

DETERMINATION OF POUNDS VOC PER GALLON SOLIDS (MCAPCO 2.0900)

Instructions for Form D1-3

Form D1-3 should be used to calculate the pounds VOC per gallon solids of a material as it is applied. This information is used to determine compliance with MCAPCO 2.0900. One Form D1-3 should be completed for each material or mixture of materials and should represent the mixture that is applied (e.g. a coating may be applied just as it is supplied in the container or a coating may be mixed with a thinner or other components which should be reflected on this form).

This form should also be completed and submitted to MCAQ 20 days prior to initial use of each new coating. Form D1-1 should also be updated and resubmitted.

EMISSION SOURCE ID #(s) WHERE MATERIAL IS USED - List all emission source ID numbers where the material is used.

FACILITY NAME/DATE - Provide the facility name and the date that this form is being completed. *(This information is used when submitting a Form D1-3 for approval of a new product, as opposed to the form being part of an application package. A Form D1-3 is required to be submitted 20 days prior to initial use of each new product.)*

MANUFACTURER/SUPPLIER NAME - Provide the name of the product manufacturer or the supplier from which you purchase the product.

MATERIAL NAME OR MANUFACTURER ID - Enter the name or manufacturer ID number of the material as it appears on the Material Safety Data Sheet (MSDS).

PROJECTED DATE OF INITIAL USE - Enter the date that you plan to begin using the material. *(This information is used when submitting a Form D1-3 for approval of a new product, as opposed to the form being part of an application package. A Form D1-3 is required to be submitted 20 days prior to initial use of each new product.)*

SIGNATURE - The form should be signed by the person completing the form. This person can be a facility employee or an employee of the material manufacturer/supplier. *(This information is used when submitting a Form D1-3 for approval of a new product, as opposed to the form being part of an application package. A Form D1-3 is required to be submitted 20 days prior to initial use of each new product.)*

UNIT CONVERSION CALCULATIONS:

GIVEN (a) - Provide the VOC Content in pounds of VOC per gallon of coating as APPLIED. This information can be obtained from the manufacturer/supplier and/or through EPA Test Method 24/24A. Please attach supporting information illustrating how the number was determined.

GIVEN (b) - Provide the density of the solvent blend in pounds of VOC per gallon of VOC. This information can be obtained from the manufacturer/supplier or see Page 2 of the form for a calculation equation. Please attach supporting information illustrating how the number was determined.

Note on "As Applied" : If you currently do not have the requested material information as it is applied, please complete Page 2 of the form (VOC Coating Data Sheet) to convert from "as supplied" to "as applied". Calculation equations are explained on the form.

COMPLETE THE FOUR-STEP CALCULATION AS SHOWN ON PAGE 1 OF THE FORM TO DETERMINE THE POUNDS OF VOC PER GALLON OF SOLIDS.

COMPARE THIS NUMBER TO THE LIMIT LISTED IN THE APPLICABLE REGULATION UNDER MCAPCO SECTION 2.0900 TO DETERMINE THE MATERIAL COMPLIANCE STATUS.

SECTION D

DETERMINATION OF POUNDS VOC PER GALLON SOLIDS (MCAPCO 2.0900)
(VOC Unit Conversion Form)

D1-3

Complete one form for each mixture of coating, paint, ink, etc. as it is applied.

Facility Name:		Date:	
Emission Source ID #(S) Where Materials Are Used:			
Manufacturer/Supplier Name:			
Material Name/Manufacturer ID:			
Signature:		Projected Date Of Initial Use:	

Unit Conversion Calculations:

Given:

(a) _____ Lb VOC/Gal of coating **less water and exempt solvents** as APPLIED (from Method 24/24A)

(b) _____ Lb VOC/Gal VOC – Density of Solvent Blend from Manufacturer (or see page 2 to calculate)

Attach supporting documentation

Note: To determine "as applied" refer to the VOC Coating Data Sheet (page 2)

I. Determine Volume of VOC in 1 Gallon of Coating Less Water

$$\frac{(\text{ a }) \text{ Lb VOC}}{1 \text{ Gal of Coating Less Water}} \times \frac{1 \text{ Gal VOC}}{(\text{ b }) \text{ Lb VOC}} = \frac{(\text{ c }) \text{ Gal VOC}}{1 \text{ Gal Coating Less Water}}$$

