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Third Party Inks and Your Roland Printer

Third party inks and how they can affect your Roland printer.

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Recently, third party inks have staged a pretty aggressive marketing campaign with some very misleading facts. This document will look at these claims and detail the real facts about using third party inks in your Roland printer. We will do this from a scientific and technical viewpoint.

Third party inks are perfectly safe for your printer. This is probably the single largest misconception about third party inks. OEM inks are specifically formulated to work with the printheads and the printer OEM is the only one with the knowledge about firing rates and patterns, drop formation, seal and gasket design and a host of other issues that third party manufacturers can only guess at. Let's look at a few chemical properties of ink that can make a huge difference in performance and wear and tear on your printer.

- **Viscosity:** This is how thick or thin the ink is. Each nozzle on a printhead needs a specific voltage setting for proper firing. This voltage setting is called the head rank on a Roland printer. These settings control the firing rate and firing strength of a nozzle. Due to slight but critical variations in manufacturing, every nozzle is different and no two printheads have the same head rank. If the third party ink does not have the exact same viscosity rate as the OEM ink, your printheads will be working harder to fire the nozzles and will wear out faster than expected. Viscosity can also affect ink spray or fly away droplets.
- **pH Balance:** This is a measurement of the acidity of the ink. Solvent and eco-solvent inks are inherently corrosive. That's how they bond to uncoated materials. The plastic parts, seals, and components are formulated to withstand the OEM ink. A difference in pH balance can mean corroded seals and faulty dampers and cap tops not to mention the microscopic moving parts inside a printhead. The same goes for other components like boards, sensors and the linear encoder. Fly away droplets due to the above viscosity problems means that ink will be getting on parts that shouldn't come in contact with ink. This can lead to all sorts of problems due to the corrosive properties of solvent ink.
- **Pigment Particle Size:** To really understand the impact of this, you have to understand the Asian printer market. There, most printers are considered disposable. You purchase a printer at an extremely cheap price, use it for a year, then get a new one when that one breaks down. Since the printers are not used much longer than a year, not much time is usually spent by the ink manufacturers on the effects of their ink on the printer. Lower costs trump everything. One of the things that helps to keep cost down is to use a larger pigment particle. These inks are usually the ones that make it over here as the third party inks as smaller pigment particles will cause the ink to cost as much or more than the OEM ink. These inks usually have a pigment particle 4-10 times the size of the OEM inks. This larger size can lead to several problems, mostly related to clogging the printhead nozzles. This can be from particle getting trapped in the nozzle feed lines to a smaller percentage of carrier fluid in each droplet leading to much quicker dry times. Quicker dry times may sound like a blessing but drying too quick and clogged nozzles are what you will get.
- **Evaporation Rate:** This is also referred to as dry time. The rate at which the carrier fluid (the solvent) evaporates is a very balanced property. Fast dry times are needed yet if they are too fast, you will experience what is called ghost banding at the very least and ruined printheads and other parts at the most. OEM inks aim for the optimal evaporation rate for the fastest dry time while keeping it slow enough not to damage the printheads.



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- **Rigidity after drying:** This is basically how hard the ink is after the carrier solution evaporates and the ink dries. This is usually too small of a variation to make a difference on your prints however it can have a huge impact on your machine. The harder an ink dries, the more abrasive it is to your printer. It is much more difficult to clear a nozzle with hard, dried ink, than with a softer drying, more flexible ink. Also, if a hard, dried particle is stuck in a nozzle, and the nozzle tries to fire, that hard particle can be crushed against the nozzle, causing permanent damage. Another adverse affect of hard drying are the remnants of ink left on your wipers. Small bits of hard ink, dried on the wipers act like sand paper on your printheads during the cleaning process. This can tear or wear off the thin film coating on the bottom of the printheads, causing severe, irreparable damage to the nozzles.
- **Chemical resistance:** This is usually a desirable property in a solvent ink. However, in order to clean your printer, there must be a chemical that can quickly and easily dissolve the ink without damaging the rest of the machine. With OEM inks, you are provided with the cleaning solution which is usually just clear ink (the carrier solution with no pigment particles present). With third party inks, this is usually not the case and you are left with using the OEM cleaning solution. In most cases, the OEM cleaning solution cannot dissolve the dried ink. You are left with trying other chemicals like turpentine or MEK which can be damaging to your machine because the internal parts are not designed to withstand these chemicals.

You can use your existing color profiles with third party inks and your color will be the same as with the OEM inks. This is definitely not true. Color is determined by several different factors including droplet size and shape, pigment density, and the chemical absorption properties of the media you are using. Unless the chemical formulation of both the carrier solution and the colorant are exactly the same as the OEM inks, the colors will never match. They may be close, but when you have a color critical customer, you are going to be spending hours of your time matching colors that would be just a click or two of the mouse to match with OEM inks and profiles.

It is illegal to deny warranty claims because of third party ink use. This is partially true. If a circuit board fails or your motor goes out, you are covered. If any issue arises in the ink system, such as clogged printheads, failing dampers, damaged cap tops or a clogged pump, you are on your own. Additionally, any collateral damage due to the ink such as ink splatter on a circuit board or encoder strip will be your responsibility as well. Third party inks will also void the 90 day parts warranty when your printer warranty has expired. If a printhead is replaced in your printer with third party inks and it fails in a week, the printhead will not be eligible for warranty replacement. Furthermore, remember that your free second year of warranty with Roland products will be void with the use of third party inks.

The third party ink manufacturer will cover any repairs not covered under warranty. This would be great if the third party ink manufacturers actually came through on their promise. It is extremely difficult to prove that the cause of the failure was due to the third party ink without extensive and costly testing. With the OEM warranty, you won't be covered and with their warranty you have to prove it was their fault. This can leave you stuck with a repair bill that can more than offset years of savings by using third party inks.

Third party ink manufacturers tend to make these outrageous claims as well as many more without taking the durability of your machine into account. With as delicate as these printers can be and the large investment needed to purchase one, it seems reckless to risk such comprehensive damage with the use of third party inks.