TORREY PINES
RESEARCH

Test of Epson Genuine Ink Cartridges vs. Non-Epson Ink Cartridges

Summary Report

1. Objective

To evaluate the performance of Epson genuine ink cartridges against other brands of ink cartridges for EPSON Stylus C42, C62, and C82 ink jet printers. Non-Epson ink cartridges are also known as "compatible cartridges." Testing gauges how well the different inks work with the printers from the perspective of an average user. The key measurements are:

- **Page Yield** – pages printed per cartridge. Higher yield is desirable because it allows users to print more pages from each cartridge. Higher yield also means less frequent cartridge replacement.
- **Head Cleaning** – users of inkjet printers initiate print head cleaning to restore good quality output by depressing the print head cleaning buttons. Fewer head cleanings are desirable because it means there are fewer pages printed with defects, less user intervention, and less ink and paper waste.

2. Results

Epson consistently outperformed other brands with higher page yields. Overall, Epson cartridges required less user intervention for head cleaning. With two of the five black and color cartridge sets of other brands, print quality problems were so persistent that valid data is unavailable.

Page Yield: In each test, yield was the average number of pages printed from printers that successfully expended 5 ink cartridge sets. A yield of 0 for any test indicates that all five printers using cartridge sets of that brand suffered print quality problems that could not be resolved by print head cleanings.

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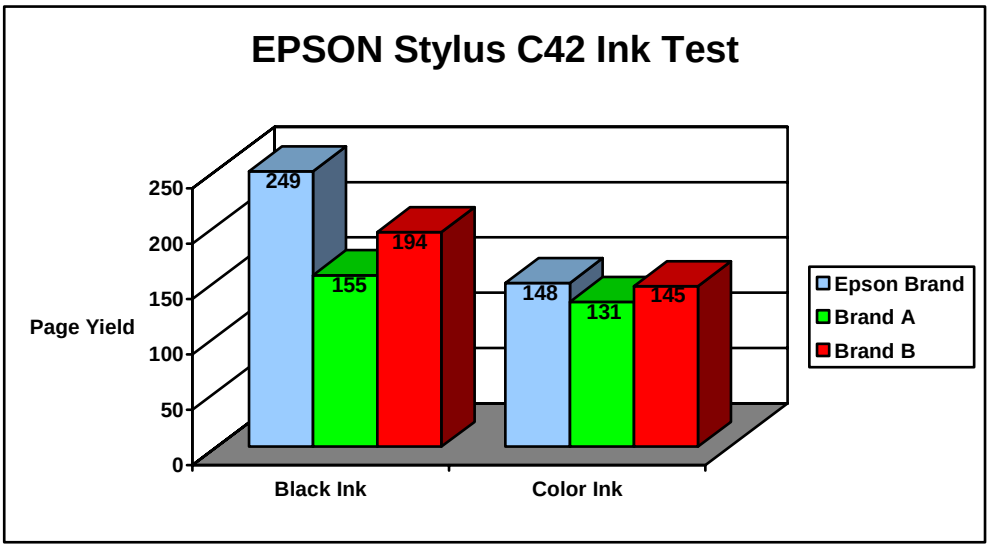
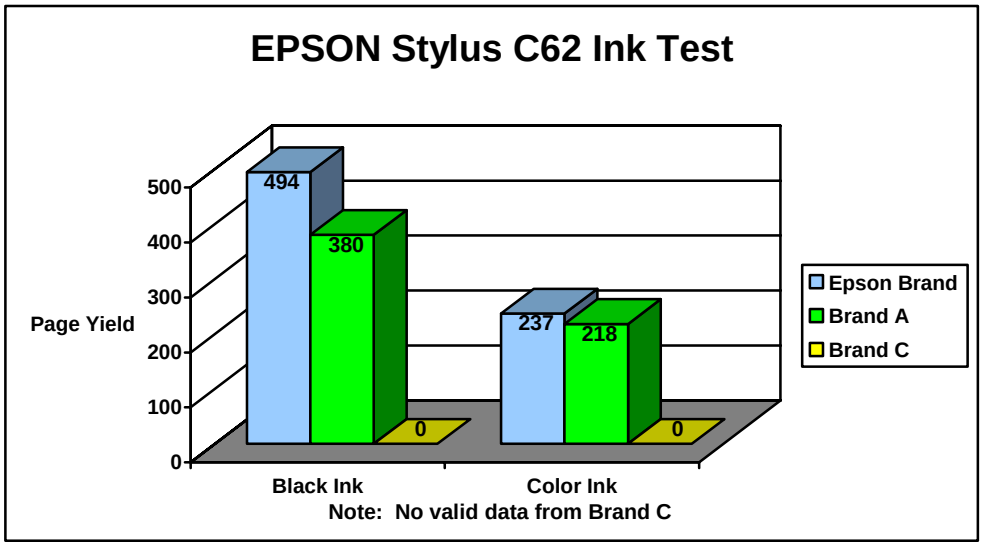
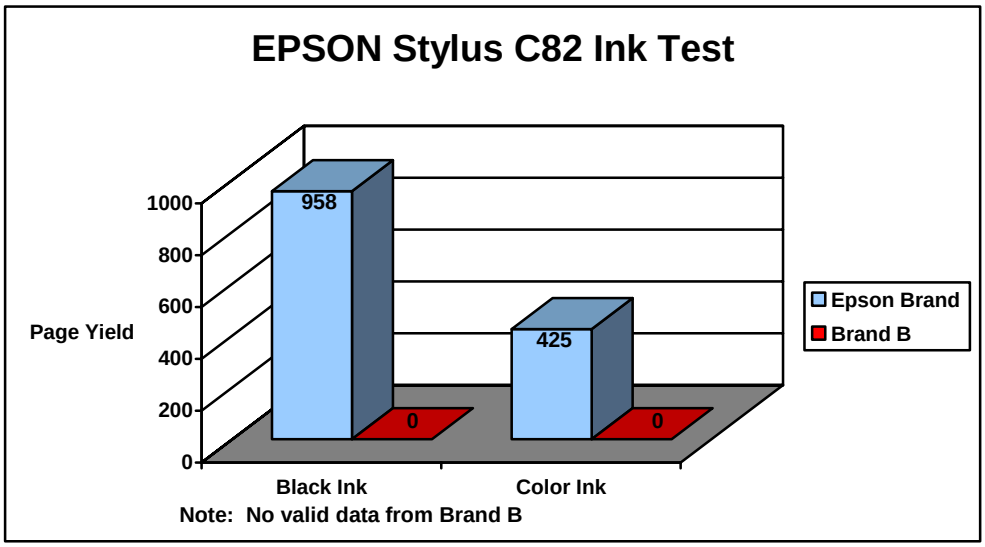


