TECHNICAL BULLETIN

RAVOC

RAVOC (Reactivity-adjusted VOC Content) ratings are a much better way to measure Volatile Organic Compounds (VOC), and Dunn-Edwards® includes RAVOC ratings along with standard VOC content. Architectural coatings have long been regulated to limit their VOC solvent content, with the intention of improving outdoor air quality. Airborne VOCs in the presence of nitrogen oxides from combustion promote the formation of ozone, a main ingredient of urban smog. VOC content, generally measured as grams of VOC per liter of coating, has become the primary indicator of environmental acceptability for coatings. This approach of measuring VOC has serious limitations because it does not consider VOC reactivity.

What is VOC "reactivity"?

"Reactivity" means the ability of a VOC to promote ozone formation. Thousands of different VOCs, some natural and some man-made, can be found in the air. Most natural VOCs are emitted from biogenic sources such as trees and vegetation. The primary man-made sources of VOC are motor vehicle exhaust, unburned gasoline, and solvents. On the continental scale, over 60% of the VOCs emitted into the atmosphere come from natural sources. Emissions from architectural coatings account for less than 1% of total VOCs.

Different VOCs have different degrees of reactivity. Some may be up to 100 times more reactive than others. Current regulations limit the amount of VOC solvent in coatings without regard to reactivity (while exempting a few compounds that are designated as "negligibly reactive"). Consequently, VOC content alone says very little about the potential air quality impact of a coating.

How does RAVOC work?

RAVOC ratings adjust the VOC content to reflect the potential air quality impacts of the specific VOCs used, relative to the average mix of all VOCs in the air. For example: If the VOC content of a product is 100 g/L, and the RAVOC rating is 50 g/L, this tells you that the VOCs used in this product have only half the air quality impact of an equivalent amount of average VOCs. RAVOC ratings are calculated using Maximum Incremental Reactivity (MIR) values developed by Dr. William P.L. Carter at the University of California, Riverside. The validity and usefulness of MIR values are widely accepted in the scientific community, and both U.S. EPA and the California Air Resources Board have used MIR values in reactivity-based rules for aerosol coatings.

Are RAVOC ratings required for paint?

No, RAVOC ratings are not required on paint labels at this time. Dunn-Edwards, however, voluntarily provides this information to better inform consumers about the relative air quality impacts of different product choices. We believe that the disclosure of RAVOC ratings will eventually become a standard practice in the paint industry.

RAVOC RATED®

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