

SCAQMD rules

SCAQMD is the [Californian South Coast Air Quality Management District](#), based in Diamond Bar and covering Orange County and parts of Los Angeles, Riverside and San Bernadino counties.

SCAQMD limitation of VOC content in adhesives, sealants, and architectural coatings has gained importance even outside California because it is referenced by [LEED](#) and other sustainable building ranking schemes in the world.

Principles

The purpose of this limitation is to protect urban **outside air** against smog, especially against formation of ground level ozone. California Air Resources Board ARB offers a list with [different VOC Limits for Architectural Coating categories](#) that are valid in different California Districts, and a [VOC calculator](#) for achieving VOC content in agreement with their rules, [on a separate webpage](#).

Another overview of the [different regulation in different districts](#) is containing links to the original regulation texts.

Use of that VOC content limitation for evaluating of emissions of VOC into **indoor air** is **not the best idea** because there is **no direct correlation** between VOC content and the emission into indoor air over time. For that reason, [LEED v4](#) of the US Green Building Initiative specifies limit values both for VOC content and for VOC emission into indoor air, mainly based on California [Section 01350](#) specification, with alternative European pathways.

SCAQMD limit values

[SCAQMD regulations](#) cover a.o.:

- SCAQMD Architectural coatings, see [rule 1113](#).
- SCAQMD Adhesives and sealants, see [rule 1168](#).

The [Suggested Control Measure \(SCM\)](#) in its version of 2007 is a model regulation proposed by CARB for Californian districts.

[LEED relevant VOC content limit values](#) are summarized in tables for [adhesives and sealants](#), and for [paints and coatings](#). Most of these rely on SCAQMD limit values and use SCAQMD rules and test methods.

Any testing request should clearly identify the category to which the tested product belongs.

Testing

Testing is different from what Europeans are used to in conjunction with [European Decopaint Directive](#).

While Europeans measure VOC content mostly by direct injection into gas chromatograph (ISO 11890-2), SCAQMD testing methods [304](#) and [303](#) are based on a different principle:

Total volatiles are determined by monitoring **weight loss during 1 hour heating** at 110 °C.

Reactive products are allowed to stand open for 1 hour after mixing before start of test for allowing first curing to happen. [Here you can download an illustration](#).

"VOC minus Water"

Total volatiles will comprise both total volatile organic compounds, but also water. Therefore water fraction is subtracted from the result. VOC content is related only to the non-aqueous fraction of the coating. **Products containing a large amount of water will show higher VOC content in California than under European Decopaint Directive**. As a consequence, modern water-based dispersion coatings and adhesives are treated more stringently than old solvent-based formulations.

"... minus Exempt Compounds"

A number of exempt compounds are subtracted because these are known NOT to contribute to ground level ozone formation. There are different lists with exempt compounds available from different authorities in the USA, but for this purpose only the Californian list of exempt compounds on pages 4 - 6 of SCAQMD [rule 102](#) is accepted. **Products containing a large amount of exempt**

compounds will show lower VOC content in California than under the European Decopaint Directive.

Technical problems with testing

Earlier, only the above mentioned testing methods are accepted, even though **not optimal**, especially not for reactive coatings and for coatings with low VOC and high water content. But in the meantime SCAQMD started accepting also GC testing (ASTM D6886 or SCAQMD method 313 (revised in 2016)), to stop delivery of non-reliable or even erroneous results for a number of low VOC products. Most recent information is available on a "[VOC Working Group](#)" section of the SCAQMD homepage.

Such testing could easily be combined with a test for [European Decopaint Directive](#) and is preferred by Eurofins VOC labs.

Testing of products for which the test method is not optimal

The earlier specified testing methods are prone to errors for a number of modern products, such as 2 component reactive coatings and adhesives, and concrete based tile adhesives. If required then Eurofins can try to apply these test methods to test such products and do its best, but Eurofins cannot guarantee that it works well.

Contact to VOC Testing Laboratories

Please see here contact information of Eurofins VOC testing laboratories in Europe, China and Japan:

www.eurofins.com/voc-contacts.

[NOTE: 2017 SCAQMD currently working on Preliminary Draft Rules Version 7 for 1168]

(c) Requirements

- (1) Unless otherwise specified in paragraph (c)(2), a person shall not apply any adhesives, adhesive bonding primers, adhesive primers, or any other primer, which have a VOC content in excess of 250 g/L less water and less exempt compounds.
- (2) A person shall not apply adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers, or any other primer, which have a VOC content in excess of the limits specified below:

VOC Limit*, Less Water and Less Exempt Compounds in Grams per Liter

Architectural Applications	Current VOC Limit
Indoor Carpet Adhesives	50
Carpet Pad Adhesives	50
Outdoor Carpet Adhesives	150
Wood Flooring Adhesive	100
Rubber Floor Adhesives	60
Subfloor Adhesives	50
Ceramic Tile Adhesives	65
VCT and Asphalt Tile Adhesives	50
Dry Wall and Panel Adhesives	50

Architectural Applications	Current VOC Limit
Cove Base Adhesives	50
Multipurpose Construction Adhesives	70
Structural Glazing Adhesives	100
Single Ply Roof Membrane Adhesives	250

**Rule 1168 (Cont.)
September 2017)**

(Amended January 7, 2005 Proposed Amended Rule 1168)

* For low-solid adhesives or sealants the VOC limit is expressed in grams per liter of material as determined in paragraph (b)(32); for all other adhesives and sealants, VOC limits are expressed as grams of VOC per liter of adhesive or sealant less water and less exempt compounds as determined in paragraph (b)(31).

Table 1 – Regulated Product Categories and VOC Limits

Category	VOC Limits (g/L)*				
	Current	Upon Adoption	1/1/2019	1/1/2021	1/1/2023
<u>Adhesives</u>					
<u>Architectural Applications</u>					
<u>Building Envelope Membrane Adhesive</u>	250				
<u>Carpet Pad Adhesive</u>	50				
<u>Ceramic Glass, Porcelain, & Stone Tile Adhesive</u>	65				
<u>Cove Base Adhesive</u>	50				
<u>Dry Wall and Panel Adhesive</u>	50				
<u>Multi-Purpose Construction Adhesives</u>	70				
<u>Other Indoor Floor Covering Adhesives</u>	50				
<u>Other Outdoor Floor Covering Adhesives</u>	150			50	
<u>Roofing</u>					
<u>Other Roof Adhesive</u>	250			200	
<u>Single Ply Roof Membrane Adhesive</u>	250			200	
<u>Structural Glazing Adhesive</u>	100				
<u>Structural Wood Member Adhesive</u>	140				
<u>Subfloor Adhesive</u>	50				
<u>VCT and Asphalt Tile Adhesive</u>	50				
<u>Welding</u>					
<u>ABS Welding</u>	325				
<u>ABS to PVC Transition Cement</u>	510			325	
<u>CPVC Welding</u>	490			325	
<u>PVC Welding</u>	510			325	
<u>All Other Plastic Cement Welding</u>	250				