



## HP Vivera Inks: Brilliant, Enduring Color

HP designs unique Vivera inks to address virtually every printing need—from photo and everyday home printing to professional photography, fine art, graphics, technical and office applications

### Quality, Reliable Results You Can Trust

Your printing requirements are as diverse as *what, where, when, and how* you print: busy parents and families who want to simply print photos and everyday documents, digital photo enthusiasts, amateur and professional photographers, creative and graphics specialists, and small to large enterprise businesses spanning a range of industries. Each printing application requires a different set of tools and printing attributes. The element at the heart of each printing system—the ink—plays a crucial role in delivering these attributes.

### Leading Innovation

As a recognized leader in the inkjet industry, Hewlett-Packard devotes significant resources to designing inks for a variety of home, business, and commercial printing applications. Years of ink development have resulted in unique ink formulations that incorporate an optimal combination of key printing requirements—brilliant, true-to-life color, permanence, and durability. This means that when you choose HP Vivera ink, there's no need to make trade-offs or sacrifice one printing attribute for another. You can achieve the quality results you expect, all from a single, convenient solution.

## Unique Formulations

HP Vivera ink technology is extremely versatile. Rather than forcing a 'one size fits all' approach, the technology behind the fundamental benefits delivered by HP Vivera inks—image quality and permanence—is adaptable to a variety of applications and configurations. Highly compact photo printers focused solely on snapshot printing, office printers with an emphasis on document print speeds and high page yields, professional photo printers with 12 inks for depth and range of color on fine art, canvas, and photo papers—these are just a few examples of the wide range of configurations of HP Vivera inks. While actual ink compositions vary widely across different printer types, common to all HP Vivera inks is a unique ability to deliver prints with enduring brilliance.

## HP Vivera Ink Families

There are three major families of HP Vivera inks: HP Vivera photo-versatile inks, HP Vivera professional inks, and HP Vivera office inks.



Brilliant, Enduring Color

<b>HP Vivera photo-versatile inks</b>	<b>HP Vivera professional inks</b>	<b>HP Vivera office inks</b>
HP Photosmart and HP Deskjet Printers	HP Designjet and HP Photosmart Pro Printers	HP Officejet, HP Officejet Pro, HP Designjet technical and HP Multi-function Printers with Edgeline technology
 <p>Designed to provide vivid, long-lasting photos for everyday home printing</p>	 <p>Designed for color accuracy, consistency and fade resistance required in professional photography, graphics, fine arts and signage</p>	 <p>Designed for crisp, vivid color and fast-dry, smudge-resistant results for office printing, in- house marketing and technical drawings</p>



## HP Vivera Photo-versatile Inks

HP Vivera photo-versatile inks—designed for use with HP Photosmart and select HP Deskjet printers and all-in-one products—deliver brilliant photos with superior fade resistance for lab-quality results from the convenience of home. When combined with HP photo papers, HP Vivera photo-versatile inks deliver vibrant prints that resist fading for generations.<sup>1</sup> In addition, most HP Vivera photo-versatile inks are designed to deliver great everyday plain paper printing for documents, e-mail, web pages, and more.

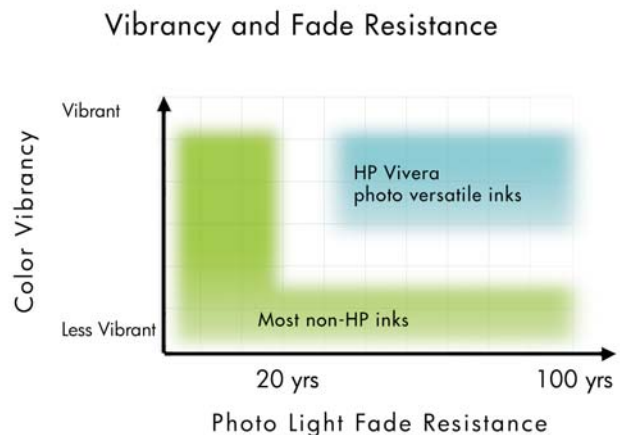
### Brilliant Photo Quality

HP Vivera photo-versatile inks offer vibrant, true-to-life color for stunning color prints and exceptional black-and-white images. In independent quality evaluations of photos printed on various consumer photo printers available in the retail market, prints produced using HP Vivera inks were preferred by home photo enthusiasts and professional photographers over traditionally processed (silver-halide) prints. When asked to judge the overall quality of photos, study participants worldwide indicated a clear preference for prints produced with HP inks and photo papers over those from either lab-processed or competitive inkjet printing systems.<sup>2</sup>

