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WHAT'S IN THE CAN VS. WHAT'S IN THE AIR: MAKING SENSE OF VOC NUMBERS



VOC conversations often go off track when one number is used to answer two different questions:

- **What's in the product? (VOC content)**
- **What gets released into the air? (VOC emissions)**

These concepts are related, but they are not interchangeable. Confusing them leads to flawed comparisons, unclear specifications, and unnecessary project issues.

VOC Content: What's in the Formulation

VOC content is a formulation-based measurement, typically expressed as grams per liter (g/L). Content limits are most commonly used for regulatory compliance tied to outdoor air quality, where the objective is to reduce smog-forming potential by limiting how much VOC material exists in a product category.

This is the context in which "low VOC" is most often used. In regulatory terms, the number describes what is in the can, not what happens inside a building after installation.

VOC Emissions: What Enters the Air

VOC emissions describe behavior, not just ingredients. Emissions testing measures what a material releases into the air under defined environmental conditions over a defined period of time.

This is accomplished through chamber testing methods used for indoor air quality evaluations. A product specimen is placed in a controlled chamber, allowed to condition, and the air is analyzed to determine VOC concentrations. Results are then compared against allowable limits for individual VOCs and total VOCs.

This approach matters because indoor air quality concerns are driven by exposure in enclosed spaces, not by a single formulation number.

Why Low Content Does Not Automatically Mean Low Emissions

It is tempting to treat VOC content as a shortcut for emissions, but there is no reliable one-to-one relationship between the two. Emissions are influenced by multiple factors, including application method, surface area, airflow,

temperature, curing behavior, and how solvents are retained or released during and after installation.

That is why emissions standards exist. They measure actual release into the air under controlled conditions rather than assuming a formulation number tells the full story.

Why This Distinction Matters for Specifiers

When reviewing specifications or submittals, it is critical to use the right measurement for the right requirement:

- **If the requirement is tied to an outdoor air quality regulation or product category limit, evaluate VOC content.**
- **If the requirement is tied to indoor air quality, occupant exposure, or green building criteria, emissions data generated through recognized chamber testing methods is the appropriate reference.**

Using VOC content to make indoor air quality claims is where many projects run into trouble. Aligning documentation with the intent of the requirement avoids that confusion.

Where Green Building Programs Fit

Green building programs typically treat VOCs as two separate checks: content limits for certain product categories and emissions limits based on chamber testing. That structure reflects the practical reality that "what's in the product" and "what enters indoor air" are distinct questions requiring different measurement approaches.

A Clear Way to Talk About VOCs

When someone asks for "the VOC number," the simplest path forward is clarification:

- **Are they confirming regulatory compliance? That is VOC content.**
- **Are they evaluating indoor air quality impact? That is VOC emissions.**

Once those questions are separated, VOC discussions become clearer, comparisons become fairer, and project requirements are easier to meet.