

## Dye Sublimation for Beginners

### Introduction

Whether it is prospective customers visiting our stand at Trade Shows or visiting our showroom in Norfolk I am surprised by the numbers of people who are thinking about Dye Sublimation as a new venture, or want to know more and if it is a technology they can exploit.

This guide is written to provide hints and tips for you at the start of your foray into the world of sublimation. If you have carried out any research on the subject you will no doubt have been confronted by a bewildering array of equipment, materials and jargon.

You probably have some questions of your own such as:

- Where can I learn about sublimation?
- Where can I buy the equipment?
- Where can I buy the blank imprimables?
- Where can I get training on how to set up and use the equipment that I buy?
- Who will help me if things go wrong?
- What is the operating cost?

In this document we aim to answer these questions for you. While it is a user-friendly technology, it is made a good deal more difficult if you are not familiar with the compliant graphics packages listed below, and you must be prepared to invest time and effort to make the system work for you. We deal with that aspect later but it is essential that if you have not used these packages that you get some professional training in their use.

### Dye Sublimation Printing - what's it all about?

Let's have a look at the 5 steps in a typical dye sublimation system.

**Step 1** – Firstly we generate an image or artwork using graphics software.

**Step 2** – Then we can personalise or customise the image with text and illustrations.

**Step 3** – The next step is to print an image in reverse onto sublimation heat transfer paper using special inks or dyes.

**Step 4** – We then use heat & pressure to transfer the image to the substrate. This has to be either Polyester, or a high Polyester mix material, or it could be polyester coated mug, poly-cotton t-shirt, a flag, or a glass or ceramic tile. The heat changes the ink into a gas allowing it to permanently penetrate the surface of the item being decorated, rather like a tattoo. It really is that simple.

**Step 5** – Finally you can sell the decorated item and make some money.

### What equipment do I need?

A number of people we speak to make the wrong buying decisions at the outset of their entry into Dye Sublimation. The two most important things are good quality equipment and knowledge, so it would pay dividends to talk through your plans with a specialist. The most common error is pitching the start-up equipment at the wrong level. You must give careful thought to the volumes of prints and the size of the image that you want to print.

The answers to these two important questions will help you determine which equipment you should use.

To make this topic easier to understand, we're going to divide the equipment into three categories:

1. Pre-Production
2. Production
3. Post-Production

#### 1. Pre-Production Equipment

In this part of the review we will be looking at:

- Computer systems
- Printers
- Ink
- Transfer Paper, and
- Layout accessories

## Computer Systems

While you will already have a computer system, you must consider carefully whether you can run your dye-sub business through it.

If your accounts person, embroiderer or administrator needs to use the computer regularly you probably need a separate stand alone machine, and your office machine may not be man enough for the job. So if you need an additional system or are starting from scratch there are a number of features and benefits and many variables to consider when selecting a computer.

Remember you are buying a machine for business use – not a home computer.

- Choose a well-known brand name such as Dell, HP, Toshiba or Apple Mac
- As a minimum you need a graphics package which is dye-sublimation compliant; either Photoshop, Illustrator or CorelDRAW, other applications may not work properly with the dye-sub colour management software (See Below).
- Make sure that these are full editions and not home & student versions as they don't always support the dye-sub colour management software. Older versions may not work correctly so the minimum versions are as follows:  
Photoshop CS  
Illustrator CS  
CorelDraw 12  
Photoshop Elements 8
- Make sure you get an up-to-date operating system such as Windows 10 on a PC or OS 10.12 "Sierra" on a Mac .
- Don't pick a machine with a slow a processor. If you pick one that is too slow you will live to regret it when you get busy and time is of the essence.
- You will end up storing a large number of images so you must have a decent hard-drive. You also need to be methodical from the outset about filing and storage of artwork. Keep a log of all your jobs and back-up frequently. External USB hard disks starting from 1Tb capacity can be purchased quite cheaply.
- The amount of Random Access Memory (RAM) dictates how much your computer can process at any one time so don't over-look this part. Your jobs will need a lot of RAM.
- Your warranty is only as good as the manufacturer but try to find one in excess of the normal 1 year. Some manufacturer such as Dell can offer 3 year warranties. If the warranty is RTB (return to base) it is imperative that you have backed up your data as recommended earlier. Always keep the original packaging for PC's and printers in case you need to return them.
- You need a good speed for communication with printers, scanners and other peripherals, and it is recommend that you have three or more USB 2.0 ports.

