Ink Consumption Comparison of
Canon imagePROGRAF 8000S versus HP DesignJet Z6100

Canon imagePROGRAF 8000S

HP DesignJet Z6100

Test Objective

Buyers Laboratory International UK Ltd (BLI), situated in Wokingham, UK, was commissioned by Canon Europe to conduct an ink consumption analysis between the 44" Canon imagePROGRAF 8000S and the 42" HP DesignJet Z6100. The purpose of the test was to objectively compare the ink usage between the two devices in standard mode when using the ISO/JIS SCID No.5 Test Pattern tiled to create 42" x 52.5" images.

HP DesignJet Z6100 and Canon imagePROGRAF 8000S under test at BLI's European test facility in Wokingham, UK

Executive Summary

During the course of conducting its comparative ink consumption analysis, BLI ran 765.5 square feet of output (50 pages of 42" x 52.5" images) on each device. Both devices were tested in default configuration.

As BLI's test results below illustrate, the Canon imagePROGRAF 8000S proved to be more efficient in its ink consumption, using only 365.9g of ink, which equates to 13.2% of the overall ink volume of a complete set of its 330ml colour cartridge set (see Table 3), while the HP DesignJet Z6100 used 558.7g of ink, which equates to 8.6% of a complete set of its 770ml colour cartridge set (see Table 4).

To equate the results of this 50-page print run to any local market price requires the use of the following equation:

A – (total cost of complete set of Canon iPG8000S 330ml cartridges) x 13.2% / 100

B – (total cost of complete set of HP DesignJet Z6100 770ml cartridges) x 8.6% / 100

Cost per page differential between the Canon imagePROGRAF 8000S versus HP DesignJet Z6100 = (B – A) / 50

BLI Test Results

Table 1

Amount of ink in each Canon imagePROGRAF 8000S cartridge								
	Yellow	Cyan	Photo Cyan	Magenta	Photo Magenta	Black	Matte Black	Grey
Weight of cartridge prior to installation	459.8g	457.0g	464.9g	457.0g	459.0g	466.8g	463.5g	459.6g
Weight of cartridge at end of life *	113.4g	113.4g	113.4g	113.4g	113.4g	113.4g	113.4g	113.4g
Net weight of ink	346.4g	343.6g	351.5g	343.6g	345.6g	353.4g	350.1g	346.2g

* Based on mean average weight across six different cartridges (Y, M, PM, C, PC, G)

Table 2

Amount of ink in each HP DesignJet Z6100 cartridge								
	Yellow	Cyan	Photo Cyan	Magenta	Photo Magenta	Black	Matte Black	Light Grey
Weight of cartridge prior to installation	999.2g	1001.0g	987.6g	1009.8g	990.1g	999.3g	1000.3g	984.8g
Weight of cartridge at end of life *	182.3g	182.3g	182.3g	182.3g	182.3g	182.3g	182.3g	182.3g
Net weight of ink	816.9g	818.7g	805.3g	827.5g	807.8g	817.0g	818.0g	802.5g

* Based on mean average weight across three different cartridges (LG, M, Y)

Table 3

Amount of ink used in 50 print run of BLI's 42¨ x 52.5¨ tiled ISO/JIS SCID No.5 Test Pattern on Canon imagePROGRAF 8000S								
	Yellow	Cyan	Photo Cyan	Magenta	Photo Magenta	Black	Matte Black	Grey
Net weight of ink used in print run	56.3g	13.4g	55.1g	48.7g	80.7g	9.1g	4.0g	98.6g
Net weight of ink in cartridge	346.4g	343.6g	351.5g	343.6g	345.6g	353.4g	350.1g	346.2g
Percentage of ink used in test	16.3%	3.9%	15.7%	14.2%	23.4%	2.6%	1.1%	28.5%

