

# Low Emitting Materials

## LEED v4 Requirements

This credit covers volatile organic compound (VOC) emissions into indoor air and the VOC content of materials, as well as the testing methods by which indoor VOC emissions are determined. Different materials must meet different requirements to be considered compliant for this credit.

The building interior is defined as everything within the waterproofing membrane.



### General Emissions Evaluation

Building products must be tested and determined compliant in accordance with California Department of Public Health (CDPH) Standard Method v1.1-2010, using the applicable exposure scenario. Manufacturers' claims of compliance must also state the range of total VOCs after 14 days. SCS Indoor Advantage Gold, UL Greenguard Gold, and MAS Certified Green meet the General Emissions Evaluation.

### VOC content requirements for wet-applied products

On-site wet-applied products must meet the following requirements:

- All paints and coatings - SCAQMD Rule 1113, effective June 3, 2011 OR CARB 2007 SCM
- All adhesives and sealants - SCAQMD Rule 1168, effective July 1, 2005

## Material Categories

### Interior paints and coatings applied on-site

Requires General Emissions Evaluation for paints and coatings applied to walls, floors, and ceilings AND VOC content requirements for wet-applied products. Obtain manufacturer documentation confirming compliance with both requirements. Shop-applied paints and coatings are excluded. MSDS Sheet may confirm VOC content. Look for SCS Indoor Advantage Gold, UL Greenguard Gold, and MAS Certified Green to meet General Emissions Evaluation.

Threshold: At least 90%, by volume, for emissions. 100% for VOC content.



### Interior adhesives and sealants applied on-site (including flooring adhesive)

Requires General Emissions Evaluation AND VOC content requirements for wet-applied products. MSDS Sheet may confirm VOC content. Look for SCS Indoor Advantage Gold, UL Greenguard Gold, and MAS Certified Green to meet General Emissions Evaluation.

Threshold: At least 90%, by volume, for emissions. 100% for VOC content.



### Flooring

Requires General Emissions Evaluation. Look for Green Label Plus for carpet, FloorScore for hard surface and NSF/ANSI 332 for resilient flooring. Floorscore and Green Label Plus meet emissions requirement for adhesives

Threshold: 100%, by quantity.



## Composite Wood

Requires Composite Wood Evaluation. Must be documented to have low formaldehyde emissions that meet the California Air Resources Board ATCM for formaldehyde requirements for ultra-low-emitting formaldehyde (ULEF) resins or no added formaldehyde resins. Look for CARB ULEF label, CARB exempt, or NAF.

Threshold: 100%, by quantity



## Ceilings, walls, thermal and acoustic insulation

Requires General Emissions Evaluation. For Healthcare and Schools only: batt insulation products may not contain added formaldehyde, including urea formaldehyde, phenol formaldehyde, and urea-extended phenol formaldehyde. Look for SCS Indoor Advantage Gold, UL Greenguard Gold, and MAS Certified Green.

Threshold: 100%, by quantity.



## Healthcare and Schools Projects only: Exterior applied products

Adhesives, sealants, coatings, roofing, and waterproofing materials applied on site must meet the VOC content requirements for:  
1) CARB 2007 Suggested Control Measure (SCM) for Architectural Coatings AND  
2) South Coast Air Quality Management District (SCAQMD), Rule 1168, effective July 1, 2005. The following are prohibited: hot-mopped asphalt for roofing, and coal tar sealants for parking lots and other paved surfaces.

Threshold: at least 90% by volume.

## Resources

<https://spot.ulprospector.com/en/na/BuiltEnvironment> **Greenguard Gold**  
[www.scsglobalservices.com/certified-green-products-guide](http://www.scsglobalservices.com/certified-green-products-guide) **Floorscore, Indoor Advantage Gold**  
<http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/r1113.pdf> **SCAQMD Rule 1113**  
<http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1168.pdf> **SCAQMD Rule 1168**  
<http://www.intertek.com/certification/indoor-air-quality/> **Intertek**  
[https://www.arb.ca.gov/coatings/arch/Approved\\_2007\\_SCM.pdf](https://www.arb.ca.gov/coatings/arch/Approved_2007_SCM.pdf) **CARB 2007 SCM**  
<http://www.usgbc.org/resources/low-emitting-materials-calculator> **LEED Calculator**  
[www.chpsregistry.com/live/public](http://www.chpsregistry.com/live/public) **CHPS - first party self-certified claims are acceptable**  
<https://www.arb.ca.gov/toxics/compwood/listoftpcs.htm> **Third Party Certifiers-Composite Wood**  
[www.mascertifiedgreen.com](http://www.mascertifiedgreen.com) **MAS Certified Green - for first party claims**  
[www.carpet-rug.org/green-label-plus.html](http://www.carpet-rug.org/green-label-plus.html) **Green Label Plus**  
<http://www.usgbc.org/credits> **LEED Credit Library**

## Furniture

Requires Furniture Evaluation. New furniture must be tested in accordance with ANSI/BIFMA Standard Method M7.1-2011. Comply with ANSI/BIFMA e3-2011 Furniture Sustainability Standard, Sections 7.6.1 and 7.6.2, using either the concentration modeling approach or the emissions factor approach. Model the test results using the open plan, private office, or seating scenario in ANSI/BIFMA M7.1, as appropriate. For classroom furniture, use the standard school classroom model in CDPH Standard Method v1.1.