II. Determine Volume of Solids in 1 Gallon of Coating Less Water

Equation: 1 Gal Coating Less Water – Volume of VOC = Volume of Solids

$$1 \text{ Gal of Coating Less Water} - (\text{ c }) \text{ Gal VOC} = (\text{ d }) \text{ Gal Solids}$$

III. Determine Amount of Coating Required to Produce 1 Gallon of Solids

$$\frac{1 \text{ Gal Coating Less Water}}{(\text{ d }) \text{ Gal Solids}} = \frac{\text{ Gal of Coating Less Water}}{1 \text{ Gal Solids}}$$

IV. Convert Lb VOC/Gallon of Coating to Lb VOC/Gallon of Solids (AS APPLIED)

$$\frac{(\text{ a }) \text{ Lb VOC}}{1 \text{ Gal of Coating Less Water}} \times \frac{\text{ Gal of Coating Less Water}}{1 \text{ Gal Solids}} = \frac{(\text{ e }) \text{ Lb VOC}}{1 \text{ Gal Solids}}$$

For MCAQ Use Only

RACT Limit: _____ Lb VOC/Gal Solids

Regulation No.: MCAPCO Reg. 2.09 _____

MCAQ Approves Use? Approves Does Not Approve

MCAQ Approval Signature: _____

Date: _____

SECTION D
DETERMINATION OF POUNDS VOC PER GALLON SOLIDS (MCAPCO 2.0900)
(VOC Coating Data Sheet)

D1-3

(Use to convert properties "AS SUPPLIED" to "AS APPLIED"
 Complete one form for each product/material

Coating Name/ID:													
Properties of Coating as Supplied					Properties of Dilution Solvent/Thinner			Properties of Coating as Applied					
Coating Density (lb/gal)	Total Volatile (wt.%)	Water (Includes Exempt Solvents) Content (wt.%)	VOC Content (wt.%)	Non-Volatile Content - Solids (vol.%)	Dilution Solvent – Weighted Average Density (lb/gal)	Dilution Solvent Ratio (gal diluent/gal coating)	Water (Includes Exempt Solvents) Content (wt.%)	Coating Density (lb/gal)	Total Volatile (wt.%)	Water (Includes Exempt Solvents) Content (wt.%)	VOC Content (wt.%)	Non-Volatile Content - Solids (vol.%)	VOC Content (lb/gal-water and exempt solvents)
D	E	F	E – F	Ss	J	K	L	G	H	W	H-W	Sa	Va

Notes: If coating as supplied does not contain water put zero (0) for F
 Given Data = D, E, F, Ss, J, K (enter given values into double lined boxes)
 Calculation are based on one gallon of coating as supplied

EQUATIONS:

<p>Water (+ Exempt Solvent) Volume in 1 gallon of coating as supplied = $(D \times F / 100) / 8.34 \text{ lb/gal water}$</p> <p>G = $[D + (J \times K)] / (1 + K)$</p> <p>W = $(D \times F + J \times K \times L) / [D + (J \times K)]$</p> <p>H = $[(D \times (E / 100)) + (J \times K)] / [D + (J \times K)] \times 100$</p> <p>Water (+ Exempt Solvent) Volume in 1 gallon of coating as applied = $(G \times W / 100) / 8.34 \text{ lb/gal water}$</p> <p>Va = $[G \times (H - W) / 100] / (1 - \text{Water Vol. Applied})$</p> <p>Sa = $Ss / (1 + K)$</p>	<p>= _____ Water (+ Exempt Solvent) Volume Supplied, Gal of Water/Gal of Coating as supplied</p> <p>= _____ Lb Coating per gal Coating as applied</p> <p>= _____ Water (+ Exempt Solvent) Content (% by wt.) as applied</p> <p>= _____ Volatile Content (% by wt.) as applied</p> <p>= _____ Water (+ Exempt Solvent) Volume Applied (Gal of Water/Gal of Coating) as applied</p> <p>= _____ Lb VOC per gal Coating Less Water as applied</p> <p>= _____ Solids Content (% by vol.) as applied</p>
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From Page 1, **b** = $[G \times (H - W) / 100] / [(1 - \text{Water Vol. Applied} - Sa/100)] =$ Lb VOC / Gal VOC (Density of Solvent Blend)

*If the weighted average density of the water+exempt solvent content is known it may be substituted here