

quality**net**®  
*Soluzioni per la Conformità*



QualityNet è una società di consulenza che opera nel settore delle certificazioni di prodotto e di processo, con particolare attenzione ai protocolli di green building, tra cui il sistema LEED®.

Opera dal 2009 dalla sede di Mestrino (PD), con un team di tecnici qualificati.

Nell'Ottobre del 2015 diventa, prima in Italia, capogruppo nelle certificazioni forestali a marchio FSC e PEFC

Nel Febbraio 2017 fonda il portale [GREENiTOP.com](http://GREENiTOP.com)

# Il sistema di rating LEED™ E i requisiti sulle emissioni di sostanze inquinanti

*18 maggio 2017*

Dott.ssa Iris Visentin LEED AP BD+C

# I Green Building Councils



- [ABOUT GREEN BUILDING](#)
- [ABOUT US](#)
- [OUR GREEN BUILDING COUNCILS](#)
- [OUR WORK](#)
- [NEWS & MEDIA](#)
- [CALENDAR](#)
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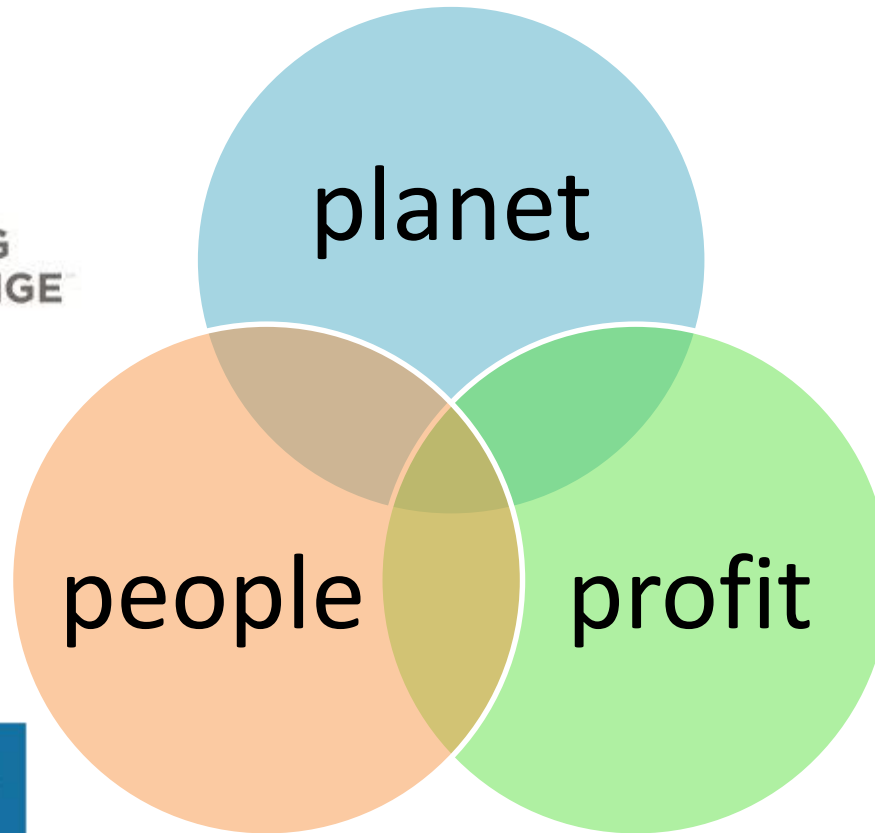


# I protocolli di certificazione di sostenibilità dell'edificio



LIVING  
BUILDING  
CHALLENGE™

THE Sustainable  
**SITES**  
Initiative®

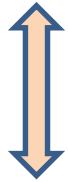


INTERNATIONAL  
**WELL**  
BUILDING  
INSTITUTE™



The IWBI and USGBC share similar certification processes and feature intents, particularly as related to air quality and daylighting. Because of their shared intentions, attainment of WELL features can help achieve certain LEED credits. However, due to differences in structure and small variations in content, complying with one does not guarantee credit for the other.

LEED



WELL

**01 Air quality standards**

Pilot Credit 68: Indoor Air Quality Performance Testing

**02 Smoking ban**

EQ prerequisite: Environmental Tobacco Smoke Control

**03 Ventilation effectiveness**

EQ credit: Enhanced Indoor Air Quality Strategies (Option 2)

EQ prerequisite: Minimum Indoor Air Quality Performance (Option 1)

**05 Air filtration**

EQ credit: Enhanced Indoor Air Quality Strategies (Option 1)

**07 Construction pollution management**

EQ credit: Construction Indoor Air Quality Management Plan

**08 Healthy entrance**

EQ credit: Enhanced Indoor Air Quality Strategies (Option 1, for mechanically ventilated spaces)

**13 Air flush**

EQ credit: Indoor Air Quality Assessment (Option 1)

**14 Air infiltration management**

EA credit: Enhanced Commissioning (Option 2)

**15 Increased ventilation**

EQ credit: Enhanced Indoor Air Quality Strategies (Option 2, for mechanically ventilated or mixed-mode system spaces)

**16 Humidity control**

EQ credit: Thermal Comfort

**17 Direct source ventilation**

EQ credit: Enhanced Indoor Air Quality Strategies (Option 1, for mechanically ventilated spaces)

**18 Air quality monitoring and feedback**

EQ: Enhanced Indoor Air Quality Strategies (Option 2)

**24 Combustion minimization**

Pilot credit 66: Community contaminant prevention - airborne releases

Pilot credit 75: Clean Construction

**25 Toxic material reduction**

MR credit: Building Product Disclosure and Optimization – Material Ingredients (Option 2)

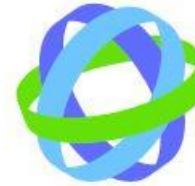
# Health, Wellbeing & Productivity in Offices

The next chapter for green building

Sponsors



SKANSKA



WORLD  
GREEN  
BUILDING  
COUNCIL

# 46mins

More sleep per night on average for office workers with windows.

