on "Upload," you can choose JPEG or PNG image from your computer to upload
- Type in a name for your image, then click on the check box that says: "I have the rights to print this image." The "Upload" button will activate. Click and your image will upload to your library.
- You can then search for your file name or scroll through your library to find the image you just added. Files are listed in alphabetical order.
- Once you click on the image, it will immediately populate into your template

What types of files can you upload?
- You can upload JPEG and PNG files to CreativeStudio

How do I download CreativeStudio?
- CreativeStudio Online Designer is a web-based program.
- This means you access it through a web browser and not through a program downloaded and installed on your computer
- You do need to download and install Virtuoso Print Manager to print from CreativeStudio

How do I make the pictures I upload look better?
- The images you upload are shown at a low resolution so that the software will work faster for you
- The larger an image file, the longer it takes for a program to open and render the image so you can work with it
- By using a low-resolution version of your picture on-screen, CreativeStudio is able to continue working for you without any lag time
- When your design prints, the image will be as sharp and clear as the original file you uploaded

Why can't I access CreativeStudio?
- You must be a registered Virtuoso HD Product Decorating System user and registered to use the SawgrassInk.com website to access CreativeStudio
- This includes downloading, installing and registering Virtuoso Print Manager, which you will need to print from CreativeStudio
- If you are logged into SawgrassInk.com and have registered your Virtuoso Print Manager software, contact Technical Support for help accessing CreativeStudio:
  - https://www.sawgrassink.com/Portal/Tech-Support/Tech-Support-Wizard.aspx

How do I look up old print jobs?
- You can look up your old jobs on your CreativeStudio User Admin page, which can be accessed by the dropdown located on the top right corner of the screen in CreativeStudio Online Designer
- It is a gray tab with your username on it. Once you click on it, a dropdown list will appear.

- Choose "Administration." This will bring you to the User Admin page.
- There is a list of tabs across the top of the screen that will bring you to different options
- The "Jobs" section of your User Admin will allow you to search for jobs, sort by job name, and date created
- From this page you can also rename, delete, or print your jobs

How do I clean up my library?
- You can access your image and template library on the CreativeStudio User Admin page, which can be accessed by the dropdown located on the top right corner of the screen in CreativeStudio Online Designer
- It is a gray tab with your username on it. Once you click on it, a dropdown list will appear.
- Choose "Administration." This will bring you to the User Admin page.
- The "My Images" tab will allow you to search for and delete multiple image selections
- You will also have an ability to individually rename your images, if needed, click "edit" button to do so
- The "My Templates" tab will allow you to do the same with your saved templates

How to manage uploaded pictures (deleting/editing name)?
- You can access your image and template library on the CreativeStudio User Admin page, which can be accessed by the dropdown located on the top right corner of the screen in CreativeStudio Online Designer
- It is a gray tab with your username on it. Once you click on it, a dropdown list will appear.
- Choose "Administration." This will bring you to the User Admin page.
- The "My Images" tab will allow you to search for and delete multiple image selections
- You will also have an ability to individually rename your images, if needed, click "edit" button to do so

How do I fit more images on a page from CreativeStudio?
- There are a couple of ways to do this. The first is to click on the "Print" button in the upper right-hand corner of your screen.
- You will be prompted to name your print job and choose if you want a bleed line included
- Once you are done with that, a new screen will say Save Complete and have a "Click here to print" button
- Click on that button to send your image to Virtuoso Print Manager, which will open immediately
- If it does not, it may not be active. In that case, go to your program listing and open Virtuoso Print Manager from there. Your image should be there, ready to print.
- Click on the "Jobs" tab and set the number of copies you want to make of your design. The preview to the right will show one print per page.
- Click on the "Layout" tab next, and select "VPM Preforms Layout"
- You can now choose what size paper you want to print on, and the preview will arrange the number of prints you want onto the fewest pieces of paper needed to accommodate the prints. You can also add in spacing on this screen.
- Once these settings are complete, make whatever additional settings necessary for your prints and then click print
- The other way to print more than one image on a page using CreativeStudio is to save your print job, and then look it up in the "Jobs" tab of the User Admin page
- You can look up your print jobs are saved on the User Admin page, which can be accessed by the dropdown located on the top right corner of the screen in CreativeStudio Online Designer
- It is a gray tab with your username on it. Once you click on it, a dropdown list will appear.
- Choose "Administration." This will bring you to the User Admin page.
- Click on the "Jobs" tab and locate the design you want to print
- Enter the number of copies you want
- Then select "Print" at the top of the page. This will open up Virtuoso Print Manager.
- Click on the "Layout" tab next, and select "VPM Preforms Layout"

