

# VOC Formulation Data

(Stamped date on signed copy January 7, 1998)

Mr. Jim Sell, Senior Counsel

National Paint and Coatings Association

1500 Rhode Island Avenue, N.W.

Washington, D.C. 20005-5597

Dear Mr. Sell:

This letter addresses volatile organic compound (VOC) formulation data being used by manufacturers as a surrogate for volatile organic hazardous air pollutants (VOHAP) to demonstrate compliance with emission limitations in the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Shipbuilding and Ship Repair (Surface Coating) Operations. You and others in the marine coating manufacturing and shipbuilding and repair industries have indicated that there is still considerable confusion over how VOC formulation data should be generated and presented by the coating manufacturer and used by the shipyard or other affected source. These questions have dealt both with coatings that the shipyard will use as supplied; and with coatings that the shipyard will thin before using. Please note, this letter only addresses VOC formulation data used by manufacturers for coatings that as supplied contain no exempt solvents which are VOHAP, and are not thinned with any exempt solvent.

As stated in my letter to you dated June 11, 1997, VOC formulation data may be used by manufacturers in lieu of the coating user or coating manufacturer testing each batch of coating by Method 24, when using VOC as a surrogate for VOHAP to demonstrate compliance with the emission limitations in the NESHAP. However, the manufacturer's VOC formulation data must have a consistent and quantitatively known relationship to Method 24. In instances where there are conflicting results between the VOC formulation data and Method 24 results, the Method 24 results take precedence.

In generating a formulation VOC value that has a consistent and quantitatively known relationship to Method 24, a coating manufacturer must account for the following three factors:

- cure volatiles generated by the coating;
- variations between quality control approved

production batches of the coating; and

- variations between Method 24 test results of samples

taken from any quality control approved production

batch of the coating.

The coating manufacturer must provide a formulation VOC value that will not be exceeded if a sample from any quality control approved production batch of the coating is tested by Method 24.

This information can be presented on the form provided in Appendix A of the rule, or on a similar form of the manufacturer's choosing.

The following paragraphs describe the specific data that a coating manufacturer must provide to satisfy the rule's provisions for VOC formulation data used by manufacturers for coatings that as supplied contain no exempt solvents which are VOHAP and are not thinned with any exempt solvent:

- For coatings that either will not be thinned, or will be thinned only with water, the coating manufacturer must provide the as supplied formulation VOC value in units of grams of VOC per liter of coating minus water and exempt compounds, and in units of grams of VOC per liter of solids. (Since these coatings are not thinned, or are thinned only with water, their as applied VOC content will be the same as their as supplied VOC content.) For multi-component coatings the coating manufacturer must also provide the component mix ratio. The coating user must adhere to this component mix ratio.
- For coatings that will or may be thinned with a thinner that is not an exempt solvent and is not water, the coating manufacturer must provide the as supplied formulation VOC value in units of grams of VOC per liter of coating minus water and exempt compounds, and in units of grams of VOC per liter of solids. The coating manufacturer must also provide the as supplied formulation volume fraction solids content of the coating in units of liter of solids per liter of coating. [The  $m_{VOC}$  term in Equation 1 of the rule is calculated by multiplying the as supplied formulation VOC value (in units of grams of VOC per liter of solids) by the as supplied formulation volume fraction solids.] For multi-component coatings the coating manufacturer must also provide the component mix ratio. The coating user must adhere to this component mix ratio. If the coating manufacturer specifies and supplies the thinner, then the coating manufacturer must provide the thinner density. In this case, the coating supplier may calculate and provide the maximum allowable thinning ratio using Equation 1 in the rule. If the coating manufacturer specifies, but does not supply the thinner, then the coating supplier may provide the thinner density, and calculate and provide the maximum allowable thinning ratio using Equation 1 in the rule. In either case, the coating user must ensure that the thinner used is the thinner specified by the coating supplier.

The manufacturer's formulation VOC values could be generated in several ways. One method of generating these values which is acceptable, and which you have discussed with Anthony Raia of my staff and David Salman of the EPA air office would be for the coating manufacturer to test samples of laboratory production batches and early regular production batches of a new coating by Method 24, and to set the formulation VOC value equal to the maximum Method 24 result plus a safety factor added to account for the three factors listed on the first page of this letter. Regardless of how the formulation VOC values are generated, Method 24 takes precedence over the manufacturer's VOC formulation data in case of conflicting results.

The coating manufacturer may want to indicate that the factors listed on the first page of this letter have been accounted for in generating the formulation VOC value for a coating. The coating manufacturer also may want to provide a reminder that in the instance where there are conflicting results between the manufacturer's VOC formulation data and Method 24 results, Method 24 takes precedence. One way in which the coating manufacturer could convey this information when presenting formulation VOC values would be to state that:

- The coating manufacturer has followed sound and consistent quality control procedures in its batch formulation and manufacturing processes.

- The formulation VOC value presented has a consistent and quantitatively known relationship to the Method 24 result that would be obtained by testing a sample from any quality control approved production batch of this coating.

- The coating manufacturer certifies that based on the quality control procedures in its batch formulation and manufacturing processes, the as supplied formulation VOC value provides an upper bound on the VOC content of the as supplied coating as would be determined by Method 24. As stated in the shipbuilding and ship repair NESHAP, in case of conflicting results between manufacturer's VOC formulation data and Method 24 results, however, Method 24 takes precedence.

To clarify the manner in which the manufacturer's formulation values are generated, and to facilitate identification of the sources of any variations between the manufacturer's VOC formulation values and Method 24 test results, the manufacturer may provide additional information on the as supplied coating (e.g., the coating density, weight percent volatiles, weight percent water, and weight percent exempt solvent). Since a safety margin will be included in the manufacturer's VOC formulation values and since variations in these three parameters do not necessarily increase VOC content, this additional information is for informational purposes only.

I hope the information in this letter is helpful. If you have any questions, please contact Anthony Raia at (202) 564-6045 or David Salman (919) 541-0859.

Sincerely,

John B. Rasnic, Director

Manufacturing, Energy and Transportation Division

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cc: Regional Air Directors

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