# 66%

Drop in performance when exposed to distracting noise.

A generally accepted figure is that replacing an existing employee costs, in total, about 1.5 to 2 times that lost employees' annual salary.

Absence through sickness comes at a major financial cost to companies.

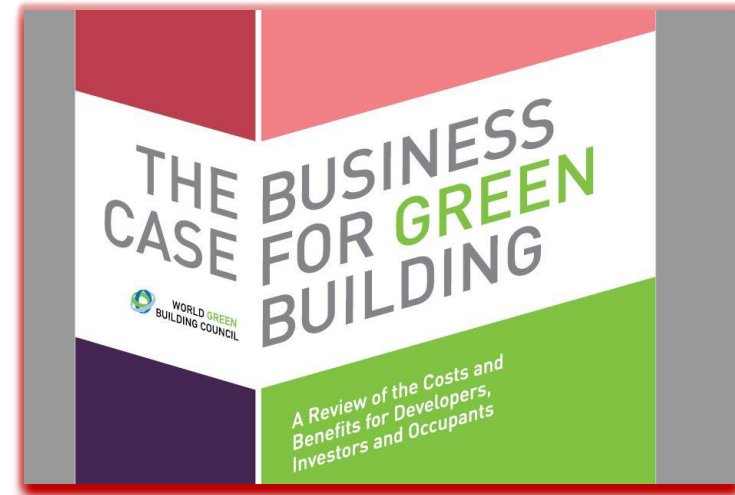
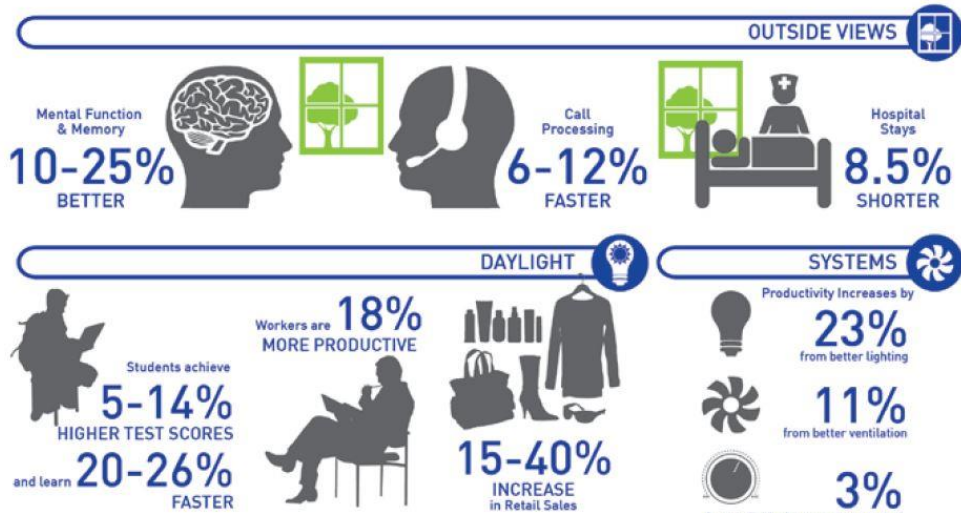
# 4%

Reduction in performance at cooler temperatures.