Look for SCS Indoor Advantage, SCS Indoor Advantage Gold, UL Greenguard Certified, UL Greenguard Gold, MAS certified green, Intertek ETL Environmental VOC, or BIFMA level (if 7.6.1 and/or 7.6.2 were achieved).

Threshold: at least 90% by cost.



## Exception

Inherently non-emitting sources: Products that are inherently non-emitting sources of VOCs (stone, ceramic, powder-coated metals, plated or anodized metal, glass, concrete, clay brick, and unfinished or untreated solid wood flooring) are considered fully compliant without any VOC emissions testing if they do not include integral organic-based surface coatings, binders, or sealants.

# LOW EMITTING MATERIALS

<b>INTERIOR PAINTS AND COATINGS</b>	<b>ALL PROJECTS</b>	<b>100%</b>
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*For applications inside the weatherproofing system, 100% of PAINTS AND COATINGS must comply with VOC (Volatile Organic Compound) content limits of either CARB 2007 or SCAQMD 1113.*

PRODUCT TYPE	CARB 2007 (g/L)	SCAQMD Rule 1113 (g/L)
Basement Specialty Coatings	400	
Bond Breaker	350	350
Building Envelope Coating		100
Clear Wood Finishes		
• Varnish		275
• Sanding sealer		275
• Lacquer		275
Colorant		
• Architectural coatings, non-IM		50
• Solvent based IM		600
• Waterborne IM		50
Concrete curing compounds	350	100
Concrete surface retarder		50
Dry-fog coatings	150	50
Faux finishing coatings	350	
• Clear topcoat		100
• Decorative coatings		250
• Glazes		350
• Japan		350
• Trowel applied coatings		50
Fireproof coatings		150
Fire resistive coatings	350	
Flat coatings	50	50
Floor coatings	100	50
Form release compounds	250	100
Graphic arts (sign) coatings	500	200
Industrial maintenance coatings	250	100
• Color indicating safety coatings		480
• High temperature IM coatings	420	420
• Non-sacrificial anti-graffiti coatings		100
• Zinc rich IM primers	340	100
Low solids coatings	120	120
Magnesite cement coatings	450	450
Mastic coatings	100	100
Metallic pigmented coatings	500	150
Multi-color coatings	250	250
Non-flat coatings	100	50
• Nonflat – high gloss coatings	150	
Pre-treatment wash primers	420	420
Primers, sealers, and undercoaters	100	100
Reactive penetrating sealers	350	350
Recycled coatings	250	250
Rust preventative coatings	250	100
Sacrificial anti-graffiti coatings		50

# LOW EMITTING MATERIALS

PRODUCT TYPE	CARB 2007	SCAQMD Rule 1113
Shellac		
• Clear	730	730
• Pigmented	550	550
Specialty primers (sealers and undercoaters)	100	100
Stains	250	100
• Interior		250
Stone consolidant	450	450
Swimming pool coatings	340	
• Repair		340
• Other		340
Tub and tile refinish coatings	420	420
Waterproofing membranes	250	
Wood Coatings	275	
Waterproofing sealers		100
Waterproofing concrete / masonry sealers	100	100
Wood preservatives	350	350

<b>INTERIOR ADHESIVES AND SEALANTS ALL PROJECTS</b>	<b>100%</b>
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*For applications inside the weatherproofing system, 100% of ADHESIVES AND SEALANTS must comply with VOC (Volatile Organic Compound) content limits according to SCAQMD Rule 1168.*

Product Type	VOC limits (g/L)		
		Plastic cement welding	250
<b>Architectural Applications</b>		PVC welding	510
Carpet pad adhesives	50	Sheet applied rubber lining operations specialty	850
Ceramic tile adhesives	65		
Cove base adhesives	50	Structural wood member adhesive	140
Dry wall and panel adhesives	50	Top and trim adhesive	250
Indoor carpet adhesives			
50		<b>Substrate Specific Applications</b>	
Multipurpose construction adhesives	70	Fiberglass SSAs	80
Rubber floor adhesives	60	Metal to metal SSAs	30
Structural glazing adhesives	100	Plastic foam SSAs	50
Subfloor adhesives	50	Porous material (except wood) SSAs	50
VCT and asphalt tile adhesives	50	Wood SSAs	30
Wood flooring adhesives	100		
		<b>Sealants</b>	
<b>Specialty Applications</b>		Architectural sealant	250
ABS welding	325	Marine deck sealant	760
Adhesive primer for plastic	550	Other sealant	420
Computer diskette manufacturing	350		
Contact adhesive	80	<b>Sealant Primers</b>	
Special purpose contact adhesive	250	Architectural non-porous sealant primer	250
CPVC welding	490	Architectural porous sealant primer	775
		Marine deck sealant primer	760
		Other sealant primer	750

