Test Objective:

Buyers Laboratory LLC (BLI), Hackensack, NJ (USA), was commissioned by the Hewlett-Packard Company to assess the resistance of HP inkjet products against ink drying up. Therefore, a test was conducted on nine HP models (three Officejet Pro 3610 models, three Deskjet Ink Advantage 4615 models and three Officejet Pro 8100 ePrinter models) to evaluate the impact of long-term periods of non-use on the print performance of HP inkjet print cartridges when stored under conditions of high heat and low relative humidity (RH). An extreme temperature of 37°C was chosen, which is the average summer high in New Dehli, India, according to weatherspark.com; and 20%RH was selected as it is the lowest recommended storage humidity of the ink cartridges tested.

Test Methodology:

Following a 24-hour acclimation period, each printer was installed on BLI's lab test network and 100 pages of the ISO 19752 single-page test document were printed and stored for the Officejet Pro 3610, which is a monochrome device, and 10 sets of the ISO 24711 five-page test suite were printed and stored for the Deskjet Ink Advantage 4615 and 20 sets on the Officejet Pro 8100 ePrinter, which are color models. The printers, with the cartridges installed, were allowed to completely power down before they were unplugged and were then stored in a Thermatron WP-446 Walk-in Environmental Chamber for 12 weeks with conditions set at 37°C/20%RH. Following the 12-week period of non-use, the printers were reinstalled on BLI's lab test network and, after a 24-hour acclimation period, five pages of the ISO 19752 single-page test document were printed for Officejet Pro 3610 models one set of the ISO 24711 five-page test suite was printed on each Deskjet Ink Advantage 4615 and Officejet Pro 8100 ePrinter model for comparison with the initial print samples.
Conclusion:

Absolutely no print quality degradation or reliability issues were observed by BLI with the nine devices tested after the 12 weeks of printer storage, clearly demonstrating that extended storage of HP models even under these extreme conditions of high heat and very low relative humidity does not have an ink dry-out effect on these HP print systems. Although light streaking was observed in the samples printed on all but one of the models following 12 weeks of storage, this was quickly resolved by using the printhead cleaning function as necessary.

Test Observations:

As can be seen from the “before and after” print samples below, there are no discernible differences in the print quality of the Exhibit A and Exhibit B prints produced by each device, indicating that the quality of the HP ink cartridges was unaffected by the 12-week period of idle time under the extreme conditions of 37°C/20%RH.

HP Officejet Pro 3610 (HP 960 Ink)

Device A

Test Print Samples Before Storage:

Exhibit A

Test Print Samples After 12 Weeks of Storage:

Exhibit B
Inkjet Printer Long-Term Storage Test
HP Inkjet Printers with Individual Ink Supplies

Device B

Test Print Samples Before Storage:

Exhibit A

Exhibit B

Device C

Test Print Samples Before Storage:

Exhibit A

Exhibit B
HP Deskjet Ink Advantage 4615 (HP 685 Ink)

Device A

Test Print Samples Before Storage:

Exhibit A1

Test Print Samples After 12 Weeks of Storage:

Exhibit A2

Exhibit B1

Exhibit B2
Inkjet Printer Long-Term Storage Test
HP Inkjet Printers with Individual Ink Supplies

Test Print Samples Before Storage:
Exhibit C1

Test Print Samples After 12 Weeks of Storage:
Exhibit C2

Exhibit D1

Exhibit D2
Inkjet Printer Long-Term Storage Test
HP Inkjet Printers with Individual Ink Supplies

Test Print Samples Before Storage:
Exhibit E1

Test Print Samples After 12 Weeks of Storage:
Exhibit E2

Device B

Test Print Samples Before Storage:
Exhibit A

Test Print Samples After 12 Weeks of Storage:
Exhibit B
Device C
Test Print Samples Before Storage:
Exhibit A

Test Print Samples After 12 Weeks of Storage:
Exhibit B
HP Officejet Pro 8100 ePrinter (HP 950/951 Ink)