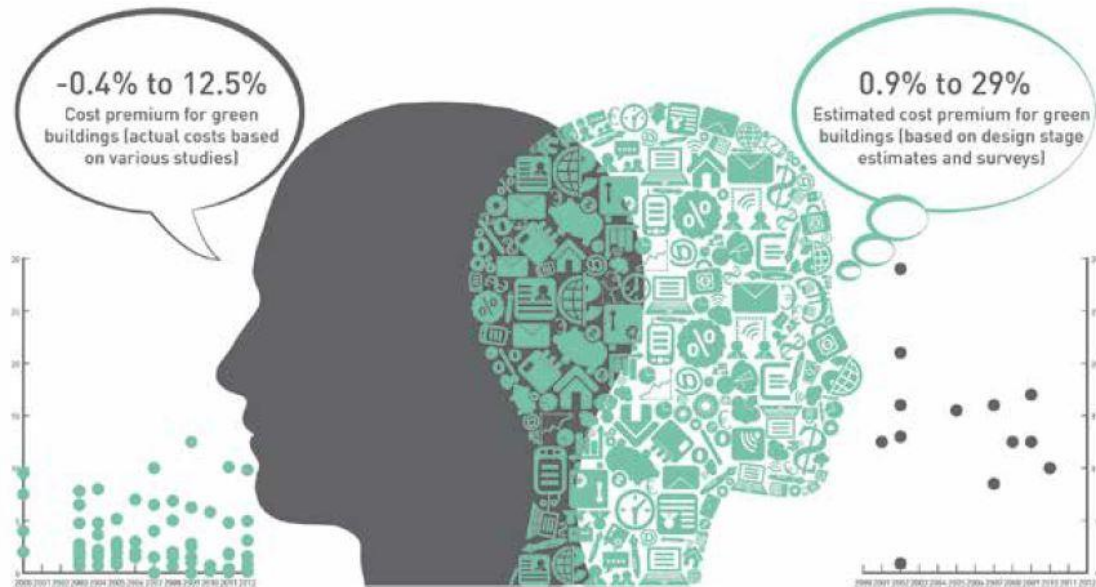
# 6%

Reduction in performance at warmer temperatures.





**Figure 11**  
 Net present value analysis of the operational cost and productivity and health benefits of LEED certified buildings





# Ma quanti sono i progetti certificati LEED™ nel mondo?

**PIU' DI 16.000  
PROGETTI**

**250 MILIONI DI  
MQ CERTIFICATI**

Nr di progetti **conclusi** (solo v3) nel mondo e completate al **4.11.16**  
(non compresi i progetti registrati e non ancora arrivati a certificazione)

Protocollo v3 (2009)	Numero di certificazioni concluse	Superficie lorda (in milioni di metri quadrati)
LEED® New Construction	6.001	64,8
LEED® Core & Shell	1.662	44,8
LEED® Commercial Interior	4.253	17,9
LEED® for School	567	4,7
LEED® for Healthcare	33	0,5
LEED® for Retail	563	2,2
LEED® Existing Building Operation & Maintenance	3.422	113
<b>Totale</b>	<b>16.501</b>	<b>247,9</b>

Fonte: [www.gbig.org](http://www.gbig.org), Ottobre 2016

# E in Italia?

gli edifici certificati e registrati LEED hanno raggiunto la quota di **439** per una superficie totale di circa **5,3 milioni di mq.**

Tra i 439 progetti totali:

- **143 progetti sono già certificati** (tra questi ci sono nomi come ZARA E BAXTER a Roma, VODAFONE, HINES ITALIA, UBS, BNP Paribas, AUTOGRILL, MORGAN STANLEY, GUCCI, BOVIS LEND LEASE, SAINT GOBAIN e SKY 3 a Milano, ITALCEMENTI a Bergamo, BAUER, PATRIMONIO DEL TRENINO, TRENINO TRASPORTI e PARCO NATURALE ADAMELLO BRENTA a Trento, UNIPOL a Bologna, DECATHLON, INTESA SANPAOLO a Torino e BOTTEGA VENETA a Vicenza)
- **296 quelli in fase di certificazione** (tra questi progetti spiccano nomi come LAVAZZA, COOP, PETRONAS LUBRICANTS ITALY, MORGAN STANLEY, NESTLÈ, L'ORÉAL, JOHNSON & JOHNSON, BENI STABILI, EXPO 2015, PRADA e NIKE).

Fonte: [www.gbcitalia.org](http://www.gbcitalia.org); ottobre 2016

# Quali sono i progetti?



## Organizations

Search our membership community of **12,000+** companies, nonprofits, education institutions, state & local governments, professional societies and trade organizations that provide direction, leverage policy and advance the understanding of the most important issues affecting building today.

BROWSE

## People

Search our community of **200,000+** staff, volunteers and professionals who give voice to our commitment to forwarding the green building movement. Our people are contributing a wealth of knowledge to benefit everyone who shares USGBC's vision of green buildings for everyone within this generation.


BROWSE

## Projects

Search our directory of registered and certified LEED project profiles by name or project ID. See how each project achieved LEED certification and glean best practices to guide the success of your project. Use the smart filter to narrow searches and save them for future reference.

BROWSE

### Learn more about the newest organizations

 [Sustainable Integration](#)  
Shoreline, WA

 [CADD Microsystems](#)  
Alexandria, VA

 [GreenEcoSavers, LLC](#)  
Reston, VA

### Connect with the newest individuals

 [Ocean Blue Fishing](#)

 [carlos perez](#)

 [John Martinez](#)  
Retired



### View the newest LEED certified projects

 [KFC Big-C Kanchanaburi](#)

 [Wells Fargo Tower](#)  
Los Angeles, CA

 [Stony Brook Millstone Watershed Associat](#)



Organizations People **Projects**

SMART FILTERS

All

LEED BD+C: New Construction

LEED BD+C: Core and Shell

LEED BD+C: Schools

LEED BD+C: Retail

LEED BD+C: Healthcare

LEED BD+C: Data Centers

LEED BD+C: Hospitality

LEED BD+C: Warehouses and Distribution Centers

LEED BD+C: Homes

Search projects

Match all results Match any results

Name contains

Clear filters APPLY

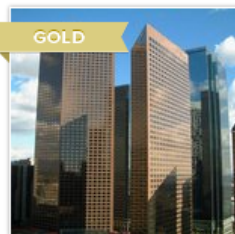
118,202 results

Sort Updated View

SIGN IN TO DOWNLOAD Export results (XLS)



