

GO RIO Dye Sublimation FAQs



Q. What is Dye Sublimation?

A. Dye: To impregnate color into a material

Sublimation: A change directly from a solid to a gaseous state without becoming liquid.

Dye sublimation simply put "solid dye particles being changed into gas using heat and pressure, which then bond with any polymers present, and then change back into a solid."

The basic inkjet dye sublimation process uses a heat sensitive sublimation dye, dissolved in a liquid, to print graphics and text onto special carrier paper. This is called dye sub transfer. The dye sub transfer and sublimatable fabric are then placed into a heat press. When the heating cycle is completed, the image on the paper has been transferred to the item and has actually become part of the surface. Run your fingers across the surface of sublimation and you will feel nothing. The reason for this is that sublimation is always done on a polyester coated item. At high temperatures, the solid dyes in the print converts into a gas without ever becoming a liquid. When the item is removed from the heat press, the temperature drops, the pores close and the gas reverts to a solid state. It has now become part of the fabric; it cannot be washed out or come off, unless the actual fibers are damaged.

All inkjet sublimation is done on white fabric (substrates is the technical term). The reason for this is because the inks are actually semi-transparent, when sublimated, and need a background to show up. White is the ideal background because it does not clash with the colors. Indeed, the white background actually enhances the colors. This allows printing a wide gamut of vibrant, brilliant colors on multiple substrates

The Advantages of Dye Sublimation

- Dye Sublimation has the highest print quality for printing on fabric/textiles.
- Dye sublimated textiles are very durable and can be laundered without any concern of them losing their appeal.
- Full Color Process - no difference is cost between 1,2,3,4 color designs
- Can print larger print sizes than a litho press or screen press

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- The proof is an actual output of your file on your fabric of choice
- Photographic quality image capability
- Very cost effective
- More elegant look and feel than vinyl or plastic
- Portability - can easily be rolled/shipped
- Storage - Does not wrinkle
- Lightweight
- Easy to fit stands, frames, & structures
- Many options to choose from
- Does not affect breathability on fabrics

How Long Has Dye Sublimation Been Around?

Historically, the process of Dye Sublimation dates back to 1957. It was first termed "Transfer Printing" by a man called Noel De Plasse working for a small printing company in the north of France. He discovered that dyes could pass directly from a solid form to a gaseous state when brought to a temperature above 370° F. This change was termed "sublimation" and is the basis for transfer printing. The process of sublimation has its roots in printing processes such as screen, lithographic, and flexography printing. Popularity of these processes grew in the sixties and seventies, which in turn led to the creation of Electrostatic sublimation.

Q. How does the dye sublimation process compare to screen printing?

A. Dye-sublimation print on polyester material does not affect the hand of the material and is more desirable than screen printing. The colors are very vibrant, do not wash out and the process is less messy than screen printing which requires messy solvents and dyes.

Sublimation is also very popular with sportswear manufacturers- many printed uniforms (cyclewear, soccer, basketball and football) on the market today are done via sublimation. Unlike screen printing, where the ink lays on top of the garment, the sublimation process produces permanent images that will not crack or fade. Also, sublimation infuses the image into the thread of the fabric so that it does not affect the breathability of the garment. Most athletes prefer sublimated jerseys versus screen printing jerseys. Screen printing leaves a layer on top of the garment which affects breathability and the comfort of the athlete.

Dye-sublimation is also cost efficient and very popular for short-run customization of fabrics. Special logos, pictures and designs can easily be created or scanned into the computer. Transfer paper can be generated and custom prints finished in a matter of minutes as opposed to screen printing which requires lengthy time for preparation of the stencil and assembly of the mesh fabric.

Q. How do I choose the right Heat Transfer Press?

A. Before deciding on which Heat Transfer Press to choose it is first important to understand the two main types of Heat Transfer Machinery:

Heat Presses are often used for printing on individual pieces such as cut apparel parts, T-shirts, sports apparel, tote bags, etc. Platen presses are also used to print on rigid substrates such as wood, metals and ceramic tiles.

Sublimators are often used to print fabric continuously (roll to roll) and to print large fabric parts such as signs and banners which may be too large for a standard platen press. Sublimators can also be used to print sports apparel and other cut apparel parts. Sublimators are more productive than platen machines for sublimation

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printing on cut apparel parts and are therefore used when production volume is high. Sublimators are not used however to print onto rigid substrates such as wood, metal, plastics or ceramic tile.

Choosing the right Heat Transfer Printing Press depends on a number of factors:

- Types of Product being printed
- Print Size
- Production Requirements

If you wish to print full coverage on 42" wide yard goods a Sublimator machine is required. T-shirts, mugs, wood or tile are best printed on a platen machine. Cut apparel parts can be printed on either a platen press or a sublimator. Production requirements often dictate which type of machine is used. Banners and soft signage are often printed on Sublimators.

Q. Can I use sublimation inks on darker substrates/materials?

A. Sublimations inks generally do not transfer well to darker type materials. Sublimation inks use dye to permeate the material and typically transfer better to lighter colored materials.

Q. Will sublimation work on cotton surfaces?

A. The sublimation inks are designed to bond to any polymer coated material, and will NOT bond to cotton surfaces. There are polymer sprays available that allow sublimations inks to work with cotton t-shirts, but they typically work best on shirts that are a mix of polyester and cotton.

Q. Can I sublimate on blended fabric with polyester and cotton? How much polyester is required?

A. We are often asked this question from clients in the garments industry. Generally speaking, the higher the percentage of polyester in the fabric the better the sublimation results. At minimum we recommend a blend of 60% polyester - or in other words the majority of the fabric should include polyester.

Q. How much area does one liter of ink cover?

A. Approximately 1000 square feet, however keep in mind results may vary depending on RIP software, printer configuration settings and ink coverage area.

Q. Can I use regular paper as a carrier?

A. Theoretically you could use a coated paper such as Bond 24; however we recommend the use of a good quality transfer paper, the reason for this is that the transfer paper has a great impact on quality, ink film thickness and also in ink consumption. The difference in cost is negligible and the impact in quality is huge.

Q. How resistant are the sublimation inks to UV fading?

A. Like any printed products, direct sunlight will cause sublimated products to fade over time. Factors that affect fading are temperature and weather - for example an area with more direct sunlight and dry, arid conditions will probably contribute to faster fading.

With that being said, our inks are specially designed for longer UV resistance. The inks greater resistance is partly due to the inks formulation process which produces higher density of dyes than typical ink manufacturers. This formulation also produces more vibrant color output.