Table 4

Amount of ink used in 50 print run of BLI's 42¨ x 52.5¨ tiled ISO/JIS SCID No.5 Test Pattern on HP DesignJet Z6100								
	Yellow	Cyan	Light Cyan	Magenta	Light Magenta	Photo Black	Matte Black	Light Grey
Net weight of ink used in print run	86.2g	5.0g	48.6g	32.9g	143.7g	17.5g	4.2g	220.6g
Net weight of ink in cartridge	816.9g	818.7g	805.3g	827.5g	807.8g	817.0g	818.0g	802.5g
Percentage of ink used in test	10.6%	0.6%	6.0%	4.0%	17.8%	2.1%	0.5%	27.5%

Summary of Ink Usage for 50 print run of BLI's 42¨ x 52.5¨ tiled ISO/JIS SCID No.5 Test Pattern	
Canon imagePROGRAF 8000S	365.9g
Hewlett Packard DesignJet Z6100	558.7g
Canon imagePROGRAF 8000S consumed 34.5% (192.8 g) less ink	

Test Methodology Overview:

Buyers Lab's ink consumption analysis was conducted using the ISO/JIS SCID No.5 Test Pattern, which is a well recognized document in the graphic arts industry. The original 406dpi 5.039" x 6.299" TIFF image was resized to 10.5" x 13.125" using Adobe Photoshop, retaining the embedded colour profile on the original ISO test file, constraining proportions to retain image integrity. The resulting 195dpi image was tiled 4 x 4 to create a 42.0" x 52.5" test file.

Test image used in BLI test comprised of 4 x 4 tiling of the ISO/JIS SCID No.5 Test Pattern

The Canon imagePROGRAF 8000S was installed in BLI's lab with the latest level of firmware (as of February 1, 2008) and connected to a Windows XP workstation using a 1000BaseT TCP/IP connection. The device was left in default configuration throughout testing. The Windows driver was used for all testing and was left in default configuration with only the media selection changed to reflect the media used in testing. The media used throughout testing was 42" Ilford OmniJet Photo 170gsm instant dry SATIN. The 42" x 52.5" test file was printed using the standard driver colour quality mode with the image size set to 42" x 52.5" and printing set to fit to media size with borderless printing and image rotation left disabled (see driver setting screenshots on next page).

The HP DesignJet Z6100 42" model was installed in BLI's lab with the latest level of firmware (as of February 1, 2008) and connected to a Windows XP workstation using a 1000BaseT TCP/IP connection. The device was left in default configuration throughout testing. The Windows driver was used for all testing and was left in default configuration with only the media selection changed to reflect the media used in testing. The media used throughout testing was 42" Ilford OmniJet Photo 170gsm instant dry SATIN. A paper profile was carried out by BLI analysts using the HP Color Center tool utility, which is provided with the product. The 42" x 52.5" test file was printed using the standard driver colour quality mode with the image size set to 42" x 52.5" and printing set to fit to media size with borderless printing and image rotation left disabled (see driver setting screenshots on the next page).

After device setup was completed, all eight ink cartridges for each device were weighed using precision digital scales prior to the commencement of the print test run. At the end of the 50-set test run, each printer's eight cartridges were weighed again, and the resulting weight of ink used for the test run calculated for each colour.

Canon imagePROGRAF 8000S: Six of the eight cartridges (C, PC, M, PM, Y, G) were run to exhaustion and the weight of the empty cartridges was recorded. Due to the fact that the entire contents of the black cartridges could not be depleted within the time of the test, the mean weight of the other six cartridges was calculated and used as the assumed empty weight for all eight colours. The mean weight was within a +/- 1% margin of difference measured for all six colours run to complete depletion.

HP DesignJet Z6100: Three of the eight cartridges (LG, M and Y) were run to exhaustion and the weight of the empty cartridges was recorded. Due to the fact that the entire contents of the other cartridges could not be depleted within the time of the test, the mean weight of the three cartridges was calculated and used as the assumed empty weight for all eight colours. The mean weight was within a +/- 0.7% margin of difference measured for all three colours run to complete depletion.