- You can now choose what size paper you want to print on, and the preview will arrange the number of prints you want onto the fewest pieces of paper needed to accommodate the prints. You can also add in spacing on this screen.
- Once these settings are complete, make whatever additional settings necessary for your prints and then click print

How to save a graphic template I designed in CreativeStudio so I can access it later?
- Click on the pink "Save" button on the upper right-hand corner of the screen. A new screen will open.
- Choose a file name for your design, and then save it as a template (you can use in the future and edit) using the dropdown
- When you want to use it in the future, it will be in you "My Templates" screen and able to be applied to a new project

I cannot locate a template for the product I want to decorate. How do I get my product added into CreativeStudio?
- Please contact Sawgrass Technical Support for this request:
  - https://www.sawgrassink.com/Portal/Tech-Support/Tech-Support-Wizard.aspx

How do I work with layers in CreativeStudio so that I could move objects within my design to be on top or on bottom?
- Select the layer you want to work with on the right-hand list of your screen
- Once the layer is activated, click on "Object" in the top menu
- Then select "Move Up" or "Move Down" until it is in the desired position

How do I locate paper size when selecting product templates?
- It is best to always design on whichever paper size you are planning on print on
- When you go through the initial selections of product type to select the correct template, you will also be prompted to select a paper size for printing
- Pick whichever size of paper you are planning on printing your single design on
- If you wish to print more than one design per page, you will be able to adjust your paper size to a larger one through Virtuoso Print Manager

How do I save mockup image created in CS to computer to show to my clients?
- Click on "Zoom" in the top menu, and select "Product Mockup Maker" from the dropdown list
- Once the mockup comes up, click the "Download" button, name your file and save
- You can find your file in your browser's downloads folder

Why don't I see a product mockup for mugs and other 3D products?
- CreativeStudio does not currently have the capability to create mockups for 3D products, such as mugs and bottles
- This is something we are working on adding in the future

How do I change a font?
- Select the layer you want to work with on the right-hand list of your screen
- Once the layer is activated, click on "Object" in the top menu
- Select "Text Font" or any of the other text options, and make your desired font selections

Can I upload my own font?
- Users cannot upload their own fonts in to CreativeStudio

How do I move multiple elements at once?
- Simply hold down the shift key while you select each element from the list on the right of your screen
- This will activate all elements you choose, and then you can move them as one

How to create a product bleed line?
- When you export your design to print through Virtuoso Print Manager, you will be prompted to choose whether you would like a bleed line added to your print.
- Check the box when you see the prompt, and your design will include the line

VIRTUOSO PRINT MANAGER FAQS

Why should I use Virtuoso Print Manager?
- Virtuoso Print Manager was created as part of the Virtuoso HD Product Decorating System and designed specifically for the printer and ink combinations in each solution
- Years of development have gone into ensuring this software adjusts to specific settings – paper, ink set, substrate, print speed, user-defined colors and more – to ensure optimal print quality and ink spend
- You will have access to the latest software updates; no other Sawgrass color management solution is continuing development
- You will also be able to streamline your production with Virtuoso Print Manager's growing suite of tools to maximize efficiency and color accuracy