## Printers

With so many different makes of printer about why should we and you choose a Ricoh or Virtuoso?

The reason is simple only Ricoh and Virtuoso printers work with sublimation inks because they are the only printers which have the sort of print-head technology that we need.

Printers use two technologies:

Thermal & Piezo Electric

- Thermal Printers such as HP use heat to fire the inks, and when using heat activated dyes this causes instability in the ink and clogging of the print heads.
- Ricoh and Virtuoso Piezo technology sends electric pulses through the crystals, which is much more stable and leads to a better result for us.

There are 3 current printers to choose from in the desk-top market:

1. Virtuoso SG400 Printer (A4)
2. Virtuoso SG800 Printer (A3)
3. Virtuoso VJ-628 Printer (A2)

As we have just discussed there isn't a vast choice of printer brand but that doesn't mean that there are not some obvious pitfalls to avoid:

- Don't go for a printing area that is too small but equally don't buy a big machine that is way outside what you need. You have to think about the size of products that you want to print onto.

- If you plan on printing in volume then the print speed will be something that you should consider. The time spent printing has a monetary value to you.

### **Cutting Plotter**

Few people choose a cutting plotter at the outset, but if you want to do logos, badges or mug wraps in volume a cutting plotter will automate a large part of the shape cutting process for you. You can buy a Craft Desk-top machine to cut A4 or larger Graphtec wide format cutters. A good quality guillotine works just as well as some electronic cutters.

### **Dye Sublimation Inks**

Sublimation inks are a vital component of successful sublimation and they come in pre-filled high capacity cartridges.

- The Ricoh & Virtuoso printers use a gel based closed cartridge system which prevents clogging and maximises the life of the ink
- The old Epson printers used a dye-sub pigment in a carrier liquid, so good housekeeping is required to prevent clogging. Open Bulk Ink Systems were available for older Epson systems but had problems with clogging if the printer was not used on a daily basis. You had to be careful not to introduce dirt and air into system.

Since the Ricoh & Virtuoso gel inks were introduced to the dye-sublimation world you no longer get these clogging issues.

### **Sublimation Paper**

The paper that you choose is an important component in achieving a successful outcome. Listawood always recommends the use of the correct sublimation papers and there are 3 brands to choose from:

- **TruPix** – This is a multi-purpose paper which can be used in Ricoh, Virtuoso and Epson printers and dries almost instantly.
- **TexPrint** – This paper can only be used in Epson printers. It is designed for use on hard items such as ceramics, tiles and UniSub products. Heavy ink lay down or dark images may need a couple of minutes to dry.
- **JetCol** – This paper can only be used in Epson printers. It is designed for use on soft items such as clothing and fabrics. JetCol is designed to hold and release more ink which is what soft items require and therefore can take up to 30 minutes to dry.

### **Pre-production Accessories**

The cost of buying accessories must be set against the time saved and the effect on rejection rate. Some suggestions are as follows:

- **Tape Dispenser** - Using a dispenser for your heat tape frees your hands and helps keep the wrap tight on mugs.
- **Templates** - Use Templates wherever possible, we can supply a good number of templates to get you started but you may want to make these for yourself for some of the simpler products and shapes. They make decorating and the correct placement on the product much easier.
- **Guillotine** - If you are decorating in volumes and consider using a good quality guillotine or electronic plotter cutter.
- **Mandrel** – You could consider using a mandrel to wrap mugs as it will help you achieve a consistently tighter wrap and reduce the amount of rejects from poor wrapping.

## **2. Production Equipment**

In this section we are going to look at:

- Flat-bed Presses
- Mug Presses
- Speciality Presses
- Production Accessories

### **Heat Presses**

After printing your photograph or artwork you need a heat-press to transfer the image to the substrate. Your heat press or presses can make up the lion's share of the start-up cost so it is important to make the right choice. Start with the press that you cannot do without and add any others as your business grows. There are three main heat presses to choose from: Mug Presses, Flatbed Heat Presses and Plate Presses.

These are available from £225 to £895. A word of warning! Some mug presses will not sublimate a full range of mugs and the smaller flatbeds only sublimate A4 images - so ask before you buy!

## Flat-bed Press

There are 2 basic designs of flat-bed press for you to choose from. They are the “clamshell” and “swing away”, and each has its merits. The clamshell as its name suggests opens up like a clam, whereas with the swing away the top moves to the side to allow you to dress the product. The disadvantage of this type of press is that it requires a good deal more space in use. Platen sizes vary so think about what size you want to print and decorate. In addition you can get small Hobby presses and pneumatic presses. The hobby presses can be very useful if you intend to or want to sublimate at craft fairs or shows or you know your volumes will be small, but it is called the hobby press for good reason. Remember its small and not an industrial machine.