LEED ID+C: Retail v3 - LEED 2009 KFC: Big-C Kanchanahuri



LEED O+M: Existing Buildings v3 - LEED 2009 Wells Fargo Tower



LEED BD+C: New Construction v3 - LEED 2009 Stony Brook Millstone

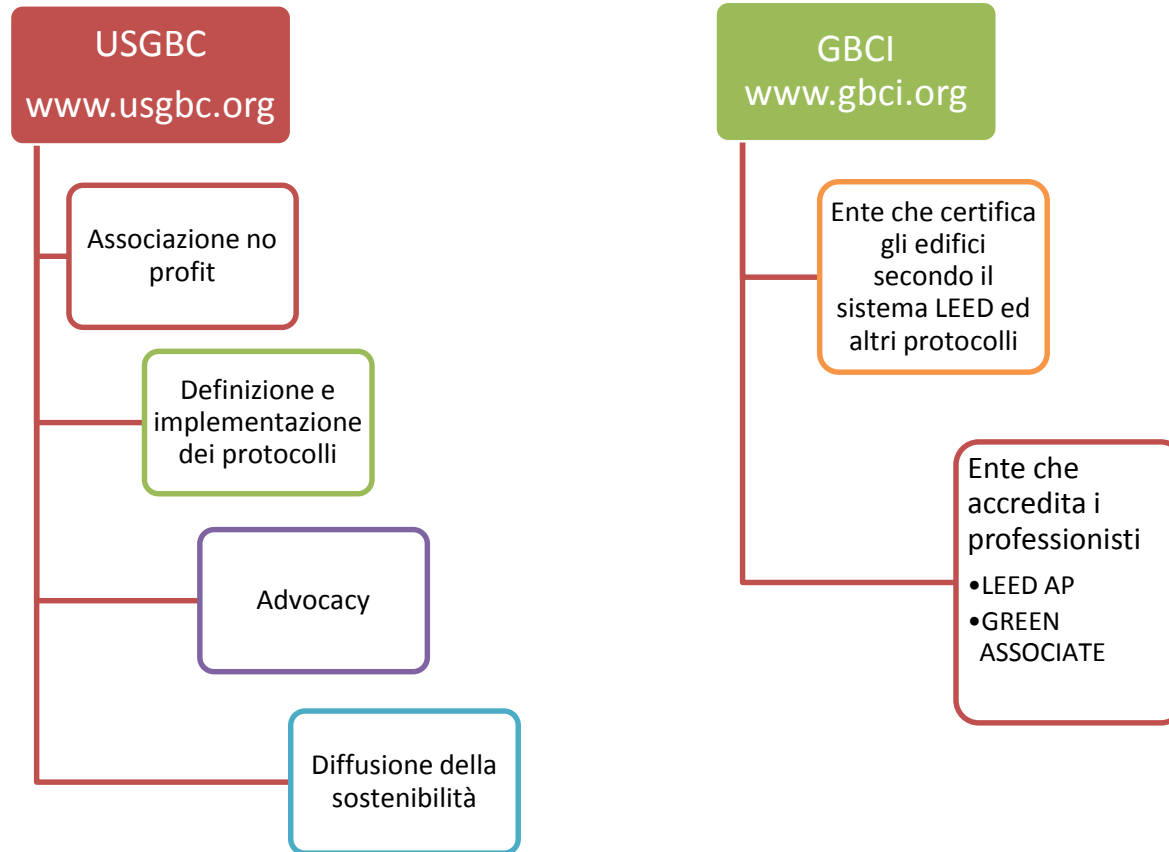


# Leadership in Energy and Environmental Design

A voluntary system  
for certifying high-  
performance,  
sustainable buildings  
and neighborhoods

