



| v3 - LEED 2009

Low-emitting materials

EQc4 | Possible 5 points

Glossary

Intent

To reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants.

Requirements

OPTION 1. Adhesives and Sealants (1 point)

All adhesives and sealants used on the interior of the building (i.e., inside the weatherproofing system and applied onsite) must comply with the following requirements as applicable to the project scope¹:

¹ Adhesives, Sealants and Sealant Primers must comply with South Coast Air Quality Management District (SCAQMD) Rule #1168. Volatile organic compound (VOC) limits listed in the table below correspond to an effective date of July 1, 2005, and rule amendment date of January 7, 2005.

Architectural Applications	VOC Limit [g/L less water]	Specialty Applications	VOC Limit [g/L less water]
Indoor carpet adhesives	50	PVC welding	510
Carpet pad adhesives	50	CPVC welding	490
Wood flooring adhesives	100	ABS welding	325
Rubber floor adhesives	60	Plastic cement welding	250
Subfloor adhesives	50	Adhesive primer for plastic	550
Ceramic tile adhesives	65	Contact adhesive	80
VCT and asphalt adhesives	50	Special purpose contact adhesive	250
Drywall and panel adhesives	50	Structural wood member adhesive	140
Cove base adhesives	50	Sheet applied rubber lining operations	850
Multipurpose construction adhesives	70	Top and trim adhesive	250
Structural glazing adhesives	100		
Substrate Specific Applications	VOC Limit [g/L less water]	Sealants	VOC Limit [g/L less water]
Metal to metal	30	Architectural	250
Plastic foams	50	Nonmembrane roof	300
Porous material (except wood)	50	Roadway	250
Wood	30	Single-ply roof membrane	450
Fiberglass	80	Other	420
Sealant Primers	VOC Limit [g/L less water]		
Architectural nonporous	250		
Architectural porous	775		
Other	750		

¹ Aerosol Adhesives must comply with Green Seal Standard for Commercial Adhesives GS-36 requirements in effect on October 19, 2000.

Aerosol Adhesives	VOC weight (g/L minus water)
General purpose mist spray	65% VOCs by weight
General purpose web spray	55% VOCs by weight
Special purpose aerosol adhesives (all types)	70% VOCs by weight

OPTION 2. Paints and Coatings (1 point)

Paints and coatings used on the interior of the building (i.e., weatherproofing system and applied onsite) must comply with the following criteria as applicable to the project scope²:

² Architectural paints, coatings, and primers applied to interior walls and ceilings must not exceed the volatile organic compound (VOC) content limits established in Green Seal Standard GS-11, Paints, 1st Edition, May 20, 1993.

² Anticorrosive and antirust paints applied to interior ferrous metal substrates must not exceed the VOC content limit of 250 g/L established in Green Seal Standard GC-03, Anti-Corrosive Paints, 2nd

- Clear wood finishes, floor coatings, stains, and shellacs applied to interior elements must not exceed the VOC content limits established in South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004.

OPTION 3. Flooring (1 point)

PATH 1

All flooring must comply with the following as applicable to the project scope:

- All carpet installed in the building interior must meet one of the following requirements:
 - Meets the testing and product requirements of the Carpet and Rug Institute's Green Label Plus³ program.
 - Maximum VOC concentrations are less than or equal to those specified in the California Department of Health Services Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda, using the office scenario as defined in Table 7.5 within the practice. The additional VOC concentration limits listed in Section 9.1a must also be met.
 - Maximum VOC concentrations meet the California requirements specified above based on the following:
 - California Department of Public Health (CDPH) Standard Method V1.1-2010 using test results obtained at the 14 day time point
 - Projects outside the U.S. may use the German AgBB/DIBt testing method and all testing methods based on AgBB/DIBt method (GUT, EMICODE, Blue Angel) using test results obtained at the 3 day or 7 day or 14 day time point. For caprolactam, if test results obtained at the 3 day or 7 day time point is used, the emission concentration must be less than ½ of the concentration limit specified above because the emission may not have peaked at the measured time points. If a European testing method (AgBB/DIBt GUT, EMICODE, Blue Angel) had used parameters for calculating test results different from those specified in the referenced California method, then the European test results for carpets or floorings need to be converted into California air concentrations by multiplication with 0.7.
- All carpet cushion installed in the building interior must meet the requirements of the Carpet and Rug Institute Green Label program.
- All carpet adhesive must meet the requirements of IEQ Credit 4: Low-Emitting Materials, Option A, which lists a volatile organic compound (VOC) limit of 50 g/L.
- All hard surface flooring installed in the building interior must meet one of the following requirements:
 - Meet the requirements of the FloorScore standard (current as of the date of this rating system, or more stringent version) as shown with testing by an independent third-party.
 - Demonstrate maximum VOC concentrations less than or equal to those specified in the California Department of Health Services Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda, using the office scenario as defined in Table 7.5 within the practice.
 - Maximum VOC concentrations meet the California requirements specified above based on the following:
 - California Department of Public Health (CDPH) Standard Method V1.1-2010 using test results obtained at the 14 day time point
 - Projects outside the U.S. may use the German AgBB/DIBt testing method and all testing methods based on AgBB/DIBt method (GUT, EMICODE, Blue Angel) using test results obtained at the 3 day or 7 day or 14 day time point. For caprolactam, if test results obtained at the 3 day or 7 day time point is used, the emission concentration must be less than ½ of the concentration limit specified above because the emission may not have peaked at the measured time points. If a European testing method (AgBB/DIBt GUT, EMICODE, Blue Angel) had used parameters for calculating test results different from those specified in the referenced California method, then the European test results for carpets or floorings need to be converted into California air concentrations by multiplication with 0.7.
- Concrete, wood, bamboo, and cork floor finishes such as sealer, stain, and finish must meet the requirements of South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004.
- Mineral-based finish flooring products such as tile, masonry, terrazzo, and cut stone without integral organic-based coatings and sealants and unfinished/untreated solid wood flooring qualify for credit without any IAQ testing requirements. However, associated site-applied adhesives, grouts, finishes and sealers must be compliant for a mineral-based or unfinished/untreated solid wood flooring system to qualify for credit.
- Tile setting adhesives and grout must meet South Coast Air Quality Management District (SCAQMD) Rule 1168. VOC limits correspond to an effective date of July 1, 2005, and rule amendment date of January 7, 2005.
- For carpet adhesive, concrete, wood, bamboo and cork floor finishes, and tile setting adhesives, compliance can be demonstrated with test results of:
 - Total volatiles fraction, based on one of the following, provided that water and exempt compounds are subtracted from total volatiles test results and the mass VOC content is calculated consistent with SCAQMD Rule 1113 and Rule 1168:
 - ASTM D2369
 - EPA method 24
 - ISO 11890 part 1
 - Total volatile organic compounds fraction, based on one of the following, provided that all VOCs with a boiling point up to 280°C (536°F) are included, and exempt compounds are subtracted from total volatiles test results and the mass VOC content is calculated consistent with SCAQMD Rule 1113 and Rule 1168.
 - ASTM D6886
 - ISO 11890 part 2

