



Emissions Inventory Help Sheet for Printing Plants (Offset or Lithography)

What do I need to report?

A printing facility emits pollutants from the printing ink, fountain solution, and cleaning solvents, including blanket wash. Printers report these emissions in the AQD Online Portal.

IMPORTANT: Because of the unusual calculations for lithographic ink due to paper retaining the solvent in the ink, the annual ink usage must not include the amount of ink in the waste disposed. Only report net material usage that causes emissions from your facility. Do not report materials that have been collected as waste and sent off-site for recycling. For example, if you have purchase receipts for 100 gallons of a volatile organic compound (VOC) emitting ink, but sent 50 gallons of it off-site for recycling, then you would only report 50 gallons of material used. The annual amount of material used must be equal to or greater than zero; the amount of material sent off-site to be recycled cannot be used to calculate a negative emissions value. If you have any questions, call 602-506-6790.

How do I determine the emission factors (EF) for my materials?

The best source for this information is your safety data sheet (SDS). The EF can be expressed as a percentage (fraction) of pollutant by weight (lb/lb) or as pounds of pollutant per gallon (lb/gal). Except for ink, the EF is the pollutant content. The pollutant in the ink retained by the paper is considered when determining the EF for ink.

- For cold presses, only 5% of the VOC from the ink is emitted as a pollutant, with 95% retained in the paper.
- For heatset presses, 80% of the VOC from the ink is emitted as a pollutant, with 20% retained in the paper.

Examples:

1. A cold press ink with 20% VOC has an EF of $(0.20 \times 0.05) = 0.01$ pounds of VOC per pound of ink used.
2. A heatset ink with 30% VOC has an EF of $(0.30 \times 0.80) = 0.24$ pounds of VOC per pound of ink used.



How do I report capture and control for heatset facilities?

Heatset facilities use emission control devices, such as a thermal oxidizer, which need to be associated with the emission process in the facility inventory tree in the AQD Online Portal. The oxidizer captures and destroys pollutant emissions from ink, fountain solution, and sometimes blanket wash. The assumptions below are the total capture and control efficiencies which need to be added to the control device's pollutants controlled section. More information on how to create a control device can be found in the AQD Online Portal Emissions Inventory Instructions. Upload documentation for your emission factor calculations into the AQD Online Portal, stating how the control efficiency was determined (and test date, if applicable).

- For heatset inks, report capture efficiency as 100%. Report the control efficiency of an oxidizer as determined from the most recent approved performance test.
- For fountain solutions, up to 70% of the pollutant is captured and controlled (maximum capture \times control = 70%).
- For automatic blanket washes with a vapor pressure of less than 10 mm Hg at 20° C, you may assume 40% of the pollutant is captured and controlled (maximum capture \times control = 40%). You may not take credit for pollutant reduction by your oxidizer if you use a blanket wash with a higher vapor pressure or one that is not automatic.

Example: An offset printer used 11,575 lbs of heatset ink. Waste disposal records indicate 575 lbs of ink were disposed. The ink EF is 0.24 lbs VOCs/lbs ink. A catalytic oxidizer was used with a destruction efficiency of 96%.

Annual usage: 11,575 lbs – 575 lbs = 11,000 lbs ink

Calculation (before control): 11,000 lbs ink \times 0.24 lbs VOC released/lbs of ink = 2,640 lbs VOC released

Control (catalytic oxidizer): 100% capture, 96% control

Emissions: 2,640 lbs VOC \times [1 – (100% \times 96%)] = 106 lbs VOC emitted

Reference: U.S. EPA, 1994. *Alternative Control Techniques Document: Offset Lithographic Printing*. Office of Air Quality Planning and Standards, EPA-453/R-94-054. Research Triangle Park, North Carolina.