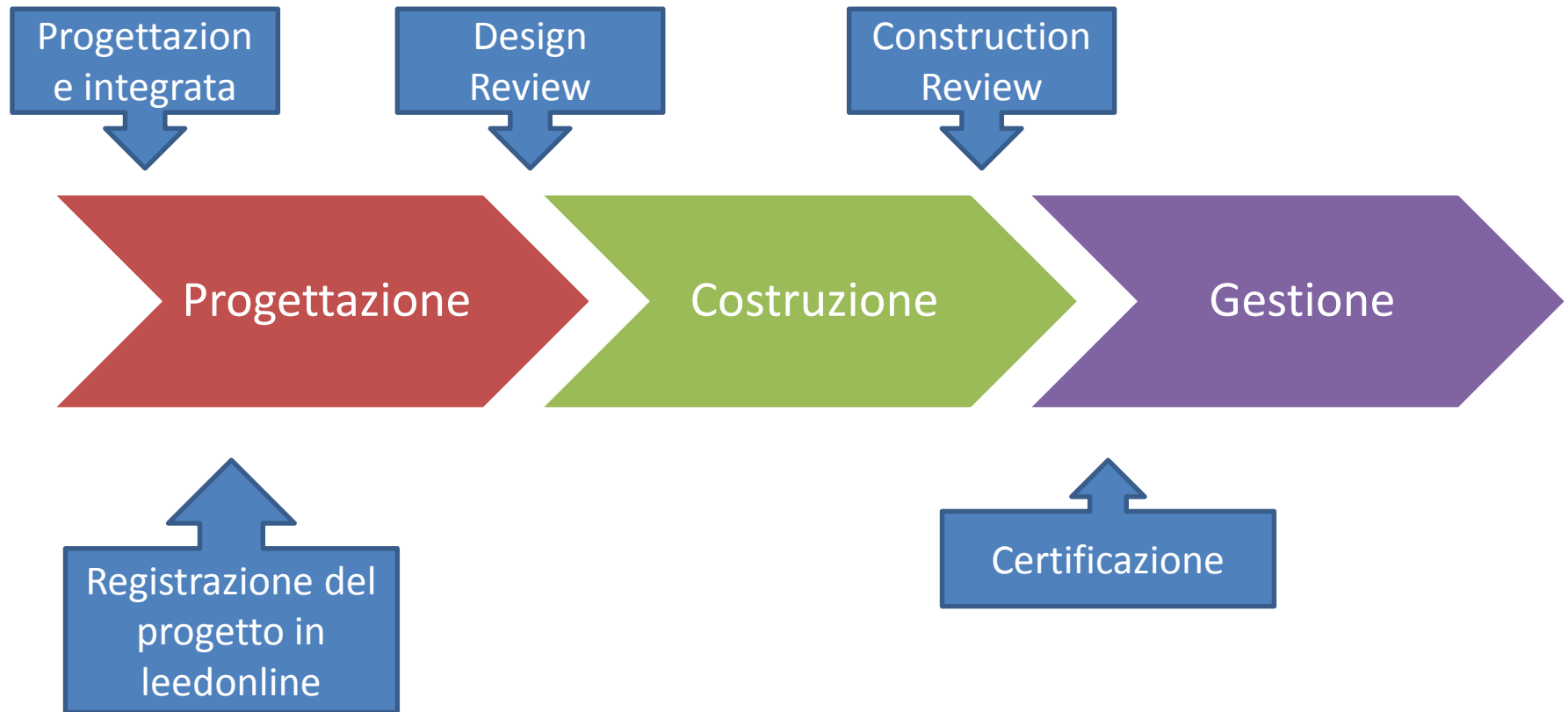


# Il sistema LEED: gli enti di riferimento



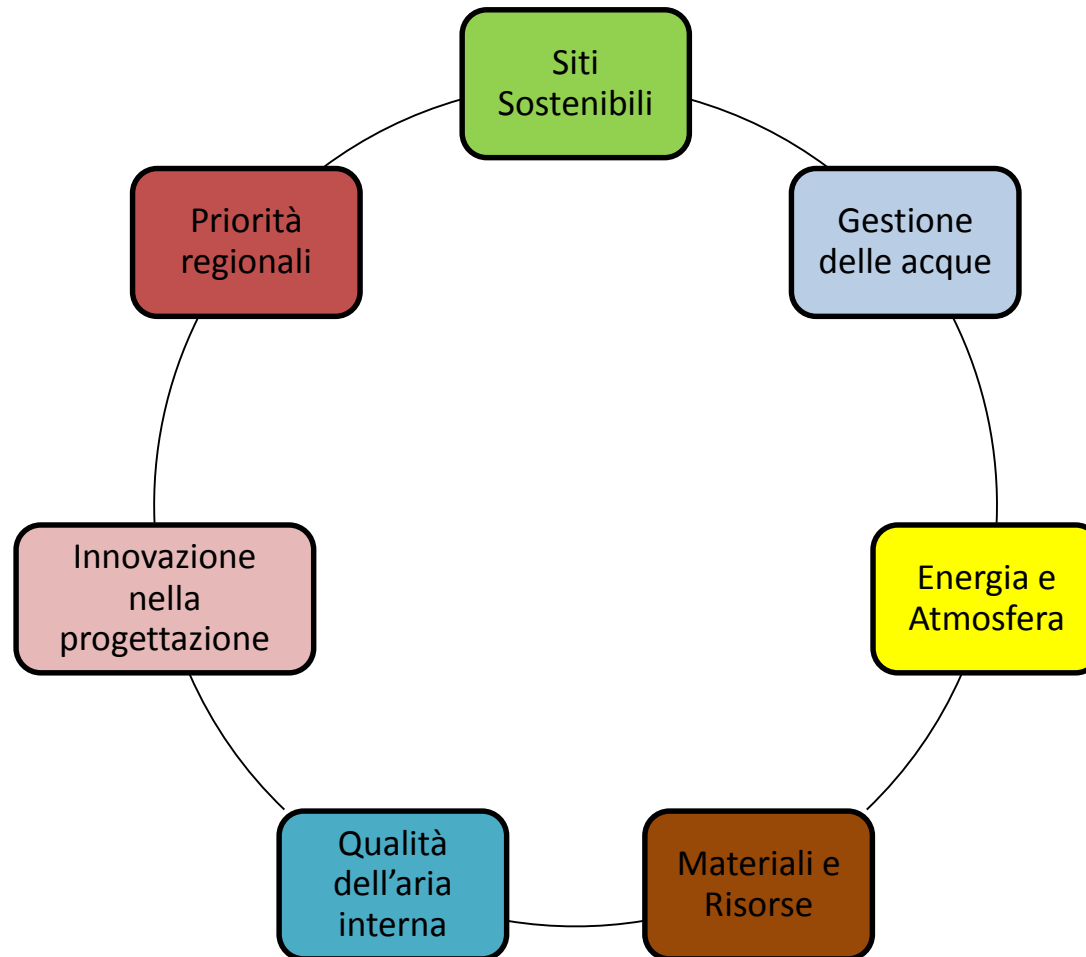


# Il processo di certificazione



GREEN BUILDING DESIGN & CONSTRUCTION	LEED FOR NEW CONSTRUCTION
	LEED FOR CORE & SHELL
	LEED FOR SCHOOLS
	LEED FOR HEALTHCARE
	LEED FOR RETAIL
GREEN INTERIOR DESIGN & CONSTRUCTION	LEED FOR COMMERCIAL INTERIORS
	LEED FOR RETAIL INTERIORS
GREEN BUILDING OPERATIONS & MAINTENANCE	LEED FOR EXISTING BUILDINGS
	LEED FOR EXISTING SCHOOLS
GREEN HOMES DESIGN & CONSTRUCTION	LEED FOR HOMES
GREEN NEIGHBORHOOD DEVELOPMENT	LEED FOR NEIGHBORHOOD DEVELOPMENT

# La struttura dei protocolli



# Area Tematica

## Prerequisiti

Finalità

Requisiti

- opzioni

## Crediti

Finalità

Requisiti

- opzioni

# Livelli di certificazione



Base  
(40-49 punti)



Argento  
(50-59 punti)



Oro  
(60-79 punti)



Platino  
(80 o più)

**0 0 0 Sostenibilità del Sito** Possible Points: 26

Y	N	?			
Y			Prereq 1	Prevenzione dell'Inquinamento da Attività di Cantiere	
			Credit 1	Selezione del Sito	1
			Credit 2	Densità Edilizia e Vicinanza ai Servizi	5
			Credit 3	Recupero e Riqualficazione dei Siti Contaminati	1
			Credit 4.1	Trasporti Alternativi: Accesso ai Trasporti Pubblici	6
			Credit 4.2	Trasporti Alternativi: Portabiciclette e Spogliatoi	1
			Credit 4.3	Trasporti Alternativi: Veicoli a Bassa Emissione e a Carburante	3
			Credit 4.4	Trasporti Alternativi: Capacità dell'Area di Parcheggio	2
			Credit 5.1	Sviluppo del Sito: Proteggere e Ripristinare l'Habitat	1
			Credit 5.2	Sviluppo del Sito: Massimizzazione degli Spazi Aperti	1
			Credit 6.1	Acque Meteoriche: Controllo della Quantità	1
