

## Confused by Compliance Standards? Navigating Phthalates & Textile Ink

Are you confused about phthalates and how the CPSIA regulation affects the textile screen printing industry? If so, you are not alone!

The Consumer Product Safety Improvement Act of 2008 (CPSIA) became law well over five years ago, and was designed to allow the US Consumer Product Safety Commission (CPSC) better regulation power over the safety of products made in, and imported for sale in the US. The CPSIA contains regulations intended to make children's products safer by requiring manufacturers and importers to prove these products do not have prohibited levels of lead and phthalates.

Phthalates are organic chemicals derived from petroleum. They are the most commonly used plasticizers in the world today. Phthalates have been in use for

many years, primarily to make polyvinyl chloride (PVC) soft and flexible. They are colorless, viscous liquids with little or no odor and low volatility. Phthalates are widely used as plasticizers because of their performance, cost and contribution to overall product durability. They are most commonly blended with PVC resins, pigments and additives to produce everything from textile screen print inks to PVC flooring, and cable sheathing to life-saving medical devices, such as vinyl blood bags and IV tubing.

At the opposite extreme, phthalates keep nail polish from chipping, make perfume linger, and make tool handles stronger and more resistant to breaking. Within the screen-printing industry, phthalates are one of the three key components of plastisol inks (PVC resin

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and pigments being the other two). Many "green" activists have criticized the use of phthalates in the global fashion industry, and this has certainly created a lot of buzz within our own industry.

### **Phthalates in Today's Screen Printing Market**

Manufacturers recognize that there is considerable interest in the CSPIA regulations, particularly as they apply to phthalates and their impact on the apparel screen-printing industry. Phthalates are widely used today, and have undergone extensive testing for possible health and environmental effects. They are among the most widely researched of all chemical substances. Over the past couple of years, the Consumer Product Safety Improvement Act of 2008 has brought the issue of phthalates sharply into focus for garment printers. In order to be compliant with the current regulations, a product must not contain more than 0.1 percent of any of the six phthalates restricted or banned by the new laws:

- DEHP (Di-2-ethylhexyl phthalate)
- DBP (Dibutyl phthalate)
- BBP (Benzyl butyl phthalate)
- DINP (Di-isononyl phthalate)
- DIDP (Di-isodecyl phthalate)
- DnOP (Di-n-octyl phthalate)

To be clear, the current laws do not regulate or prohibit the use of all phthalates, just the six named above.

There is a healthy debate as to how the CPSIA legislation applies to children's clothing, and in particular, to those garments printed with plastisol inks containing phthalate plasticizers. Phthalate plasticizers are not chemically bound to PVC, so they may leach out. The concern is that infants and toddlers will chew on, or place a garment or item containing phthalates into their mouths, potentially absorbing some of the chemicals into their bodies.

Due to recent rapid information spread, educational efforts and access to information sharing via social media and other mediums, many of the major brand retailers are requiring CPSIA compliance of all textile articles. This puts pressure on the printers and the manufacturers who supply them, and those manufacturers, in turn, put pressure on the textile ink companies to make products that do not use phthalates.

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It just cannot contain one of the six ortho-phthalates in an amount of more than 0.1 percent. Keep this in mind when shopping around for inks to meet the new standards, because the marketing information from ink manufacturers could be confusing. For example, some manufacturers may list their compliant products as "non-phthalate" when in reality the product still does contain phthalates, just not the six restricted ones.

### **Cost of False Positives**

A certain ink may register as a false positive for a regulated phthalate. The reasons can vary, but some include problems with sample preparation, incorrect calibration of equipment, misleading reference standards and inexperienced technical staff. Depending on the test method and execution procedures, there are occasional false positive readings for DINP (the most common cause for failure).

A positive DINP reading comes as a result of overlapping peaks in the spectra when running the Gas Chromatography and Mass Spec test methods in an analytical laboratory. As a result, the non-phthalate plasticizers can be misread. The potential for misinterpretation of the non-phthalate plasticizers as containing phthalates has been reported by several research groups, and can cause issues for many printers.

### **Minimizing Failure Due to Contamination**

In any location where both phthalate and non-phthalate inks are being used, cross-contamination can be a challenge. Phthalates are thick, sticky substances that like to attach and leave residue on the surfaces with which they come into contact.

So what can you do to implement proper ink hygiene when working with regulated phthalate inks and non-phthalate-containing inks?

#### *Tips and Tools for Proper Hygiene*

##### **Ink room managing**

- Only use sealed containers for inks and additives to minimize potential introduction of any contaminants that are splattered and/or may be airborne.
- Separate the storage area for non-phthalate inks versus regulated phthalates and phthalate-containing inks.
- Separate the cleaning and usage of stir sticks, spatulas, mixing buckets and additives.

- Only use a compliant cleaning solution to clean stir sticks, spatulas and mixing buckets.

#### Screen room managing

- Separate the reclaim solution tank for screens used for phthalate and non-phthalate jobs.
- Separate the reclaim storage area and reclaim station for phthalate and non-phthalate jobs to make sure the reclaim solution is compliant.
- Only use phthalate-free emulsion to prepare the stencil.
- Avoid using screens in non-phthalate jobs that previously were used for phthalate jobs.

#### On press

- Make sure the pallet glue, screen opener and cleaner are compliant.
- Avoid printing a non-phthalate job next to a phthalate job to eliminate splash contamination.
- Make sure the rags that used for cleaning are not used in a phthalate job or printed with phthalate inks.

- During printing, the shelves or counters that hold garments should be cleaned with non-phthalate cleanser.

#### Other cleaning advice

- Floors and shelves need to be cleaned with non-phthalate cleansers.
- Squeegees need to be cleaned with compliant solvent only.
- Ensure proper cleaning in your oven to ensure that solvents don't leak or cross-contaminate other samples.
- If the non-phthalate job is taking place after the phthalate job, squeegees need to be taken apart to remove all old ink trapped between the holder and squeegee blade.

Over the years, the industry has taken proactive steps to educate the general public in this matter — what phthalates are, what the CSPIA regulations mean, and how those regulations affect textile screen printing, and there's still so much to learn.

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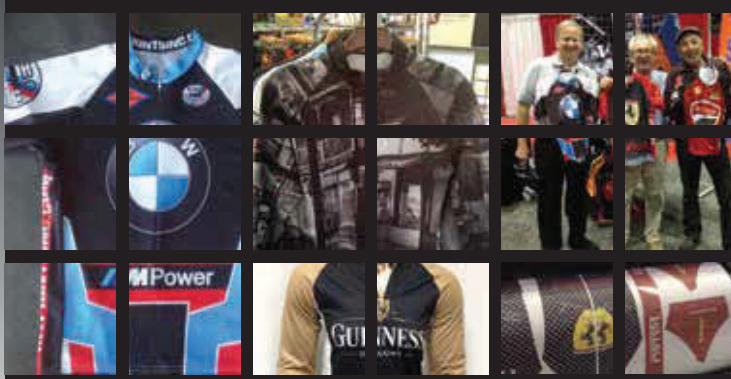


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