



**Printers'  
National  
Environmental  
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Center**

## **Fact Sheet**

**PNEAC**

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### **Controlling Plastisol Ink Waste in Textile Screen Printing**

**By Marci Kinter**

Plastisol is general name given to the PVC (polyvinyl chloride) inks that are used in textile screen printing. These inks are extremely diverse in opacity, viscosity, application, and finish appearance. Plastisols are solvent free and are cured with the application of heat at temperatures between 300°F and 340°F. In the liquid form, plastisols will not gel or cure without heat, making them extremely easy to use and the most popular ink system for printing textiles. This ease of use can also make printers a little less diligent than they should be in the proper storage and disposal of the product. An open container of plastisol can remain useable for many years without becoming unworkable.

One of the best ways to control ink waste is to use a matching system. Most of the major ink manufacturers use at least one Pantone ink matching system. The advantage of using a color matching system is that it allows you to make the exact amount of ink needed for an order. With a little practice, most screen ink departments can cut their waste by over 50% by using a matching system.

Matching systems are not expensive for the printer to use. The base inks needed are priced about the same as pre-mixed inks. The only extra equipment required is an accurate weighing scale and a mixer. A smaller printer can be up and running with a matching system starter kit, a scale, and a small mixer for under \$1,000. Larger printers can expand upon this base concept by adding dispensing equipment that will allow the facility to speed up the process and allow for larger batches. These systems can cost as much as \$50,000 , however, a facility should work with their ink manufacturer prior to implementation to ensure compabitility with the manufacturer's system.

The newest software for these matching systems actually includes what is called "work-off" or recycle calculations. By putting in the weight and Pantone number of your leftover ink, the software will tell you what colors can be made using the leftover amount. The reduction in waste ink can be extremely significant. Many printers have reported that by using recycling software, they have been able to reduce their true waste plastisol by over 80%.

A shop that uses 20 gallons of ink per week, and mixes most of their own colors, can generate between 5 to 50 gallons of true waste ink per year. True waste ink is ink that must be disposed because it can no longer be used. Disposal of this waste ink has a cost and an environmental impact. If the ink is left in the liquid state, it is considered hazardous and must be disposed of properly. Through utilization of an ink-matching system with recycling, ink waste can be reduced by 50% to 80%, depending upon the mix. If a shop primarily uses standard inks, the actual amount of waste generated can be very low. If a shop uses a lot of specialty inks, such as puffs, glitters, metallics, or catalyzed inks, then the amount of waste generated will be typically greater.

Even after utilization of a mixing system, you will still have some waste ink that must be properly disposed. One of the best ways to handle this ink is to sort it into containers based on color. In the first container, put any scrap inks that contain little or no white pigments. In the second container put inks that contain white pigment. In the third container, put all the odd ball scrap such as puff (an ink that expands when heated during the curing process), metallics, shimmers, etc.

If a couple of gallons is in the first container, a small amount of black pigment can be added, and then the ink can be used in non-critical applications. It is recommended that this blended black be used on one-color simple prints. It has the tendency to bleed out colors when it touches other inks in a wet-on-wet print, so it is best to keep it isolated.

The second bucket can sometimes be blended together to give interesting light and medium shades. It is a potluck situation, but sometimes useable colors can be created by blending some fresh ink into the container.

The third bucket is truly waste ink. In its liquid form, plastisol is considered a non-hazardous liquid waste in most jurisdictions. Check with your solvent waste hauler to see if they can take this ink waste.

The following are a few simple suggestions to help reduce ink waste at a textile screen printing facility:

1. Train your employees to use the proper inks for each situation
2. Document the inks to use on work orders
3. Label containers properly
4. Make sure that you have adequate inventories of each type of ink so that substitutions are not necessary

## The Result

1. Correct ink used means money saved
2. Correct ink means higher productivity
3. Correct ink means better color matching
4. Correct ink means fewer returns
5. Correct ink means less waste

Using the proper ink for a given application will result in both reduced cost and reduced waste. The use of a matching system with recycling capability should minimize scrap ink to very small amounts. Most importantly, educating your staff on ink types, applications, and recycling methods can cut waste to insignificant levels.

The result is a win-win situation; the environment benefits from reduced waste, and the business benefits from cost savings.

Specific questions about technology, equipment, vendors can be posted on the PrinTech listserv. To subscribe, simply follow the instructions on the PNEAC web site at [www.pneac.org](http://www.pneac.org).

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