Can I use Virtuoso Print Manager with my Ricoh?
- Virtuoso Print Manager is only compatible with Virtuoso printers: SG400, SG800 and VJ 628

What Virtuoso printers and ink sets does VPM support?
- SG400 and SG800 printers with SubliJet-HD and ChromaBlast-HD
- VJ 628 printers with SubliJet-HD Dual CMYK, Pro Photo and Pro Photo XF inks

Does Virtuoso Print Manager replace PowerDriver and MacProfile?
- Virtuoso Print Manager replaces PowerDriver and MacProfile for Virtuoso System printers – SG400, SG800 and VJ 628
- PowerDriver and MacProfile can continue to be used for legacy printers, such as the Ricoh 3110, but will not be developed further and no longer available for direct download from the Sawgrass site
- If you own a legacy printer, we encourage you upgrade to a Virtuoso system so that you are using the latest printers, software and inks for sublimation printing
- We strongly recommend that ALL Virtuoso users upgrade from PowerDriver or ICC profiles to Virtuoso Print Manager in order to take advantage of the significant color management and productivity advantages that the software offers

Is Virtuoso Print Manager a sufficient substitute for RIP applications for VJ 628?
- Virtuoso Print Manager has many RIP-like capabilities including step and repeat / nesting (image and job ganging), auto print, as well as Hot Folder and Web-to-Print workflows
- Virtuoso Print Manager is not a RIP, and RIPs are still necessary for spot-color related ink sets and applications, including SubliJet-HD FLEX
- ICC profiles for popular RIPs will continue to be available and further developed for all VJ 628 ink sets, including Dual CMYK, Pro Photo, Pro Photo XF and FLEX

What's the difference in OS and design software compatibility between Virtuoso Print Manager, PowerDriver and MacProfile?
- Virtuoso Print Manager is a universal print manager for Virtuoso systems. It works on Windows and Mac OS. It works with CreativeStudio, CorelDRAW, Adobe design programs, Silhouette and many other desktop graphics software.
- MacProfile and PowerDriver only work with Corel and Adobe. PowerDriver only works with Windows. MacProfile only works with with Mac OS.

What does "universal print manager" mean in regard to Virtuoso Print Manager?
- Virtuoso Print Manager is universal in that it is a single print management program that works with all Virtuoso printers, Windows and Mac OS, and both desktop graphics software AND CreativeStudio
- Prior to the launch of Virtuoso Print Manager, Virtuoso users had to use several different programs to manage their printing and production, depending on their printer, OS and graphics software
- With Virtuoso Print Manager, these users can manage their jobs across platforms with all Virtuoso systems

If I am upgrading from PowerDriver or ICC profiles, do I have to register my printer again?
- Yes, you will have to register again
- The registration you completed before was for the software you were installing, not for the printer itself
- Since you are registering new software and associating it with your printer, a new registration needs to be completed

With Virtuoso Print Manager, do I need to install the ColorSure Palette in CorelDRAW or Adobe programs?
- Yes, if they plan to use ColorSure for spot color values when designing

What's the difference in the color management of Virtuoso Print Manager as compared to MacProfile and PowerDriver?
- MacProfile is a single ICC profile
- Virtuoso Print Manager and PowerDriver offer a different profile for each ink set, substrate and media combination, which delivers superior color output on the widest range of products, ink and transfer media
- Virtuoso Print Manager also offers Advanced Color Control and ColorSure replacement spot color values

What's the difference in productivity with VPM as compared to MacProfile or PowerDriver?
- PowerDriver and MacProfile only offer a File-to-Print workflow
- Virtuoso Print Manager also offers printing options with hot folders, step and repeat, image and job grouping, and the ability to group jobs created from multiple sources - CreativeStudio Online Designer or desktop software

What does an ICC profile offer that Virtuoso Print Manager does not?
- ICC profiles offer no notable advantage, other than compatibility with OS X versions prior to 10.9, which Virtuoso Print Manager does not support

