

Suggested Litho Press Potential to Emit Calculations

Ink Coverage = 0.001 lb/ft²

Ink Retention = 89-97% per Battelle for the Graphic Arts Education and Research Foundation March 1993 2nd printing the District will use **90%**. Note, the retention was tested after 4 weeks of storage with no difference in retention.

Fountain Solution Usage = (0.00002 oz/in²)(y in²/sheet)(# sheet/hr)

Blanket Wash = x oz/in² (y in²/blanket)(# blankets)(5 cleaning cycles/day)

Roller Cleaner = w oz/in² (y in²/roller)(# rollers)(5 cleaning cycles/day)

Plate Cleaner = u oz/in² (y in²/plate)(# plate)(5 cleaning cycles/day)

Assume 80% runtime, 10% cleanup, and 10% setup time

(5 cleaning cycles/day) is about 2.4 hrs (10% of a day for cleaning) assuming approximately 30 min/cleaning cycle

The District believes these are reasonable estimates of the Blanket Wash/Roller Cleaner/Plate Cleaner usage rates:

x = 0.04 oz/in²

w = 0.02 oz/in²

u = 0.02 oz/in²

Assume the surface area of the blankets/rollers/plates (y) = (length of sheet (in))*[width of sheet (in) + 2 (in)]; where the 2 (in) is an inch on each side of the sheet.

Assume the # of rollers/blankets/plates each = # of colors

Assume for total coverage of ink and fountain solution that the press can only operate at 75% of maximum speed

Assume starch, rubber rejuvenator, glue, etc are all considered to be insignificant.

Example 1:

10-color press (15,000 sheets/hr)

A(sheet) = (41"x29") = 1189 in² = 8.26 ft²

A (blanket/roller/plate) = (41"x31") = 1271 in²

VOC Ink = 5.45%

VOC Fountain Solution = 4.87% (as applied)

Density of FS (as applied) = 8.2 lb/gal

VOC Blanket Wash = 6.37 lb/gal

VOC Roller Wash/Plate Wash = 5.91 lb/gal

Ink: = (0.001 lb/ft²) (0.0545 VOC content) (8.26 ft²/sheet) (15,000 sheet/hr)
(0.10 retention) (0.80 runtime) (0.75 coverage) (8760 hr/yr) (ton/2000 lb)
= 1.78 tpy

Fountain Solution: = (0.00002 oz/in²) (1271 in²/sheet) (15,000 sheet/hr) (1 gal/128 oz) (0.0487 VOC) (8.2 lb/gal) (0.80 runtime) (0.75 coverage) (8760 hr/yr) (ton/2000 lb)
= 3.13 tpy

Blanket Wash: = (0.04 oz/in²) (1271 in²/blanket) (10 blankets/cleaning cycle) (5 cleaning cycles/day) (1 gal/128 oz) (6.37 lbVOC/gal) (365 day/yr) (ton/2000 lb)
= 23.09 tpy

Roller Wash: = (0.02 oz/in²) (1271 in²/roller) (10 rollers/cleaning cycle) (5 cleaning cycles/day) (1 gal/128 oz) (5.91 lbVOC/gal) (365 day/yr) (ton/2000 lb)
= 10.71 tpy

Plate Cleaner: = (0.02 oz/in²) (1271 in²/plate) (10 plates/cleaning cycle) (5 cleaning cycles/day) (1 gal/128 oz) (5.91 lbVOC/gal) (365 day/yr) (ton/2000 lb)
= 10.71 tpy

Total VOC = 1.78 + 3.13 + 23.09 + 10.71 + 10.71 = 49.42 tpy

Example 2:

6-color press (15,000 sheets/hr)

A(sheet) = (10"x12") = 120 in² = 0.83 ft²

A (blanket/roller/plate) = (10"x14") = 140 in²

VOC Ink = 5.45%

VOC Fountain Solution = 4.87% (as applied)

Density of FS (as applied) = 8.2 lb/gal

VOC Blanket Wash = 6.37 lb/gal

VOC Roller Wash/Plate Wash = 5.91 lb/gal

Ink: = (0.001 lb/ft²) (0.0545 VOC content) (0.83 ft²/sheet) (15,000 sheet/hr) (0.10 retention) (0.80 runtime) (0.75 coverage) (8760 hr/yr) (ton/2000 lb)
= 0.18 tpy

Fountain Solution: = (0.00002 oz/in²) (120 in²/sheet) (15,000 sheet/hr) (1 gal/128 oz) (0.0487(VOC)) (8.2 lb/gal) (0.80 runtime) (0.75 coverage) (8760 hr/yr) (ton/2000 lb)
= 0.29 tpy

Blanket Wash: = (0.04 oz/in²) (140 in²/blanket) (6 blankets/cleaning cycle) (5 cleaning cycles/day) (1 gal/128 oz) (6.37 lbVOC/gal) (365 day/yr) (ton/2000 lb)
= 1.53 tpy

Roller Wash: = (0.02 oz/in²) (140 in²/roller) (6 rollers/cleaning cycle) (5 cleaning cycles/day) (1 gal/128 oz) (5.91 lbVOC/gal) (365 day/yr) (ton/2000 lb)
= 0.71 tpy

Plate Cleaner: = (0.02 oz/in²) (140 in²/plate) (6 plates/cleaning cycle) (5 cleaning cycles/day) (1 gal/128 oz) (5.91 lbVOC/gal) (365 day/yr) (ton/2000 lb)
= 0.71 tpy

Total VOC = 0.18 + 0.29 + 1.53 + 0.71 + 0.71 = 3.42 tpy