The percentage of ink used per cartridge was calculated by dividing the net weight of ink used in the print run by the overall weight of ink in each cartridge and multiplying by 100. The results are found in Tables 3 and 4.

The percentage of total ink used per printer was calculated by adding the percentages used of each of the eight cartridges and dividing by 8.

Printer Driver setup during testing for the Canon imagePROGRAF 8000S
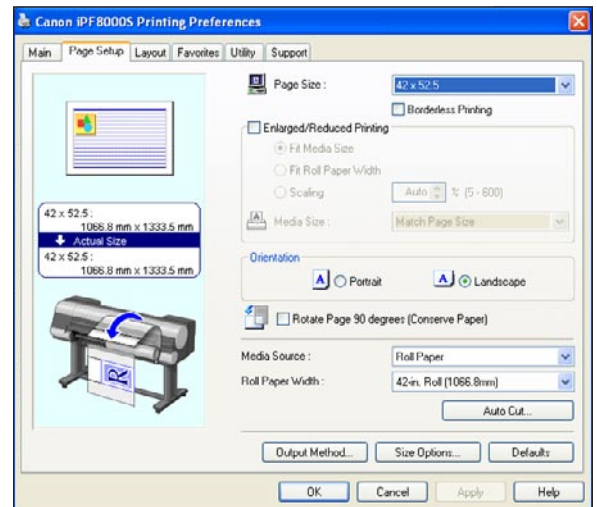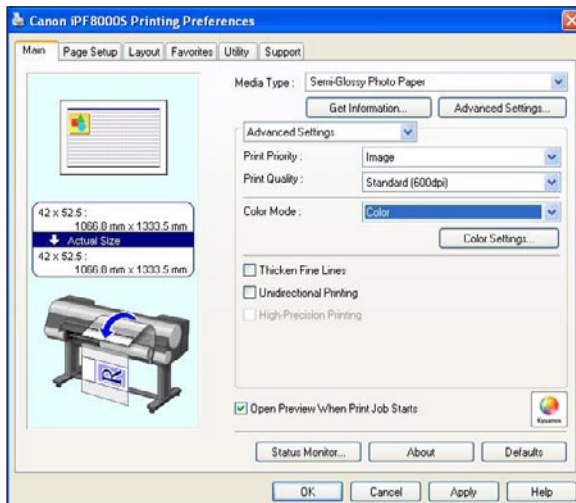
Printer Driver setup during testing for the HP DesignJet Z6100
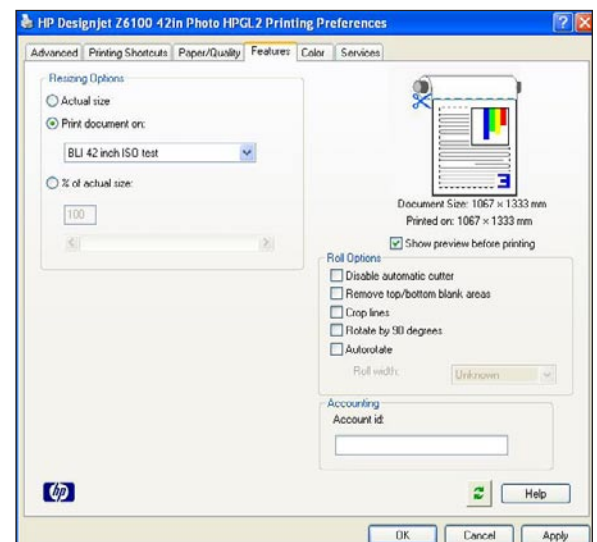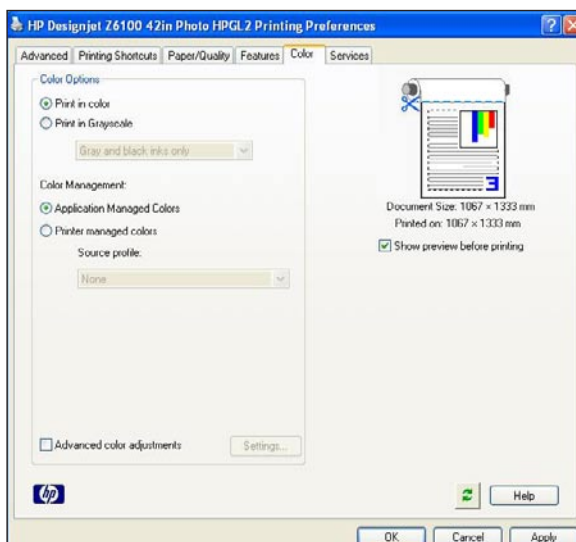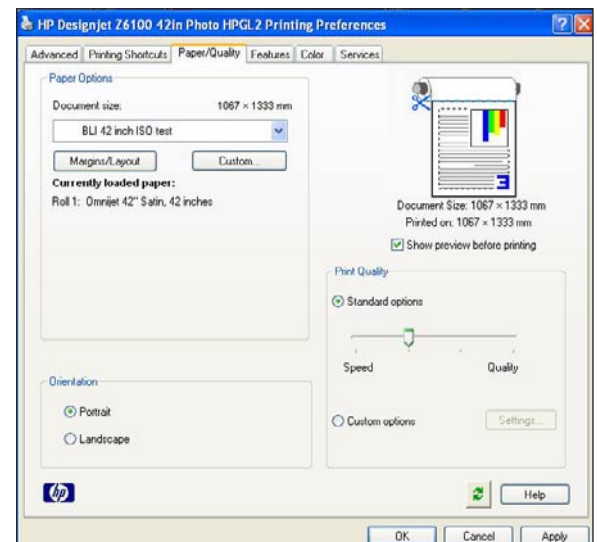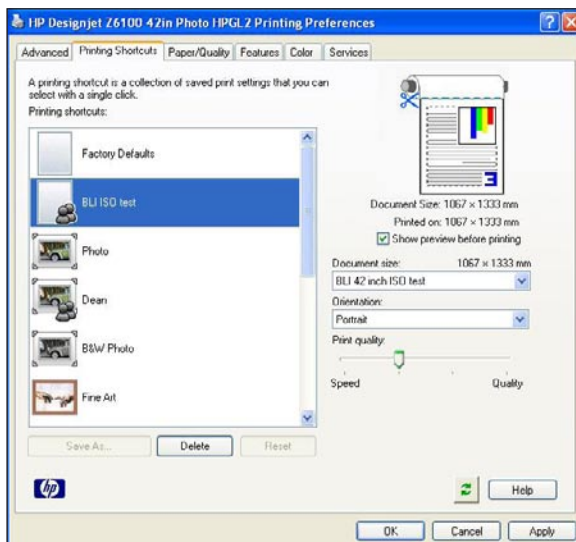
About Buyers Laboratory Inc.

For more than 45 years, Buyers Laboratory has been the leading independent equipment testing lab and business consumer advocate for the imaging industry. In addition to publishing the industry's most comprehensive and accurate test reports on document imaging devices, each representing months of exhaustive hands-on testing in BLI's UK (Wokingham, Berkshire) and US (Hackensack, NJ) laboratories, the company has been the leading source for extensive databases of specifications and pricing on copiers, printers, wide format devices, fax machines and multifunctional products. The company's databases cover more than 10,000 products and have a long-standing reputation for being the industry's most trustworthy and complete source for global competitive intelligence. They are available to BLI subscribers online via the company's bliQ competitive information service. This encyclopedic resource also provides quick and easy access to BLI's First Look Reports, Field Test Reports, Lab Test Reports, Solutions Reports, Digital Imaging Review and Business Consumer's Advisor newsletters and OEM library.

In addition to the testing of equipment for its subscribers, Buyers Laboratory provides a vast array of confidential for-hire private testing services that include document imaging device beta and pre-launch testing, performance certification testing, consumables testing (such as toner, ink and photoconductors), software and solutions assessments, and print media testing (including virgin and recycled papers).

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