Does Virtuoso Print Manager work with JPG, JPEG, PNG, .SG, .SGZ or PDF files created in any design software?
- No. Files must be created from supported design software:
  - CreativeStudio Online Designer
  - CorelDRAW X6 - X8
  - Adobe Creative Cloud; Adobe Illustrator, Adobe Photoshop
  - Adobe Photoshop Elements
  - Silhouette
  - SubliEVO

What are Virtuoso Print Manager Minimum System Recommendations?
- Virtuoso Print Manager minimum system requirements are:
    - Windows 71 / Windows 8/8.12 / Windows 10 / Mac OS 10.9 or Higher
    - Windows 32 bit is NOT supported
    - Minimum RAM: 2 GB
    - Recommended RAM: 8 GB
    - Recommended CPU: Dual Core 2 GHz
    - Min. Free HD Space: 10% Free
    - Minimum Resolution: 300 DPI
- Supported Design Software for File-to-Print Workflow
    - CreativeStudio Online Designer
    - CorelDRAW X6 - X8
    - Adobe Creative Cloud; Adobe Illustrator, Adobe Photoshop
    - Adobe Photoshop Elements
    - Silhouette
    - SubliEVO
- Supported Design Software for File-to-Open or Hot Folder Workflow
    - CreativeStudio; .SG, .SGZ
    - CorelDRAW and Adobe CC; .JPG, JPEG, .PNG, Optionally .PDF
    - NOTE: Files must be created from supported design software - Corel, Adobe CC or Creative Studio Online Designer.

What design software does VPM support for File-to-Print workflow?
- VPM supports the following software:
    - CreativeStudio Online Designer
    - CorelDRAW X6 - X8
    - Adobe Creative Cloud: Adobe Illustrator, Adobe Photoshop
    - Adobe Photoshop Elements
    - Silhouette
    - SubliEvo

What file types does Virtuoso Print Manager support for File-to-Open or Hot Folder workflow?
- Virtuoso Print Manager supports the following file types:
    - CreativeStudio; .SG, .SGZ
    - CorelDRAW, Adobe, etc.: .JPG, JPEG, .PNG, Optionally .PDF
    - Minimum Resolution; 300 DPI
    - NOTE: Files must be created from supported design software.

What do the color modes on the Color tab of VPM mean?
- **Photographic** – The most realistic, accurate mode; keeps colors and details true to the image
- **Graphic** - High saturation to pop colors
- **Vivid** - Very vibrant and colorful, heavy color saturation and contrast, possible loss of fine details due to color saturation
- **Cool Grey** - Black and white setting with more blue undertones, output is cool, striking and dramatic
- **Grayscale** - Black and white setting that is more neutral and accurate
- **Classic** – Pulls old profiles that were in VPM prior to v5.1, includes legacy PowerDriver profiles

What happened to the Group Images option in VPM?
- There used to be a Group Images option on the main screen of Virtuoso Print Manager. This has been moved to the Layout tab. Once you click on that tab, you will have two choices:
    - Preserve Layout from Designer
    - VPM Performs Layout
- Choosing VPM Performs Layout enables the same functionality as the Group Images option in previous versions of the software

How do I print a color palette from VPM?
- Locate and click on the VPM icon on your computer system toolbar. This will bring up a small menu of options.
- Click on Palette Manager
- Make your ink, speed, substrate, paper, mode and palette selections according to the dropdown options. Select ColorSure in the palette dropdown to print the ColorSure Spot Color Palette.
- You can de-select any of the colors in the palette, which enables you to print only the colors you want
- Click print, and then press your palette on the substrate of your choice

How do I print a palette of colors similar to a custom color I designate?
- Locate and click on the VPM icon on your computer system toolbar. This will bring up a small menu of options.
- Click on Palette Manager.
- Click on Add in the top right corner
- Enter the RGB values into the screen that opens, and then click Next
- A palette of colors will appear on the next screen, starting with the color you entered the RGB values for. You can choose to have a small, medium or large increment of similar colors generated.
- Select your printer, page size and source options. Then click print.