			Credit 6.2	Acque Meteoriche: Controllo della Qualità	1
			Credit 7.1	Effetto Isola di Calore: Superfici Esterne	1
			Credit 7.2	Effetto Isola di Calore: Coperture	1
			Credit 8	Riduzione dell'Inquinamento Luminoso	1

**0 0 0 Gestione delle Acque** Possible Points: 10

Y	N	?			
Y			Prereq 1	Riduzione dell'Uso dell'Acqua	
			Credit 1	Gestione Efficiente delle Acque a Scopo Irriguo	2 to 4
			Credit 2	Tecnologie Innovative per le Acque Reflue	2
			Credit 3	Riduzione dell'Uso dell'Acqua	2 to 4

**0 0 0 Energia e Atmosfera** Possible Points: 35

Y	N	?			
Y			Prereq 1	Commissioning di Base dei Sistemi Energetici dell'Edificio	
Y			Prereq 2	Prestazioni Energetiche Minime	
Y			Prereq 3	Gestione di Base dei Fluidi Refrigeranti	
			Credit 1	Ottimizzazione delle Prestazioni Energetiche	1 to 19
			Credit 2	Produzione in sito di Energie Rinnovabili	1 to 7
			Credit 3	Commissioning Avanzato dei Sistemi Energetici	2
			Credit 4	Gestione Avanzata dei Fluidi Refrigeranti	2
			Credit 5	Misure e Collaudi	3
			Credit 6	Energia Verde	2

**0 0 0 Materiali e Risorse** Possible Points: 14

Y	N	?			
Y			Prereq 1	Raccolta e Stoccaggio dei Materiali Riciclabili	0
			Credit 1.1	Riutilizzo degli Edifici: Mantenimento di Murature, Solai e Coper	1 to 3
			Credit 1.2	Riutilizzo degli Edifici: Mantenimento del 50% degli Elementi Non 1	
			Credit 2	Gestione dei Rifiuti da Costruzione	1 to 2
			Credit 3	Riutilizzo dei Materiali	1 to 2

**Materiali e Risorse** (Continua)

Y	N	?			
			Credit 4	Contenuto di Riciclato	1 to 2
			Credit 5	Materiali Estratti, Lavorati e Prodotti a Distanza Limitata (Mat	1 to 2
			Credit 6	Materiali Rapidamente Rinnovabili	1
			Credit 7	Legno Certificato	1