# LOW EMITTING MATERIALS

## HEALTHCARE and SCHOOLS Only

<b>EXTERIOR</b>	<b>PAINTS AND COATINGS</b>	<b>Healthcare and Schools Only</b>	<b>90% by Volume</b>
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For applications OUTSIDE the weatherproofing system, 90% by volume of COATINGS, ROOFING, and WATERPROOFING MATERIALS must comply with VOC (Volatile Organic Compound) content limits according to CARB 2007.

*Prohibited:*

- Hot-mopped asphalt for roofing
- Coal tar sealants for parking lots and other paved surfaces

PRODUCT TYPE	CARB 2007
Bond Breaker	350
Concrete curing compounds <ul style="list-style-type: none"> <li>• For roadways and bridges</li> </ul>	350
Concrete surface retarder	
Driveway sealer	50
Dry-fog coatings	150
Faux finishing coatings <ul style="list-style-type: none"> <li>• Clear topcoat</li> <li>• Decorative coatings</li> <li>• Glazes</li> <li>• Japan</li> <li>• Trowel applied coatings</li> </ul>	350
Fire resistive coatings	350
Flat coatings	50
Form release compounds	250
Graphic arts (sign) coatings	500
Industrial maintenance coatings <ul style="list-style-type: none"> <li>• Color indicating safety coatings</li> <li>• High temperature IM coatings</li> <li>• Non-sacrificial anti-graffiti coatings</li> <li>• Zinc rich IM primers</li> </ul>	250
Low solids coatings	120
Magnesite cement coatings	450
Mastic coatings	100
Metallic pigmented coatings	500
Multi-color coatings	250
Non-flat coatings <ul style="list-style-type: none"> <li>• Nonflat – high gloss coatings</li> </ul>	100
	150
Pre-treatment wash primers	420
Primers, sealers, and undercoaters	100
Reactive penetrating sealers	350
Recycled coatings	250
Roof coatings <ul style="list-style-type: none"> <li>• Aluminum</li> <li>• Bituminous</li> </ul>	50
	400
	50
Roof primers <ul style="list-style-type: none"> <li>• Bituminous</li> </ul>	350
Rust preventative coatings	250

# LOW EMITTING MATERIALS

Shellac	
• Clear	730
• Pigmented	550
Specialty primers (sealers and undercoaters)	100
Stains	250
Stone consolidant	450
Swimming pool coatings	340
• Repair	
• Other	
Traffic (marking) coatings	100
Waterproofing membranes	250
Waterproofing concrete / masonry sealers	100
Wood Coating	275
Wood preservatives	350
• Below-ground	
• Other	

<b>EXTERIOR ADHESIVES AND SEALANTS</b>	<b>Healthcare and Schools Only</b>	<b>90% by volume</b>
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For applications OUTSIDE the weatherproofing system, 90% by volume of ADHESIVES AND SEALANTS must comply with VOC (Volatile Organic Compound) content limits according to SCAQMD Rule 1168.

Product Type	VOC limits (g/L)	Product Type	VOC limits (g/L)
<b>Architectural Applications</b>		<b>Substrate Specific Applications (SSA)</b>	
Multipurpose construction adhesives	70	Fiberglass SSAs	80
Outdoor carpet adhesives	150	Metal to metal SSAs	30
Single ply roof membrane adhesives	250	Plastic foam SSAs	50
Structural glazing adhesives	100	Porous material (except wood) SSAs	50
VCT and asphalt tile adhesives	50	Wood SSAs	30
<b>Specialty Applications</b>		<b>Sealants</b>	
ABS welding	325	Architectural sealant	250
Adhesive primer for plastic	550	Marine deck sealant	760
Adhesive primer for traffic marking tape	150	Nonmember roof sealant	300
Contact adhesive	80	Roadway sealant	250
Special purpose contact adhesive	250	Single-ply roof membrane sealant	450
CPVC welding	490	Other sealant	420
Plastic cement welding	250	<b>Sealant Primers</b>	
PVC welding	510	Architectural non-porous sealant primer	250
Sheet applied rubber lining operations specialty	850	Architectural porous sealant primer	775
Structural wood member adhesive	140	Modified bituminous sealant primer	500
Top and trim adhesive	250	Marine deck sealant primer	760
		Other sealant primer	750