### Longest-lasting Prints

Photos printed on HP photo papers using HP Vivera photo-versatile inks not only feature better image quality than photos processed by conventional labs or non-HP retail kiosks, but are more resistant to fading caused by light or heat. When used with HP Premium Plus Photo Paper, HP Vivera photo-versatile inks provide light-fade resistance superior to that of traditionally processed photos—up to 100 or more years.<sup>3</sup>

Figure 1. Since printers in the home should be versatile enough to meet many printing needs—from lab-quality photos to colorful plain paper documents, HP Vivera photo-versatile inks are designed to produce both long-lasting, vivid photos and vibrant plain paper prints.



HP invests heavily in research and technology to ensure your photos will last for generations. Proprietary dyes deliver exceptional light fade resistance while maintaining a large color gamut. HP designs Vivera inks, even its specialty, photo inks, from the ground up to produce natural

<sup>1</sup> Based on Wilhelm Imaging Research, Inc., or HP Image Permanence Lab display permanence testing. For details visit [www.hp.com/go/printpermanence](http://www.hp.com/go/printpermanence).

<sup>2</sup> Spencer Lab Digital Color Laboratory, 2005 Photo Print Quality Research U.S., France and China, Spencer & Associates Publishing Ltd.

<sup>3</sup> Up to 108 years, based on Wilhelm Research light-fade testing under glass (as of January 2005) using the HP 95 Tri-Color and HP 99 Photo Inkjet Print Cartridge on HP Premium Plus Photo Papers. For details visit [www.hp.com/go/printpermanence](http://www.hp.com/go/printpermanence).

looking skin tones, vibrant, true-to-life color, and excellent light-fade resistance. According to Wilhelm Imaging Research’s accelerated testing, photos printed with refill ink will fade within two years. Photos printed with HP Vivera inks, in comparison, will last for generations.<sup>4</sup>

Photo Light Fade Resistance

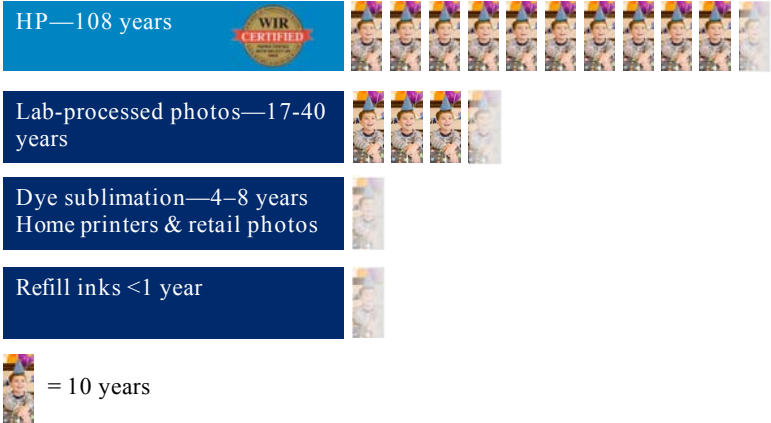


Figure 2. Photos printed on HP printers will last longer on display without fading than many competitive printing systems, competitive inks, or alternative photo printing methods.<sup>5</sup>

Durability

In addition to permanence—how well photos last over time—HP ink chemists also consider durability—how well photos resist accidents such as spilled water, smudging and scratches. Those who desire a more durable photo printing solution can combine HP Vivera photo-versatile inks with HP Advanced Photo Paper for both fade- and water-resistant results.

