



Canon imagePROGRAF 8000S: Ink Consumption Comparison of Standard versus Economy Modes



Test Objective:

Buyers Laboratory International UK Ltd (BLI), situated in Wokingham, UK, was commissioned by Canon Europe to conduct an ink consumption analysis on the Canon imagePROGRAF 8000S. The purpose of the test was to objectively compare the ink usage in standard and economy modes on the device using the ISO/JIS SCID No.5 Test Pattern tiled to create a 42" x 52.5" image.

PERFORMANCE SUMMARY

During the course of conducting its comparative ink consumption analysis, BLI ran 1,531 square feet of output split evenly between standard and economy modes. The device was left in default configuration with the 42" image being set to fit the media size (42" roll) and media type set to the closest fit from the driver media catalogue.

As BLI's test results on page 3 illustrate, the Canon imagePROGRAF 8000S delivered an overall ink savings of 8.0% when switched from the standard to economy mode.



imagePROGRAF 8000S under test in BLI's Wokingham Lab

As the ink comparison in Table 1 on page 3 illustrates, the difference in ink usage can be largely attributed to the far greater use of photo cyan and photo magenta inks. This is largely due to the different way in which the two modes handle lighter shades of colour in the test document. By consuming more photo cyan and photo magenta inks (which are effectively washed out versions of the pure cyan and magenta) in standard mode, the Canon imagePROGRAF 8000S is able to saturate lighter areas of the image, thereby delivering a smooth, richly coloured finish. Economy mode uses more halftoning, which saves ink overall but results in a slightly lower quality finish due to the sparser distribution of dots. The greater use of halftoning did result in higher use of grey and cyan ink in economy mode. It should be noted, though, that while the economy mode uses more halftoning and delivers a slightly less intense colour output, BLI technicians were still impressed by the quality of the economy mode output, which required close inspection to distinguish differences between the two output modes.

BLI Test Results

Table 1

Ink savings with Economy Mode

	Yellow	Cyan	Photo Cyan	Magenta	Photo Magenta	Black	Matte Black	Grey
Ink savings by choosing Economy over Standard Mode	8%	-11.2%*	39.7%	0%	30.1%	45.1%	15%	-24.9%*

* Due to increased halftoning, Economy Mode consumed more Cyan and Grey ink than Standard Mode.

Overall ink usage by weight in Standard Mode: 365.9g

Overall ink usage by weight in Economy Mode: 336.6g

Overall ink savings when using Economy Mode: 8.0%

Table 2

Amount of ink in each 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 3

Amount of ink used in 50 print run of BLI's 42" x 52.5" tiled ISO/JIS SCID No.5 Test Pattern in Standard Mode

	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%	3.9g	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 in Economy Mode

	Yellow	Cyan	Photo Cyan	Magenta	Photo Magenta	Black	Matte Black	Grey
Net weight of ink used in print run	51.8g	14.9g	33.2g	48.7g	56.4g	5.0g	3.4g	123.2
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	15.0%	4.3%	9.4%	14.2%	16.3%	1.4%	1.0%	35.6%

Test Methodology Overview:

Buyers Lab's running 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, 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. 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. 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).

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



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

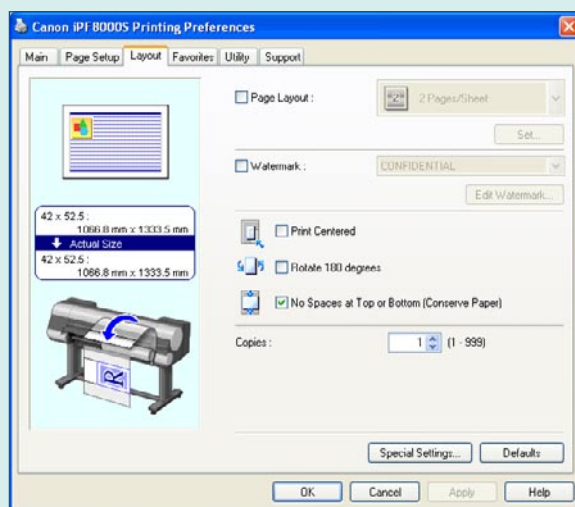
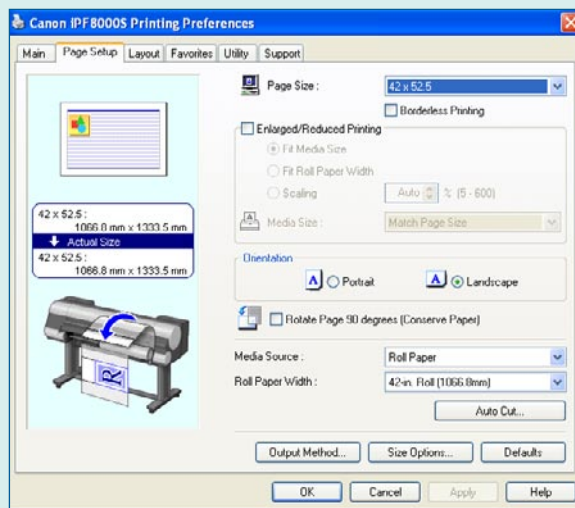
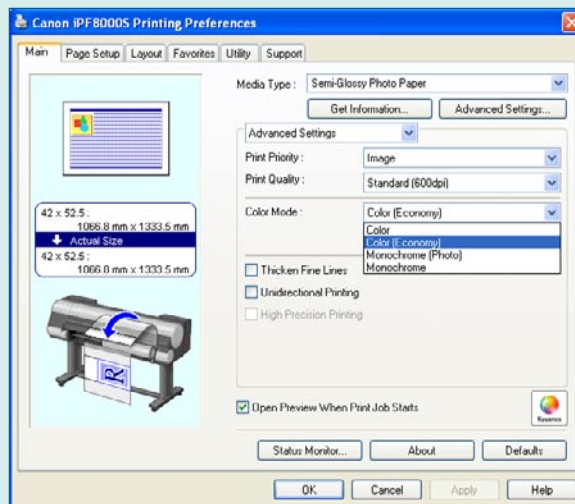
A new print run was conducted using the same document and the same print run length with the driver set to economy mode. All eight cartridges were weighed again at the beginning and at the end of the test run.

Six of the eight cartridges (C, PC, M, PM, Y, Gy) 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 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.

The net amount of ink per colour used in the test was calculated by deducting the weight of the cartridge at the end of the test print run from the weight of the cartridge at the start of the test print run. The results are found in Table 2.

The percentage of ink used 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.

Printer Driver setup during testing, with only Color Mode changing from Standard to Economy differentiating the two test processes.



LAB TEST

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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