



WHAT'S IN A DROP? INK INNOVATIONS AND WHY THEY MATTER FOR YOUR CUSTOMERS

Resellers need to help clients understand the dangers of using counterfeit printing products

By **John Stoffel**, Distinguished Technologist & **Richard McManus**, R&D for Ink Innovation, HP Inc.



Printing technology emerged with the Tang Dynasty in China (601-906 AD) when craftsmen first used ink-embossed wood blocks to print Buddhist images and scriptures. Since that time, printing advances have come along slowly and steadily – until the last few decades.

Now, we're seeing such rapid progress in the science behind ink and toner technology, that it can be difficult to know what to expect from the various market offerings. What's in a single drop of these important substances? A ton of HP research and development.

HP's History of Leadership and Innovation in Ink

It was HP, after all, that accelerated inkjet development in a Palo Alto lab in the late 1970s. HP's [John Vaught](#), a college dropout in mechanical engineering, came up with the technology behind modern "thermal" inkjet printing by observing how coffee percolators heated and dispensed the water that ultimately produced a hot, steaming cup of java. In subsequent decades, HP would constantly innovate for inkjet printing, even adding a whole [Managed Print Services](#) (MPS) offering to its highly competitive product mix.

HP partners with third-party suppliers of colorants, pigments and polymers on research and development to identify the right mix of materials for every possible customer use. A lot of the chemistry is involved in stabilizing the ink's big pigment particle and ensuring that it adheres to the paper. HP does a great deal of work on the binder that helps provide durability for the ink, partnering with some of the top companies around the world. No one has more experience in ink design than HP, and we have always seen ink as part of the system when we develop the printing solution.

Ink Science: Drop by Drop

There's much more science behind preventing printheads from clogging, using surfactants to improve print clarity, and controlling viscosity for uniform ink droplets. In fact, it's not uncommon for HP to tear through hundreds of prototypes in the development of new HP supplies.

As a result, HP's partners can learn how print quality improves at the same time that printing gets faster and easier. From each HP printhead, ink heated at 572 degrees Fahrenheit for about a microsecond can transfer onto a page at the rate of [one million drops per second](#), faster than the blink of an eye.

A lesser known aspect of HP's quest to perfect its ink offerings involves making sure its technology works with a wide variety of paper types. At times, this has meant circling the globe to see just what media businesses are using, where the media is being made, and what materials are used in the media.

HP collaborates with the paper industry to improve digital print and provide a more consistent, quicker, higher-definition and more sustainable print job. Plus, vivid robust prints increasingly resist water and light better.

The Partner Play

Channel partners can assure customers that important business or legal documents printed on HP and stored in the dark or in the right conditions will last a century, [according to third-party tests](#) (PDF). HP photo prints can survive for generations, rivaling the longevity of traditional silver halide photographic prints.

Channel partners can look like heroes because HP printers jam up less than earlier generations, thanks to quick-drying ink and crinkle-resistant paper. Customers can plan for fewer service calls because state-of-the-art ink designs paired with smart printer software help extend the life of the printheads. HP Managed Print Services further enables businesses to outsource their printing infrastructure and maintenance.

The intelligence and communication capabilities built into HP equipment has evolved to the level that customers can subscribe to HP Instant Ink knowing they'll never run out of ink. The latest products apply less ink to a sheet of paper than in the past, yielding more printed pages out of each inkjet cartridge, which reduces the costs of supplies.

Environmental Advantages

HP's Design for Environment principles, launched back in 1998, are critical to keeping ink development a step ahead in the industry – a major selling point for the 73 percent of consumers who told Nielsen they would change their consumption to lessen their environmental effects.

One thing that HP focused early on is that we've developed a series of Design for Environment criteria for our inks. When new regulations restricting toxic chemicals come on board around the world, HP had already prepared its ink formulations ahead of time to ensure the highest safety standards for people and the environment.

HP Original Ink cartridges are proven to work out of the box, as opposed to counterfeit cartridges that usually fall short and wind up in a landfill. In addition, the [HP Planet Partners](#) program makes it easy to recycle HP Original ink and toner.

HP's ongoing work toward intelligent supplies and hardware have helped to reinvent business models around printing, satisfying modern needs and helping customers become more independent. HP is leading the print industry's reinvention, as digital inkjet offerings replace old analog technologies. The inkjet market is expected to grow (PDF) by nearly 9 percent from 2018 to 2023.

Channel partners can continue to count on HP for science-based leadership for the long-term that will continue to evolve to serve future generations.

¹ Whitepaper by Smithers Pith, Commissioned by HP: <http://www8.hp.com/h20195/v2/GetPDF.aspx/4AA7-4499EEE.pdf>