**0 0 0 Qualità Ambientale Interna** Possible Points: 15

Y	N	?			
Y			Prereq 1	Prestazioni Minime per la Qualità dell'Aria	0
Y			Prereq 2	Controllo Ambientale del Fumo di Tabacco	0
			Credit 1	Monitoraggio della Portata dell'Aria di Rinnovo	1
			Credit 2	Incremento della Ventilazione	1
			Credit 3.1	Piano di Gestione IAQ: Fase Costruttiva	1
			Credit 3.2	Piano di Gestione IAQ: Prima dell'Occupazione	1
			Credit 4.1	Materiali Basso Emissivi: Adesivi, Primers, Sigillanti, Materiali C	1
			Credit 4.2	Materiali Basso Emissivi: Pitture	1
			Credit 4.3	Materiali Basso Emissivi: Pavimentazioni	1
			Credit 4.4	Materiali Basso Emissivi: Prodotti in Legno Composito e Fibre V	1
			Credit 5	Controllo delle Fonti Chimiche ed Inquinanti Indoor	1
			Credit 6.1	Controllo e Gestione degli Impianti: Illuminazione	1
			Credit 6.2	Controllo e Gestione degli Impianti: Comfort Termico	1
			Credit 7.1	Comfort Termico: Progettazione	1
			Credit 7.2	Comfort Termico: Verifica	1
			Credit 8.1	Luce Naturale e Visione: Luce Naturale per il 75% degli Spazi	1
			Credit 8.2	Luce Naturale e Visione: Visuale Esterna per il 90% degli Spazi	1

**0 0 0 Innovazione e Processo di Progettazio** Possible Points: 6

Y	N	?			
			Credit 1.1	Innovazione nella Progettazione: Titolo Specifico	1
			Credit 1.2	Innovazione nella Progettazione: Titolo Specifico	1
			Credit 1.3	Innovazione nella Progettazione: Titolo Specifico	1
			Credit 1.4	Innovazione nella Progettazione: Titolo Specifico	1
			Credit 1.5	Innovazione nella Progettazione: Titolo Specifico	1
			Credit 2	Professionista Accreditato LEED (LEED AP)	1

**0 0 0 Priorità Regionale** Possible Points: 4

Y	N	?			
			Credit 1.1	Priorità Regionale: Credito Specifico	1
			Credit 1.2	Priorità Regionale: Credito Specifico	1
			Credit 1.3	Priorità Regionale: Credito Specifico	1
			Credit 1.4	Priorità Regionale: Credito Specifico	1

**0 0 0 Total** Possible Points: 110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110



# LEED for New Construction and Major Renovations (v4)

	<b>POSSIBLE: 1</b>
Credit Integrative process	1

<b>LOCATION &amp; TRANSPORTATION</b>	<b>POSSIBLE: 16</b>
Credit LEED for Neighborhood Development location	16
Credit Sensitive land protection	1
Credit High priority site	2
Credit Surrounding density and diverse uses	5
Credit Access to quality transit	5
Credit Bicycle facilities	1
Credit Reduced parking footprint	1
Credit Green vehicles	1

<b>SUSTAINABLE SITES</b>	<b>POSSIBLE: 10</b>
Prereq Construction activity pollution prevention	REQUIRED
Credit Site assessment	1
Credit Site development - protect or restore habitat	2
Credit Open space	1
Credit Rainwater management	3
Credit Heat Island reduction	2
Credit Light pollution reduction	1

<b>WATER EFFICIENCY</b>	<b>POSSIBLE: 11</b>
Prereq Outdoor water use reduction	REQUIRED
Prereq Indoor water use reduction	REQUIRED
Prereq Building-level water metering	REQUIRED
Credit Outdoor water use reduction	2
Credit Indoor water use reduction	6
Credit Cooling tower water use	2
Credit Water metering	1

<b>ENERGY &amp; ATMOSPHERE</b>	<b>POSSIBLE: 33</b>
Prereq Fundamental commissioning and verification	REQUIRED
Prereq Minimum energy performance	REQUIRED
Prereq Building-level energy metering	REQUIRED
Prereq Fundamental refrigerant management	REQUIRED
Credit Enhanced commissioning	6
Credit Optimize energy performance	18
Credit Advanced energy metering	1
Credit Demand response	2
Credit Renewable energy production	3
Credit Enhanced refrigerant management	1
Credit Green power and carbon offsets	2

<b>MATERIAL &amp; RESOURCES</b>	<b>POSSIBLE: 13</b>
Prereq Storage and collection of recyclables	REQUIRED
Prereq Construction and demolition waste management planning	REQUIRED
Credit Building life-cycle impact reduction	5
Credit Building product disclosure and optimization - environmental product declarations	2
Credit Building product disclosure and optimization - sourcing of raw materials	2
Credit Building product disclosure and optimization - material ingredients	2
Credit Construction and demolition waste management	2

<b>INDOOR ENVIRONMENTAL QUALITY</b>	<b>POSSIBLE: 16</b>
Prereq Minimum IAQ performance	REQUIRED
Prereq Environmental tobacco smoke control	REQUIRED
Credit Enhanced IAQ strategies	2
Credit Low-emitting materials	3
Credit Construction IAQ management plan	1
Credit IAQ assessment	2
Credit Thermal comfort	1
Credit Interior lighting	2
Credit Daylight	3
Credit Quality views	1
Credit Acoustic performance	1

<b>INNOVATION</b>	<b>POSSIBLE: 6</b>
Credit Innovation	5
Credit LEED Accredited Professional	1

<b>REGIONAL PRIORITY</b>	<b>POSSIBLE: 4</b>
Credit Regional priority	4

**TOTAL** **110**

40-49 Points CERTIFIED	50-59 Points SILVER	60-79 Points GOLD	80+ Points PLATINUM
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# Esempio

## Building product disclosure and optimization - material ingredients

### Intent

To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically, and socially preferable life-cycle impacts. To reward project teams for selecting products for which the chemical ingredients in the product are inventoried using an accepted methodology and for selecting products verified to minimize the use and generation of harmful substances. To reward [raw material](#) manufacturers who produce products verified to have improved life-cycle impacts.