Comments: Epson ink cartridges outperformed Brand A and B in both black and color page yields. Epson's combined black and color yields of 397 pages were 39% more than Brand A and 17% more than Brand B.

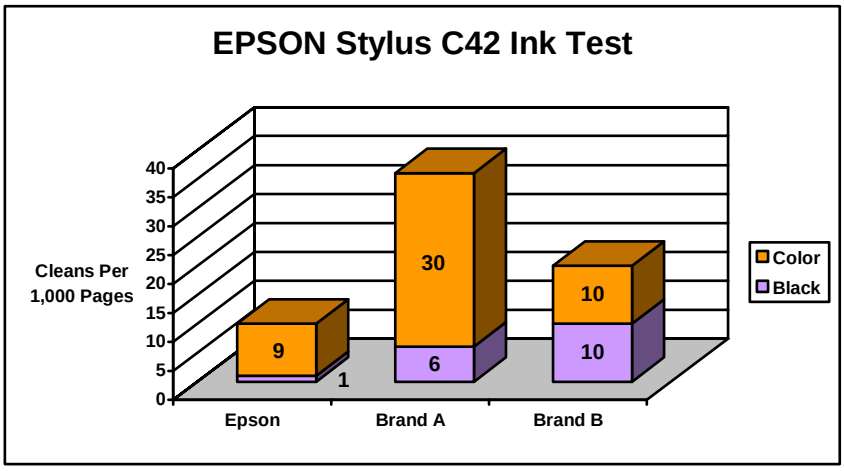


Comments: Epson ink cartridges outperformed Brand A in both black and color page yields. Epson's combined black and color yields of 731 pages were 18% more than Brand A. Brand C performed so poorly that no comparisons were possible.