A recent addition to the HP Vivera photo-versatile ink family—the HP 110 Tri-color Inkjet Print Cartridge for HP Photosmart Portable Printers—provides fade resistance for generations, along with water- and smudge-resistance to improve photo handling.<sup>6</sup> When combined with quick-drying HP Advanced Photo Paper, prints can be passed around immediately from the printer without smudging or smearing.

Customers with older HP devices can enjoy the benefits of HP Vivera inks with the HP 57+ and HP 78+ inkjet print cartridges, compatible with HP Photosmart and HP Deskjet printer and all-in-one products that use the HP 57 or HP 78 inkjet print cartridges.

<sup>4</sup> Less than one year is the average of all refill brands in 2006 display permanence testing (light fade under glass) by Wilhelm Imaging Research of commonly available private label and other refilled cartridges for six-ink printing with HP 57- and HP 58- compatible inkjet print cartridges printed on refill brands’ recommended or leading 3rd-party photo paper tested. For more information visit [www.wilhelm-research.com](http://www.wilhelm-research.com).  
<sup>5</sup> Up to 108 years, based on Wilhelm Research light-fade testing under glass (as of January 2005) using the HP 95 Tri-Color and HP 99 Photo Inkjet Print Cartridge on HP Premium Plus Photo Papers. For details visit [www.hp.com/go/printpermanence](http://www.hp.com/go/printpermanence).  
<sup>6</sup> Display permanence rating by Wilhelm Imaging Research, Inc. For more information on fade resistance of inkjet prints please visit [www.hp.com/go/printpermanence](http://www.hp.com/go/printpermanence).



## HP Vivera Professional Inks

HP Vivera professional inks—developed for use in HP Photosmart Pro and select HP Designjet Graphics printers—provide outstanding color for high-quality results that last. Because HP understands the needs of professional photographers, creative and printing professionals go beyond a broad color palette and longevity, Vivera professional inks are carefully engineered to provide creative flexibility with exceptional color accuracy and consistency on a wide variety of printing substrates, from photo and fine art papers to canvas and specialty media, for predictable, reliable results. Imagine how much more productive you can be, knowing your last print will be the same as your first.

### Precise, Long-lasting Color

HP Vivera pigment inks—the most recent addition to HP’s professional ink family—are specifically designed for use with HP Photosmart Pro and select HP Designjet printers to provide an extensive palette of brilliant, lifelike colors, deep, rich blacks and true, neutral grays for professional portraits, landscapes, portfolio prints, photos and other printing assignments. HP Vivera pigment inks, used in the HP Designjet Z2100, Z3100 and Z6100 Photo Printers, provide complete coverage of both SWOP and ISO coated gamuts when printing on HP Proofing Papers.

#### HP Designjet Z3100 Photo Print Gamut Comparison

- SWOP
- ISO coated
- HP Designjet 130
- HP Designjet Z3100

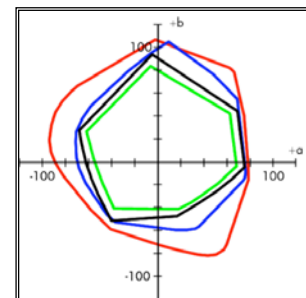


Figure 3. HP Vivera pigment 12-ink technology in the HP Designjet Z3100 creates a very large range of rich, vibrant colors. The chroma area, indicated by the red line, is significantly larger than the SWOP and ISO benchmarks. The chroma also exceeds that of HP’s previous generation of Vivera professional inks, which used dyes rather than pigments.

### HP Dispersion Technology

Vivera professional inks are formulated with an HP exclusive pigment dispersion technology—Electrosteric Encapsulation Technology (EET)—to deliver excellent gloss uniformity across a range of colors and consistent, reliable performance with the long-life HP printhead. The key to delivering a reliable, consistent ink with good gloss properties is to ensure that particles do not stick together and form larger particles which might clog the printhead, or degrade the gloss of the print. Unlike typical color pigment inkjet inks, HP EET uses two mechanisms (rather than just

one) to keep pigment particles separated, so that the ink can flow smoothly for good image quality and reliability.