ONLINE EDUCATIONAL RESOURCES

SawgrassInk.com provides a wide variety of useful online resources dealing with sublimation and digital decoration that can be used in conjunction with and in addition to this book.

Creativity and Commerce Blog

Sawgrass' monthly blog regularly features a variety of articles to help you learn and grow with sublimations. Here, you'll find out what's new in CreativeStudio, what the latest software updates are, about other product decorators who are having success with sublimation, about new trends and products, and more.

- https://www.sawgrassink.com/Resources/Creativity-and-Commerce-Blog.aspx

How-To Application Videos

The Sawgrass How-To Video Series is designed to provide you with visual instructions for accomplishing a variety of digital decoration applications. Quick and to-the-point, they make learning new processes simple.

- https://www.sawgrassink.com/Resources/Pressing-Instructions.aspx

Webinars

Sawgrass hosts educational webinars featuring various experts discussing a wide range of topics. Subjects include: Making money, pricing, marketing, selling, troubleshooting, graphic design software basics, etc. All you need to participate is a broadband internet connection, a computer with speakers and a comfortable chair.

- https://www.sawgrassink.com/Resources/Webcasts/Webinars.aspx

Webcasts

Each webinar is recorded and placed in our online library of webcasts. Should you miss a live event or simply wish to review the material, you can view our webcasts 24/7. You will need to register one time for access, but after that you can freely come and go for knowledge on demand.

- https://www.sawgrassink.com/Resources/Webcasts.aspx

Trade Shows and Seminars

Attending trade shows is the ideal way to find out about new technologies and solutions for growing your business. In addition to hands on opportunities with cutting-edge digital decoration techniques, trade shows also provide a range of educational opportunities in the form of seminars and workshops.

At SawgrassInk.com, you can find a list of upcoming events, free passes to shows (when available) recommended seminars and lists of digital decoration dealers that are exhibiting.

- https://www.sawgrassink.com/Resources/Trade-Shows.aspx

Stock Designs and Sample Images

Looking to get started on a sample kit or practice your sublimation techniques? Visit our stock image library, which is full of designs that you can use for any purpose.

- https://www.sawgrassink.com/Resources/Stock-Designs.aspx

Find an Authorized Sawgrass Dealer

The extensive network of Sawgrass dealers is composed of a diverse group of business professionals with a wide range of expertise and knowledge in many different markets and technical disciplines. Dealers are another great source for education and training resources. You can find a complete list of Sawgrass dealers using our Dealer Locator.

- https://www.sawgrassink.com/Special-Pages/Dealers.aspx

Follow us on Social Media

Stay up-to-date on Sawgrass' latest news and opportunities by following us on Facebook, Twitter and Instagram.
- https://www.facebook.com/SawgrassInk/
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- https://www.youtube.com/user/SawgrassInk

DIGITAL PRINTING GLOSSARY

Additive Colors: Additive colors refer to the colors used to produce other colors. The three primary additive colors are red, green and blue. Combining one primary additive color with another creates a secondary additive color. The three secondary additive colors which can be created are cyan, magenta and yellow.

Combining equal amounts of primary additive colors produces white. Combining equal amounts of secondary additive colors produces black.

Bitmap Image (BMP): Is a type of image file format used to store digital images. The term bitmap comes from the computer programming terminology, meaning just a map of bits.

CMYK: CMYK is an abbreviation of the four colors, cyan, magenta, yellow and black.

Color Balance: Referring to image processing and manipulation, color balance is the adjustment of the intensities of colors in an image. Changing the intensity of each color produces the visual results required. The three primary colors used are red, green and blue.

Color Curves: A color curve in image editing is a color correction tool which enables the user to emphasize certain color channels within an image. Applying a curve through all color channels can be used to make light parts of image lighter and dark parts of an image darker, to increase the contrast. Applying a curve to individual channels can be used to emphasize that particular color over the image.