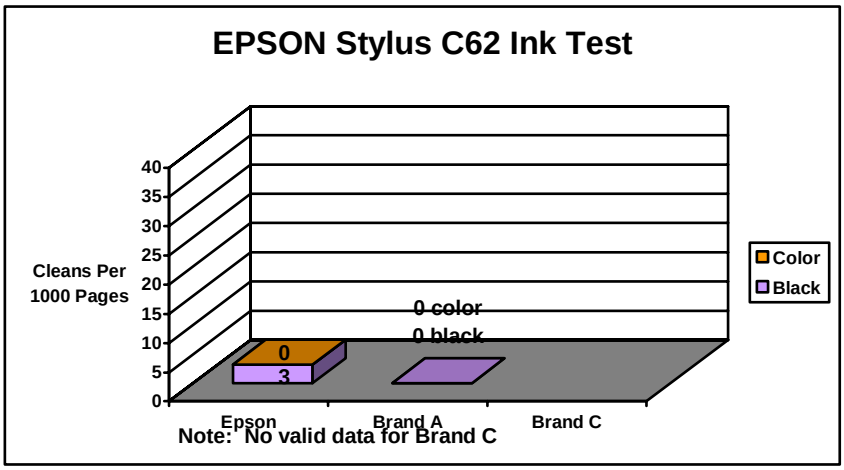


Comments: The combined black and color yields with Epson ink cartridges were 1,383 pages. Brand B performed so poorly that no comparison was possible.

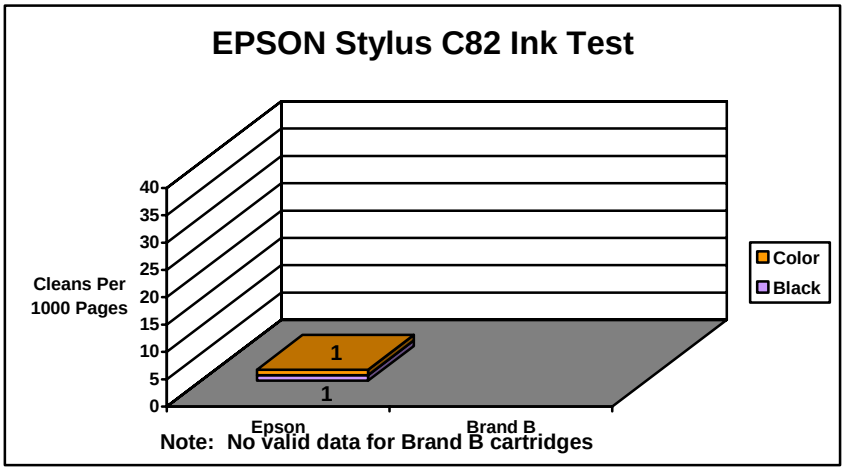
Head Cleanings: Overall, the Epson cartridges tested had lower rates of user initiated head cleanings. Head cleanings were not required with one of the Brand A cartridge sets but even as to these models, page yields were higher with the Epson cartridges. Data was normalized by page yield to show cleaning frequency per 1,000 pages to provide a consistent comparison between brands.



Comments: Significantly fewer head cleanings were required with Epson cartridges than with Brand A and Brand B cartridges. Combining black and color cleaning, Brand A cartridges required 260% more head cleanings than Epson cartridges, and Brand B cartridges required 100% more.



Comments: Printers using Epson cartridges had low cleaning rates and cleaning was not required with Brand A cartridges. All five printers using Brand C cartridges could not be restored to good print quality with head cleanings so valid comparisons of cleaning rates were not possible.



Comments: Printers using Epson cartridges had low rates of user induced head cleanings. All five printers using Brand B cartridges could not be restored to good print quality with head cleanings so valid comparisons of cleaning rates were not possible.

3. Test Plan

Evaluate Epson ink cartridges and 3 brands of non-Epson ink cartridges on 3 different Epson printer models. The testing involved 40 printers, five hundred ink cartridges, and tens of thousands of printed pages.