## Permanence and Durability on a Variety of Media

HP Vivera professional inks are designed to deliver exceptional image quality, permanence, and durability across a broad media set, including photo, watercolor, canvas, textured, and fine arts paper (see Figure 4). When combined with HP creative and specialty media, Vivera professional inks offer superior display permanence, in excess of 200 years.<sup>7</sup> The inks are carefully formulated for durability, water resistance, and excellent handling ability. When printing on quick-dry HP Advanced Photo Paper, prints can be handled immediately from the printer out-tray.

With an HP media portfolio that includes a variety of creative and specialty media, such as HP photo and HP Advanced Photo Paper, HP Artist Matte Canvas, HP Professional Satin Photo Paper and HP Hahnemuhle Smooth Fine Art Paper in varying sizes up to 42-inch—HP offers creative professionals a broad set of printing tools that are designed, engineered, and tested together to produce optimal results from the first print to the last. HP understands that for a printing solution to offer true media flexibility, the solution must provide outstanding image quality, durability, and permanence across a broad media set. HP Vivera pigment inks deliver this flexibility.

### Indoor Display Permanence Ratings

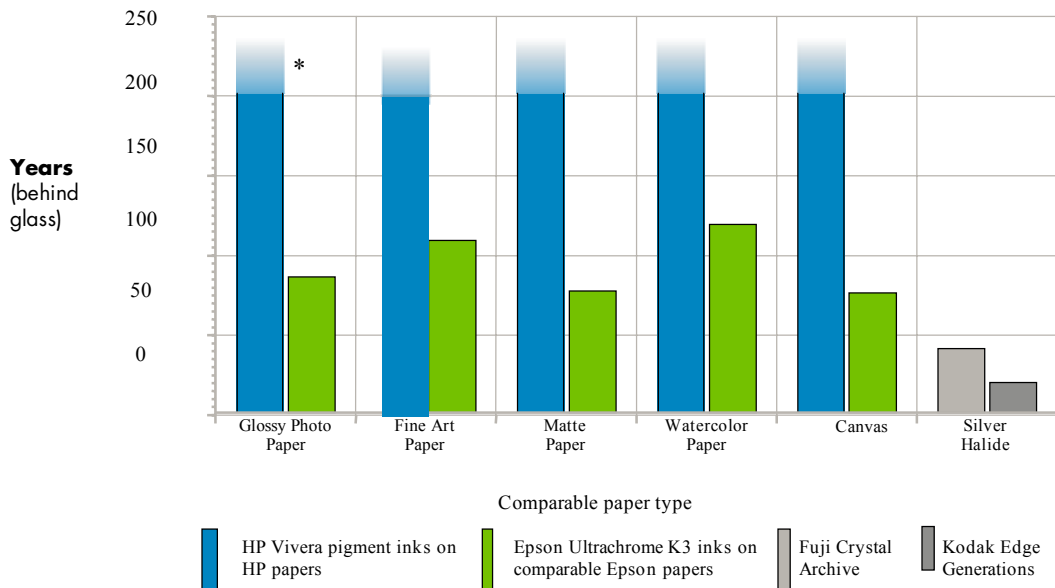


Figure 4. A key element of creative flexibility of HP Vivera professional inks is the ability to deliver outstanding fade resistance on a wide range of media types.

## Consistent Results

Designed to work with various elements of the printing system, HP Vivera professional inks deliver exceptional color accuracy for realistic, life-like output. The inks are designed to quickly achieve their final color within minutes of printing, which greatly assists the operation of built-in color calibrations in HP printers. Vivera professional inks are carefully co-developed with HP printhead design to deliver highly accurate, precise drop placement even at high print speeds.

<sup>7</sup> Based on light fade testing under glass and thermal degradation tests by Wilhelm Imaging Research using HP Advanced Photo Paper, HP Photo Matte, HP Hahnemuhle Smooth Fine Art Paper, HP Hahnemuhle Watercolor Paper and HP 38 Pigment Ink Cartridges. Preliminary results to be updated as test progresses—see [www.wilhelm-research.com](http://www.wilhelm-research.com) or [www.hp.com/go/printpermanence](http://www.hp.com/go/printpermanence).