The heavy Pneumatic presses are ideal for large volume production. Our promotional products division decorates 75,000 fabric mats a year using this type of press and it ideal for this sort of volume.

## Mug Presses

Since many of you will be selling mugs this is quite an important area for you to think about. There are essentially two mug press designs, vertical and horizontal.

Listawood only sells horizontal presses but the designs are much the same. It is the robustness and the flexibility that is more important. You need to check whether the mug press will press more than just the 10oz/11oz mug?

- When you buy your mug press give a thought to the size of designs you want to print as not all presses can decorate over the same area. Our mug presses are designed to press all of the shapes of mugs that we offer.
- For the same reason you need to think about the size of mugs you want to decorate – only one size or multiple sizes. If you buy a press for 11oz mugs you may struggle to decorate the UK standard mug which is the 10oz. The smaller the diameter of the mug press means that the number of mugs you can press will be limited. There is no perfect solution and clearly the difference in size from a stein to a child’s mug means that one press cannot press every mug.

You have got to compromise over some aspect whether this is your budget or over the range you sell. Some customers buy two presses, others a double-header and others use ovens to ensure that they can sell all the mugs that they want.

There are some considerations. While the right mug allows top-to-bottom print, no mug press will enable you to do a complete full-wrap you have to use an oven for these.

- Your heating element should be good for around 1000 cycles so you need to be able to get spare elements. (These cost about £65).
- Not all machines function in the same way but most will happily go from one mug to the next if you are doing them one after another. You need to watch out when the time between mugs is several minutes or longer. Some presses will cool as part of the design. When we are using this type of press we put in a blank mug for a full cycle to bring it up to temperature before we decorate the mug.
- Most machines these days have a digital timer even if their display is analogue, as long as they are accurate it doesn’t really matter. Analogue will normally be cheaper.
- A good alert is vital. You will not have the time to just stand and watch your mugs cook and you need to get on with other things. The timer alerts you to when you need to go back to the machine and it should not be ignored or your mug will over-cook.
- Most of the mug presses are easy to work with, but the location of the machines is as important for your safety and that of your customers. If you or they touch a mug when it comes out of the press you will burn yourself. A badly sited machine could burn a customer, and that is not what your insurer will want to hear in your first week of trading.

## Specialty Presses

The remaining presses that are available have very specific applications, such as presses for caps and plates. You might want to consider whether your business plan makes them viable. If you don’t you risk paying a good deal of money for something you will get little use out of.

- Combination Presses are the equivalent to the DIY drill with loads of attachments and have not proven so popular in the UK. The bonus is that you can buy attachments that will give a variety of applications.
- You can also buy some extensions to add functionality to an existing press.
- Specialty Presses are also available which are dedicated to a single specialised application such as plates or caps.

## Production Accessories

There are a number of accessories that can help you during production a few are listed below:

- Silicone Sheeting – Which can be used in a variety of pressing situations, helps conduct the heat and to achieve a print over tile edges and mug lips.
- Heat Tape - Is a MUST HAVE item that helps keep your image in place during cooking.
- Heat Proof Gloves – These make for a safe working environment and really MUST be worn to avoid burns.
- Tape Dispensers – These are the equivalent of an extra hand, indispensable for good wrapping.

## 3. Post Production Equipment

There are a couple of issues to consider here:

- 1) Equipment to help you cool down the product after sublimation, and
- 2) Point of sale packaging.

### Post -Production Cooling

There are two main reasons for wanting to do this. Firstly because there is a risk that the product will carry on sublimating, and secondly you need to be able to handle the product safely. Of course you want your customers to be safe if they are near your production area, all the products come out of the presses at over 200°C and they will badly burn you when they first come out of the press.

Put signs up in your production area if it is close to staff or customers or think very carefully about where you store the hot items.

You can essentially stand the decorated product on anything you like that will help it cool down quicker and will not burn your work surfaces. You can use:

- Cooling Plate for tiles, ceramics, metals
- Metal table for tiles, ceramics, metals
- Pie or Cake rack for tiles, ceramics, metals
- Use a fan to circulate air and cool the items down

## Presentation

Presentation accessories and point of sale packaging are a great way to sell your products; they provide added value to the product and additional revenue for you. If you are going to offer them don't make the mistake of including them in the price for the item, it will make you uncompetitive.