Epson Printer Model and Ink Cartridges	Ink Brand
EPSON Stylus C42 T036120 (Black), T037021 (Color)	Epson - Original Equipment Manufacturer
	Brand A [1]
	Brand B [2]
EPSON Stylus C62 T040120 (Black), T041020 (Color)	Epson - Original Equipment Manufacturer
	Brand A
	Brand C [3]
EPSON Stylus C82 T032120 (Black), T042220/T042320/T042420 (Color - CMY)	Epson - Original Equipment Manufacturer
	Brand B

To ensure accurate and fair testing:

- Each of the 8 tests above utilized 5 brand new printers. All 40 printers were tested using the same methodology.
- To simulate real-life usage, each printer's first ink cartridge set was a genuine Epson cartridge. An ink cartridge set consisted of black and color cartridge.
- After the initial set, each printer had to use 4 cartridge sets of a specific brand to complete test. Performance results were based on data from the last 3 of 5 ink cartridge sets.
- C82: cyan, magenta, and yellow inks were all replaced when just 1 was expended.

Basic test steps were:

1. Initialize new printer with Epson cartridge set. Print nozzle check to confirm nozzle function and print head alignment.
2. Print test pattern shown in Appendix.
3. Head cleaning was performed at anytime during the test if print quality was poor. Examples of poor print quality are missing lines or colors. A nozzle check print out was performed after cleanings to determine if good print quality had been restored. Testing was stopped if acceptable print quality could not be restored with 5 successive head cleanings.
4. When 1st cartridge set was expended, the print pattern was printed using 2^{nd,} 3rd, 4th, and 5th ink cartridge sets from one brand only (A, B, C, or Epson).
5. Each printer test was complete when 5 cartridge sets were expended. Data from incomplete tests was not considered.

4. Conclusion

The performance of the Epson ink cartridges tested was superior to Brand A and far superior to Brand B and C cartridges. Epson ink cartridges consistently yielded more pages than non-Epson cartridges, up to 60% more. Overall, cleaning was less frequent with Epson ink cartridges. One set of Brand B and one set of Brand C cartridges performed so poorly that valid comparisons of yields and user induced head cleanings were not possible.

EPSON Stylus C42 Tests: Epson cartridges consistently outperformed both Brand A and Brand B cartridges, with higher yields and fewer cleaning cycles. The yield differences were most noticeable with black ink cartridges. Brand A black cartridges yielded 40% less pages and Brand B cartridges yielded 22% less.

EPSON Stylus C62 Tests: Epson ink cartridges outperformed Brand A cartridges and far outperformed Brand C cartridges. The Epson black cartridges required few cleaning cycles and the Brand A cartridges required none, but the Brand A cartridges yielded 23% less pages. Brand C cartridges consistently performed so poorly that the tests could not be completed.

EPSON Stylus C82 Tests: Epson ink cartridges far outperformed Brand B cartridges. Combining black and color, Epson ink cartridges yielded 1,383 pages and required very few cleaning cycles. Brand B cartridges consistently performed so poorly that the tests could not be completed.

In summary, testing confirmed that genuine Epson inks offered these advantages:

- More quality prints per cartridge.
- Less user intervention due to fewer print quality problems.
- Cartridge savings because of higher page yields and less ink used overall for cleaning.
- Paper savings because less paper was wasted on poor-quality output and nozzle check print outs.
- Protection of printer investment because poor performance was a persistent problem with some of the non-Epson cartridges.
- Better for the environment: less ink and paper waste, fewer cartridge replacements, longer printer life.

5. Appendix

Thumbnail of test pattern is shown below. Actual size is 8.5” x 11”.

Common examples of print defects are shown below. These image problems are the result of an absence of ink being sprayed where intended, including missing lines from one or more clogged print head nozzles and color drop out from many clogged nozzles.

Normal

Missing Lines

Yellow Ink Dropout

Footnotes:

1) Brand A cartridges are made in Europe and distributed extensively throughout Europe and some other markets worldwide.
2) Brand B cartridges are made in Europe and distributed extensively in Europe, the US and some other markets worldwide.
3) Brand C cartridges are made in China and distributed extensively in some European markets.