## HP Vivera Office Inks

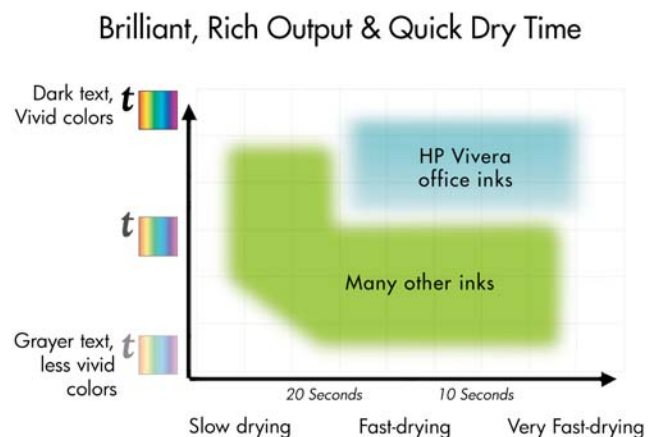
HP Vivera inks for business are designed first and foremost to provide exceptional plain paper print quality and durability for typical office applications. The inks are specially formulated for use with HP Officejet and HP Officejet Pro printers and all-in-one products, plus HP multi-function printers (MFPs) with Edgeline Technology and HP Designjet technical printers. HP Vivera office inks deliver crisp, laser-quality text, bright, true colors for business and technical graphics, and quick-dry durability to meet the demands of general office use. In addition, HP Vivera office inks allow customers to produce brilliant photos and business graphics on coated media for professional looking brochures, proposals, marketing materials, and technical drawings.

Since an extensive amount of office printing takes place on plain paper, much of the burden to achieve print quality is placed on the ink. Consistently high quality text and graphics with bold blacks, sharp lines and edges, and high color saturation are essential attributes for business printing. Office documents are handled in different ways from photo prints. Printed pages are handled when read—often by more than one individual—and may be annotated, edited, or signed. This requires ink formulations that allow business professionals to create fast drying documents ready for use right from the printer, that resist smearing from handling and moisture. HP Vivera office inks are specially formulated to provide an optimal combination of rich, dark text, vivid colors, and quick dry times for durability.

### Fast Drying, Vivid Results

HP Vivera office inks are designed to support the fast print speeds offered with HP business and technical printing systems. Uniquely formulated Vivera black inks, developed for high-speed printers (HP Officejet Pro and HP MFPs with Edgeline technology), enable exceptionally fast black printing with quick dry times and excellent handling ability. Unique ingredients

Figure 5. Typical fast-dry inks are designed for quick absorption into the paper, which causes a dull, faded appearance. HP Vivera inks overcome this challenge with brilliant color results that dry quickly.



in the ink vehicle allow ink components to quickly penetrate into the paper, while colorants are retained near the surface. HP patented ink technologies also prevent color and black inks from mixing together or ‘bleeding’ when placed in close proximity to each other on the page. Together, these technologies allow HP office and technical printing devices to produce exceptionally dark, black text and vivid colors with crisp, clean edges.

## ColorLok Paper Technology

Quick drying HP Vivera office inks allow you to get fast turnaround times for all your business documents. HP Vivera office inks dry even faster when combined with fast drying papers, such as HP everyday papers with ColorLok technology. HP papers with ColorLok technology receive and hold the ink near the surface for even absorption and uniform, vivid color. Blacks are bolder for improved contrast, sharper text and rich line detail. Plus, documents printed on ColorLok papers dry quickly for almost immediate handling. HP papers with ColorLok technology are compatible with both ink and laser printers, so you can enjoy the convenience of using just one paper with every office printer. And with prices comparable to other quality, everyday papers, you get all the benefits of ColorLok—universal compatibility, bolder blacks, uniform, vivid colors, and fast dry times—without paying more.