OR

PATH 2

All flooring products must meet the testing and product requirements of the California Department of Health Services Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.

Mineral-based finish flooring products such as tile, masonry, terrazzo, and cut stone without integral organic based coatings and sealants and unfinished/untreated solid wood flooring qualify for credit without any IAQ testing requirements. However, associated site-applied adhesives, grouts, finishes and sealers must be compliant for a mineral-based or unfinished/untreated solid wood flooring system to qualify for credit.

OPTION 4. Composite Wood and Agrifiber Products (1 point)

Composite wood and agrifiber products used on the interior of the building (i.e., inside the weatherproofing system) must contain no added urea-formaldehyde resins.

Laminating adhesives used to fabricate onsite and shop-applied composite wood and agrifiber assemblies must not contain added urea-formaldehyde resins. Please note that built-in casework and built-in millwork items must be included in the base building calculations.

Products covered by IEQ Credit 4, Option E—Furniture shall be excluded from these requirements

OPTION 5. Furniture and Furnishings (1 point)

For manufactured and custom furniture, components of furniture and their assembly must meet the requirements of IEQ Credit 4, Option A: Adhesives and Sealants, IEQ Credit 4 Option B—Paints and Coatings, and IEQ Credit 4, Option D: Composite Wood and Agrifiber Products.

Please note that built-in casework and built-in millwork items are to be considered part of the base building.

AND

All systems furniture⁴ and seating⁵ introduced into the project space that have been manufactured, refurbished, or refinished within 1 year prior⁶ to occupancy must meet 1 of the requirements below.

PATH 1

Greenguard Indoor Air Quality Certified

OR

PATH 2

Calculated indoor air concentrations that are less than or equal to those established in Table 1 for furniture systems and seating determined by a procedure based on the EPA Environmental Technology Verification (ETV) Large Chamber Test Protocol for Measuring Emissions of VOCs and Aldehydes (September 1999) testing protocol conducted in an independent air quality testing laboratory.

Chemical Contaminant	Emission Limits Systems Furniture	Emission Limits Seating
TVOC	0.5 mg/m ³	0.25 mg/m ³
Formaldehyde	50 parts per billion	25 parts per billion
Total Aldehydes	100 parts per billion	50 parts per billion
4 - Phenylcyclohexene (4-PCH)	0.0065 mg/m ³	0.00325 mg/m ³

OR

PATH 3

Calculated indoor air concentrations that are less than or equal to those established in Table 1 for furniture systems and seating determined by a procedure based on ANSI/BIFMA M7.1-2007 and ANSI/BIFMA X7.1-2007 testing protocol conducted in an independent third-party air quality testing laboratory.

The requirement in ANSI/BIFMA X7.1-2007, Section 5, is waived for LEED purposes. Section 5 requires that laboratories used to perform the emissions testing and/or provide analytical results shall be independently accredited to ISO/IEC 17025, "General requirements for the competence of testing and calibration laboratories."

OPTION 6. Ceiling and Wall Systems (1 point)

All gypsum board, insulation, acoustical ceiling systems, and wall coverings installed in the building interior shall meet the testing and product requirements of the California Department of Health Services Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.