The sort of products that are available include:

- Tile & plate stands
- Presentation boxes
- Jigsaw Envelopes
- Coaster boxes

## What Can I Print Onto?

Market surveys reveal that there are literally hundreds of substrates to choose from, below is a list of the main ones; not all available from us.

- Babies Bibs
- Badges
- Bags
- Bar Runners
- Bone China Mugs
- Candles
- Caps
- Carpet Tiles
- Clocks
- Cushions
- Dog Bowls
- Glass Chopping Boards
- Glass Floor Tiles
- Glass Coasters
- Jigsaws
- Lustre Mugs
- Magnetics
- Metal
- Mouse Mats
- Mugs
- Pennants
- Pet Collars & Leads
- Pillow Cases
- Plates
- Steins
- Sweatshirts
- Teddy Bears
- Tiles
- Trinket Boxes
- Technology and Phone Cases
- T-shirts
- Umbrellas
- Unisub
- WoWMugs

In the UK the number one substrate, by far, is mugs and drinkware. This is followed by technology cases, t-shirts and mouse mats.

### **Where Do I Go From Here?**

We hope our document has given you a good feel for dye sublimation, but we still recommend you investigate the points below before getting stuck in.

1. Develop a business plan that identifies the market or markets that you want to target (e.g. Photo-gifts, and Business-to-business Promotional)
2. From this plan you will have identified the goods you think that you will want to sell in the short, medium and long term.
3. The list of products that you think you can sell will dictate the size of printer and heat presses that you need to purchase to start off with and those which you can comfortably leave until later.
4. Discuss your plans with Listawood, we will be able to advise you on what options you might consider (you can do this on the phone with our tech support team or come to our showroom & in-house training facility). We can also supply estimated cost-per-print information – essential for calculating your overheads.
5. Work out where the gaps in your training are. You must get training on the graphics packages if you are not familiar with them – see 6. However we can help you with dye sublimation training with our free-of-charge one-to-one training for customers who come to our facility.

A typical training session would cover:

- Setting up your printer
- Colour Management – Use of ICC Profiles
- Printing from Applications (Photoshop and Corel Draw)
- Cutting and Wrapping Mug Transfers
- Heat Transferring in a Mug Press
- Heat Transferring in Flatbed Heat Press

6. If you are not familiar with the graphics packages that are dye-sub compliant (Photoshop, Illustrator or CorelDRAW) you will probably need to book yourself onto a course or buy a tutorial programme.

Courses are available in and from a variety of places:

- Local community colleges and FE centres
- Computer learning centres
- Third party books such as PhotoShop for Dummies
- On-line classes
- Some stationers are selling part-works which build week-by-week into a useful reference guide.

### **Technical Support**

We are also renowned for the quality of our technical support, which is delivered in four ways:

- Telephone advice
- In house training and demonstrations
- Web based technical downloads
- Remote access PC/MAC support and demonstrations

Our tech support team is trained to deal with your technical queries and our aim is to help you to solve your problem in the same working day. Many of the issues that may be perceived as problems can simply be from a misunderstanding of the process. Do not worry, we have seen and heard many of these issues in the past and will most probably have an answer for you. In the event of us not being able to resolve your particular problem by telephone you will be invited to bring your equipment to us and we will endeavour to rectify it free of charge. If we are unable to rectify the problem we will suggest a course of action to you to help to bring you back into production as quickly and economically as possible.

### **Colour Management Software**

When you purchase a printer you will need some form of colour correction to use for the sublimation process. We supply PC and Mac compatible colour management software for all the printers that we supply complete with written installation instructions.

### **About Listawood Trade Supplies**

Listawood is a volume decorator of ceramics by sublimation and our technical support comes from experts in their field. New starters can take advantage of this knowledge with a free of charge visit to our in-house training facility at our custom fitted factory.

We offer a one-stop shop for sublimation pintables and equipment through [www.listawoodtradesupplies.com](http://www.listawoodtradesupplies.com). Ceramics are our speciality, only Listawood can provide pioneering mug enhancements like Duraglaze® and SatinSub®, the former being the only truly 100% dishwasher proof sublimation mug in Europe.

We are also stockists of proven branded equipment such as Ricoh and Virtuoso printers and Hix heat presses, and our renowned Genie Mug Press is the best in its class.

**For further technical support please call us on +44 (0)1553 818848**