Device A

Test Print Samples Before Storage:

Exhibit A1

Test Print Samples After 12 Weeks of Storage:

Exhibit A2

Exhibit B1

Exhibit B2
Test Print Samples Before Storage:

Exhibit E1

Test Print Samples After 12 Weeks of Storage:

Exhibit E2

Device B

Test Print Samples Before Storage:

Exhibit A

Test Print Samples After 12 Weeks of Storage:

Exhibit B
Device C

Test Print Samples Before Storage: Exhibit A

Test Print Samples After 12 Weeks of Storage: Exhibit B

Supporting Test Data

Test Equipment:
BLI’s dedicated test network, consisting of Windows 2003 and Microsoft Exchange 2003 servers, Windows XP and 7 Professional workstations, 10BaseT/100BaseTX network switches and CAT5 cabling. Thermotron WP-446 Walk-in Environmental Chamber.

Lab Test Environment:
Print testing was conducted in BLI’s test facility located at 20 Railroad Avenue, Hackensack, NJ, and under ambient conditions of 20°C to 22°C and 45% RH (+/-10%), with daily conditions monitored by an Extech RH520 temperature/humidity digital recorder and Honeywell Model 61 Seven-Day Temperature/Humidity Chart Recorder. During the 12-week period of non-use, all printers were stored in a Thermatron WP-446 Walk-in Environmental Chamber with conditions set at 37°C/20%RH.
Compatible Printers

The following cartridges used in testing are compatible with these printers and the results from testing will also apply to these models.

<table>
<thead>
<tr>
<th>HP 685 ink</th>
<th>HP 950/951 ink</th>
<th>HP 960 ink</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP Deskjet Ink Advantage 3525</td>
<td>HP Officejet Pro 251dw Printer</td>
<td>HP Officejet Pro 3610 Black &amp; White</td>
</tr>
<tr>
<td>e-All-in-One Printer</td>
<td>HP Officejet Pro 276dw Multifunction</td>
<td>e-All-in-One Printer</td>
</tr>
<tr>
<td>HP Deskjet Ink Advantage 4615</td>
<td>HP Officejet Pro 8100 ePrinter</td>
<td>HP Officejet Pro 3620 Black &amp; White</td>
</tr>
<tr>
<td>All-in-One Printer</td>
<td>HP Officejet Pro 8600 e-All-in-One</td>
<td>e-All-in-One Printer</td>
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<tr>
<td>HP Deskjet Ink Advantage 4625</td>
<td>HP Officejet Pro 8600 Plus</td>
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<tr>
<td>e-All-in-One Printer</td>
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<tr>
<td>HP Deskjet Ink Advantage 5525</td>
<td>HP Officejet Pro 8600 Premium</td>
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<td>HP Deskjet Ink Advantage 6525</td>
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</tr>
<tr>
<td>e-All-in-One Printer</td>
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About Buyers Laboratory LLC

Buyers Laboratory LLC (BLI) is the world’s leading independent provider of analytical information and services to the digital imaging and document management industry. For over 50 years, buyers have relied on BLI to help them differentiate products’ strengths and weaknesses and make the best purchasing decisions, while industry sales, marketing and product professionals have turned to BLI for insightful competitive intelligence and valued guidance on product development, competitive positioning and sales channel and marketing support. Using BLI’s web-based bliQ and Solutions Center services, 40,000 professionals worldwide create extensive side-by-side comparisons of hardware and software solutions for over 15,000 products globally, including comprehensive specifications and the performance results and ratings from BLI’s unparalleled Lab, Solutions and Environmental Test Reports, the result of months of hands-on evaluation in its US and UK labs. The services, also available via mobile devices, include a comprehensive library of BLI’s test reports, an image gallery, hard to find manufacturers’ literature and valuable tools for configuring products, calculating total cost of ownership (TCO) and annual power usage. BLI also offers consulting and private, for-hire testing services that help manufacturers develop and market better products and consumables.

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