## Archival Document Quality

When you print important documents with HP Vivera inks, you’ll have the confidence of knowing that archived documents will retain black text and color quality for decades without fading.<sup>8</sup> While all HP Vivera office inks are designed to resist degradation in room temperature storage for many decades, some HP office printing solutions offer enhanced longevity, resist degradation from water, and allow documents to be handled and distributed almost immediately from the printer without ink smudging or smearing.

### HP Vivera Office Inks - Enhanced Water Resistance Options



Typical inks on standard plain paper

HP Vivera office inks for use with HP Officejet Pro on HP Advanced Multi-use Paper

HP Vivera office inks for HP MFPs with Edgeline technology on standard plain paper

Figure 6. Water drip test comparison of different HP Vivera ink solutions (approximately 6X magnified text).

## Enhanced Durability, Highlighter- and Water-resistance

Today’s HP’s office printers provide durability and performance that meets the needs of most office customers. For those who desire the additional durability attribute of water resistance, HP offers solutions such as HP Advanced Multipurpose Paper for water-resistant, long-lasting results. To offer customers even broader versatility, HP’s newest office ink solutions—specifically formulated for use with HP MFPs with Edgeline technology—deliver quick-drying, smudge- and water-resistant results on a wide range of everyday plain and office papers.

<sup>8</sup> Based on paper industry predictions for acid-free papers; colorant stability data at room temperature based on similar systems tested as per ISO 11798 and ISO 18909.



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The inks are crafted with a unique bonding agent to deliver superior print quality, with significantly improved dry time and water resistance for high-end, high-volume office, professional and commercial printing applications. When combined, the special bonding agent and ink chemically react to “fix” the ink to the paper. Colorants in the inks immobilize rapidly on the page to ensure consistent dot size, high color saturation, and high optical density. Prints dry rapidly at up to 71 pages per minute, resist highlighter smear, and are water resistant.

HP offers a variety of Vivera office inks for use with HP Officejet and Officejet Pro printer and all-in-one products, plus HP MFPs with Edgeline technology. In time, HP’s continued investment in ink technology will pursue the benefits of the unique Vivera bonding agent ink on other HP printing systems, such as HP desktop printers designed for general office and consumer use.

## Summary

HP Vivera inks are uniquely designed to meet the distinct needs of a variety of printing applications, from photo and everyday home printing, to professional photography, fine art, graphics, and office printing. HP ink chemists continually strive for the optimal balance of ink components to create the best possible results when combined with the rest of the HP printing system. Each ingredient is carefully selected to meet stringent criteria for printing attributes—from outstanding color and display permanence, to reliability and print speed.

HP Vivera photo-versatile inks allow customers to produce lab-quality photos from the convenience of home, as well as crisp, black text and vibrant color for quality home documents. Specially formulated to meet customers’ diverse home printing needs, HP Vivera photo-versatile inks deliver excellent results on plain paper and brilliant, lasting photo quality when used in combination with HP photo papers.

The creative ink flexibility of HP Vivera professional inks delivers outstanding image quality, permanence, and durability for impressive results on a variety of photo, fine art, canvas, watercolor and other papers. An ideal solution for photographers, creative, and graphics specialists, Vivera professional inks are formulated to produce a broad color gamut, deep, rich blacks, and true, neutral grays for exceptional image quality and archivability and accurate, consistent color you can count on.

With laser-quality text, crisp lines, and colors and brightness specifically tuned for office graphics, technical and marketing materials, HP Vivera office inks deliver professional print quality for a variety of office and technical printing applications. Vivid, quick drying office inks support fast business printing and offer durability and permanence on plain paper, including solutions for smudge-, water- and fade-resistance.

Regardless of the intended end use, all HP Vivera inks are carefully developed, engineered and tested to ensure they deliver the characteristics you expect from HP—from vivid, true-to-life colors and rich, neutral blacks for photos, to crisp lines and sharp black text for professional looking documents. HP Vivera inks are designed to provide additional characteristics, from varying levels of fade, water- and smudge-resistance to quick or virtually “instant” dry ink formulations, to address customers’ varying durability and handling needs. The careful design and engineering of HP Vivera inks, inkjet cartridges, printers, and everyday and specialty papers assure you a convenient, reliable solution—tailored to address your specific printing needs.