

DRAFT

VOC Cap Permit Language
3M Commercial Graphics Division
Project Number 2003-06-024

Attachment A: VOC Compliance Calculations and Worksheet

The calculation methods for demonstrating compliance with special condition 2 (A) are described below. Table A provides an example worksheet that will be used to identify the sources of VOC emissions, the emissions calculations method used, and the monthly emissions (tons).

Recordkeeping – Material Balance

On each day of operation, the Permittee shall record and maintain records of the total quantity of all materials used containing VOC at the facility. By the 15th of the month, the Permittee shall calculate and record the following:

1. The total usage of VOC containing materials for the previous calendar month using the daily VOC usage records. The record shall also include the VOC content of each material as determined by (1) Material Safety Data Sheet (MSDS) from the 3M Chemical Data Management System (CDMS), (2) 3M laboratory formulation sheet or (3) 3M product specification information, which ever is most representative for each material used; the record shall indicate the source of VOC content for each material used. Other alternative methods approved by the Director may be used. The Director reserves the right to require the Permittee to determine the VOC contents of any material according to EPA reference methods. The amount of VOC used for each month shall be determined by multiplying the amount of VOC containing materials used by the VOC content of each material.
2. The VOC emissions for each emissions unit and the total facility for the previous month. VOC emissions shall be determined from the total VOC used for each emissions unit multiplied by one minus the capture efficiency for each emissions unit multiplied by the control efficiency of any thermal oxidizer used, as represented in the following equation:

$$VOC\ emissions = VOC\ used\ (1 - capture\ efficiency\ x\ control\ efficiency)$$

Where:

- VOC emissions are expressed as pounds (or tons)
- VOC used is expressed as pounds (or tons)
- Capture efficiency is expressed as a fraction (i.e., percent capture divided by 100)

-Control efficiency is expressed as a fraction (i.e., percent capture divided by 100)

Total facility VOC emissions shall be calculated by summing the VOC emissions from each emissions unit.

3. The 12 month rolling sum VOC emission for the previous 12 month period by summing the monthly VOC emissions data for the previous 12 months. This number shall be used to demonstrate compliance with Special Condition 2(A).
4. VOC emissions shall be recorded and maintained in a written or electronic form at the facility for a period of five years.

Recordkeeping – Emission Factor or Emission Model Calculations

On each day of operation, the Permittee shall record and maintain records of the total quantity of materials used or hours of operation for each VOC emissions unit. By the 15th of the month, the Permittee shall calculate and record the following:

1. The total usage of VOC containing materials or hours of operation for the previous calendar month using the daily production records. The record shall indicate the emission factor used to demonstrate compliance with Special Condition 2(A). Emission factors must be obtained from the most recent edition of AP-42, *Compilation of Air Pollutant Emission Factors*, the most recent stack test report, a mass balance approach (described above), and/or by a method approved by the Air Pollution Control Program. Documentation sufficient to support the emission factors must accompany Attachment A required by Special Condition 2(B).
2. The VOC emissions for each emissions unit and the total facility for the previous month. VOC emissions shall be determined by multiplying the quantity of materials used or hours of operation by an emissions factor, as represented in the following equation:

$$VOC\ emissions = Materials\ Used\ or\ Hours\ of\ Operation \times Emission\ Factor$$

Total facility VOC emissions shall be calculated by summing the VOC emissions from each emissions unit.

5. The 12 month rolling sum VOC emission for the previous 12 month period by summing the monthly VOC emissions data for the previous 12 months. This number shall be used to demonstrate compliance with Special Condition 2(A).
6. VOC emissions shall be recorded and maintained in a written or electronic form at the facility for a period of five years.

Attachment A: VOC Compliance Worksheet

3M Commercial Graphics Division
 Vernon County, S10, T35N, R3W
 Project Number: 2003-06-024
 Installation ID Number: 217-0004
 Permit Number:

This sheet covers the period from _____ to _____
 (month, year) (month, year)