Color Management: Is the controlled conversion between the color representations on your computers monitor to the colors produced after pressing your image on to a substrate.

ColorSure: The ColorSure Palette that resides within Virtuoso Print Manager is the best way to achieve spot color accuracy in sublimation transfers. The palette includes more than 170 colors that, when loaded into your graphic design software, allow you to fill solid portions of artwork with a color from the palette. By employing colors from the ColorSure Palette, you are able to control how your image will look once transferred. With the help of the ColorSure Palette, you will precisely achieve the correct colors, whether you are matching colors for a custom order or selecting colors for new artwork.

ChromaBlast: The key to the patented ChromaBlast system is the chemical reaction between the ink and coating. Where they touch, there is a cross-link reaction under heat and pressure that chemically bonds the printed image to the cotton fiber.

DPI: DPI is an abbreviation of the words Dots per Inch and refers to the amount of dots or pixels which make up your image.

EPS: EPS is an abbreviation of Encapsulated Post Script and is a standard file format for importing and exporting graphics images. EPS files are widely used as they are compatible with a large range of computer programs.

GIF: Short for graphics interchange format. A file format often used for Web graphics; not suitable for photos because it can't handle more than 256 colors.

Heat Press: Is used to sublimate your printed transfers on to the chosen substrate. Your heat press should be set to the correct time, temperature and pressure for each substrate.

Hue: Hue is the term for the pure spectrum colors commonly referred to by the color names - red, orange, yellow, blue, green and violet - which appear in the hue circle or rainbow.

ICC Profile: Is a color management file which is used in the output stage of the graphics software program. This file ensures that the colors which are shown on the screen are correctly delivered on the chosen substrate.

JPEG: A JPEG is the most commonly used digital image format and is the abbreviation of Joint Photographic Experts Group.

Layer: A way of managing elements of an image in stackable overlays that can be manipulated separately, moved to a different stacking order, or made partially or fully transparent.

Masking: Image masking is the process of eliminating the background from a selected image, isolating the required selection.

OEM Driver: OEM refers to original equipment manufacturer; the driver is the application that connects the computer to the printer.

Pixel: A pixel refers to a single dot in a graphic image. All images are made up of millions of pixels.

PPI: PPI is an abbreviation of the words Pixels per Inch and refers to the amount of dots or pixels which make up your image.

PPC: PPC is an abbreviation of the words Pixels per Centimeter and refers to the amount of dots or pixels which make up your image - it is the metric equivalent of PPI.

Primary Colors: The three primary colors are Red, Green and Blue. These colors can be combined together with different intensities to create a whole spectrum of colors.

Raster Image: Is a type of graphic made up of a grid of dots or pixels. Most images found on the web are raster images and are commonly compressed into a Jpeg file.

Resolution: The resolution of an image refers to the amount of DPI or PPI in an image. The more dots or pixels in an image, the higher the resolution, thus a visually higher quality image.

RGB: RGB is an abbreviation of the three colors, red, green and blue.

Sublimation: Is the process of transition of a substance from the solid phase to the gas phase without passing through an intermediate liquid phase. In the dye sublimation industry, this is the ability of the ink to transfer under heat and pressure.

Sublimation Transfer Paper: Is the specialist paper used to transfer your image from the printer to the substrate. Sublimation transfer paper is able to absorb more ink and also dry quickly.

Substrate: Is a term used in the dye sublimation industry to describe the base material onto which images will be transferred.

TIFF: Stands for tagged image file format. A popular image format supported by most Macintosh and Windows programs.

UV Coating: You can coat your sublimated items with UV coating which will ensure your items do not fade if exposed to direct sunlight.

Vector Image: Is a type of graphic made up of points, lines, curves and shapes. In most circumstances, vector images can be scaled by any amount without losing clarity. Vector images are most suitable for logos and illustrations.
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