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9
Point No. ¹	Emission Unit ¹	Emissions Calculation Method ¹	Amount of Material Processed ²	Units for Material Processed ²	Emission Factor ³	Units for Emission Factor ³	Control Efficiency ⁴	Monthly Emissions ⁵ (tons)
M40	Maker 40	Mass Balance						
M41-1	Maker 41	Mass Balance						
M42-1	Maker 42	Mass Balance						
M43-1	Maker 43	Mass Balance						
M44-1	Maker 44	Mass Balance						
M45-1	Maker 45	Mass Balance						
M46-1	Maker 46	Mass Balance						
M47-1	Maker 47	Mass Balance						
M48-1	Maker 48	Mass Balance						
M49-1	Maker 49	Mass Balance						
M50-1	Maker 50	Mass Balance						
N1-1	N1 Press	Mass Balance						
N2-1	N2 Press	Mass Balance						
N3-1	N3 Press	Mass Balance						
M41-2 through N3-2	Maker 41-50, N1-N3 Press Ovens	Mass Balance						
47CR	47 Cleaning Room	Mass Balance/Engineering						
49CR	49 Cleaning Room	Mass Balance/Engineering						
MCR	Maker Cleaning Room	Mass Balance/Engineering						
PCR	Press Cleaning Room	Mass Balance/Engineering						
MM-2	Premix #1	Mass Balance/Engineering						
MM-2	Premix #2	Mass Balance/Engineering						
MM-2	Premix #3	Mass Balance/Engineering						
MM-6	Mixer #1	Mass Balance/Engineering						
MM-4	Drum/Tote Mixers	Mass Balance/Engineering						
MM-3	Kettle #1	Mass Balance/Engineering						
MM-8	Kettle #2	Mass Balance/Engineering						
MM-9	Kettle #3	Mass Balance/Engineering						
MM-10	Kettle #4	Mass Balance/Engineering						
MM-11	Kettle #5	Mass Balance/Engineering						
MM-7	Tote Cleaner	Mass Balance/Engineering						
MM-5	3 Roll Mill	Mass Balance/Engineering						
MM	Mix/Mill Total	Mass Balance/Engineering						
GA-1, GA-10	Cleaning Tanks (2)	Not Applicable						
GA-2	Stripping Tank	Not Applicable						
GA-3	Grinder	Not Applicable						

M41-1	Maker 41	Mass Balance						
GA-4 through GA-6	Copper Tanks (3)	Not Applicable						
GA-7, GA-14	Rinse Tanks (2)	Not Applicable						
GA-8	Lathe	Not Applicable						
GA-9	Engraver	Not Applicable						
GA-12	Etch Tank	Not Applicable						
GA-11	Ring Coating	Mass Balance/ Engineering						
GA-15	Proof Press	Mass Balance/ Engineering						
GA-13	Chrome Tank	Performance Test						
TOABC	TO - ABC	AP-42						
TOD	TO - D	AP-42						
B1	Boiler #1	AP-42						
B2	Boiler #2	AP-42						
THEP	Storage Tank	EPA Tanks Software /						
TMEK	Storage Tank	EPA Tanks Software /						
TXYL	Storage Tank	EPA Tanks Software /						
TDBK	Storage Tank	EPA Tanks Software /						
T100	Storage Tank	EPA Tanks Software /						
TRS1	Storage Tank	EPA Tanks Software /						
TRS2	Storage Tank	EPA Tanks Software /						
TRS3	Storage Tank	EPA Tanks Software /						
LUWA	Solvent Recovery #1	Material Balance						
PRIV	Solvent Recovery #2	Material Balance						
LAM	Laminator	Material Balance						
X2	Extruder 2	Assume PTE						
X3	Extruder 3	Assume PTE						
CP	Case Printer	Assume PTE						
TP-1	Test Printer #1	Assume PTE						
TP-2	Test Printer #2	Assume PTE						
MISC	Space Heaters (3)	Assume PTE						
TFO1	Fuel Oil Storage Tank	Assume PTE						
Sum of Monthly VOC Emissions from Entire Installation ⁶								
12-Month VOC Emissions Total from Previous Month's Worksheet								
Monthly VOC Emissions Total from Previous Year's Worksheet								
Current 12-Month Total VOC Emissions ⁷								

¹ The removal or addition of any equipment must be included in this list and documented on Attachment C

² Amount of VOC containing material used in conjunction with the equipment including units of measurement

³ All emission factors used to demonstrate compliance with the VOC emissions limitation must be documented according to Special Condition 2

⁴ All control efficiencies used to demonstrate compliance with the VOC emissions limitation must be documented according to Special Condition 2

⁵ Monthly amount of VOC emissions in tons from each emission point, using the emission factor and control efficiency listed in Column 6 and

⁶ Monthly amount of VOC emissions in tons from entire installation

⁷ A current 12-month total VOC emissions of less than 655 tons is in compliance.