### Option 1. material ingredient reporting (1 point)

Use at least 20 different permanently installed products from at least five different manufacturers that use any of the following programs to demonstrate the chemical inventory of the product to at least 0.1% (1000 ppm).

- **Manufacturer Inventory.** The manufacturer has published complete content inventory for the product following these guidelines:
  - A publicly available inventory of all ingredients identified by name and Chemical Abstract Service Registration Number (CASRN)
  - Materials defined as trade secret or intellectual property may withhold the name and/or CASRN but must disclose role, amount and hazard screen using either:
    - GreenScreen benchmark, as defined in GreenScreen v1.2.
    - The Globally Harmonized System of Classification and Labeling of Chemicals rev.6 (2015) (GHS)
      - The hazard screen must be applied to each trade secret ingredient and the inventory lists the hazard category for each of the health hazards included in Part 3 of GHS (e.g. "GHS Category 2 Carcinogen").
      - Identify in the inventory all hazard classes for which a classification cannot be made because there are insufficient data for a particular endpoint(s).
- **Health Product Declaration.** The end use product has a published, complete Health Product Declaration with full disclosure of known hazards in compliance with the Health Product Declaration open Standard.
- **Cradle to Cradle.** The end use product has been certified at the Cradle to Cradle v2 Basic level or Cradle to Cradle v3 Bronze level.
- **Declare.** The Declare product label must indicate that all ingredients have been evaluated and disclosed down to 1000 ppm.
- **ANSI/BIFMA e3 Furniture Sustainability Standard.** The documentation from the assessor or scorecard from BIFMA must demonstrate the product earned at least 3 points under 7.5.1.3 Advanced Level in e3-2014 or 3 points under 7.4.1.3 Advanced Level in e3-2012.
- **Cradle to Cradle Material Health Certificate.** The product has been certified at the Bronze level or higher and at least 90% of materials are assessed by weight.
- **USGBC approved program.** Other USGBC approved programs meeting the material ingredient reporting criteria.



## Option 2. Material ingredient optimization (1 point)

Use products that document their material ingredient optimization using the paths below for at least 25%, by cost, of the total value of permanently installed products in the project.

- GreenScreen v1.2 Benchmark. Products that have fully inventoried chemical ingredients to 100 ppm that have no Benchmark 1 hazards:
  - If any Ingredients are assessed with the GreenScreen List Translator, value these products at 100% of cost.
  - If all Ingredients are have undergone a full GreenScreen Assessment, value these products at 150% of cost.
- Cradle to Cradle Certified. End use products are certified Cradle to Cradle. Products will be valued as follows:
  - Cradle to Cradle v2 Gold: 100% of cost
  - Cradle to Cradle v2 Platinum: 150% of cost
  - Cradle to Cradle v3 Silver: 100% of cost
  - Cradle to Cradle v3 Gold or Platinum: 150% of cost
- International Alternative Compliance Path – REACH Optimization. End use products and materials that do not contain substances that meet REACH criteria for substances of very high concern. If the product contains no ingredients listed on the REACH Authorization or Candidate list, value at 100% of cost.
- USGBC approved program. Products that comply with USGBC approved building product optimization criteria.

## Logo GBC Italia e produttori

Non ci sono prodotti certificati GBC Italia.  
Il logo GBC Italia è solo per i membri dell'associazione.

Il logo GBC Italia indica solamente che un'azienda è socia di GBC Italia;  
GBC Italia non revisiona, non certifica e non approva prodotti e servizi  
offerti dai suoi soci.

L'apposizione del logo GBC Italia per il produttore, sulla confezione del  
prodotto, deve essere rivisto e approvato da GBC Italia

# Focus: Materials & Resources

## LEED NC ITALIA 2009 (V3)

Mrp1

- Stoccaggio dei rifiuti

MRc1

- Mantenimento porzione edificio

MRc2

- Gestione dei rifiuti da costruzione

MRc3

- Riuso di materiali

MRc4

- Contenuto di riciclato

MRc5

- Materiali regionali

MRc6

- Materiali rapidamente rinnovabili

MRc7

- Legno certificato

## LEED NC V4

Mrp1

- Storage and collection of recyclables

MRp2

- Construction and demolition waste management planning

MRc1

- Building life-cycle impact reduction

MRc2

- Building product disclosure and optimization – environmental product declaration

MRc3

- Building product disclosure and optimization – sourcing of raw material

MRc4

- Building product disclosure and optimization – material ingredient

MRc5

- Construction and demolition waste management



# TRASPARENZA e OTTIMIZZAZIONE

Maggiore attenzione a:

- **processo produttivo** (LCA / EPD / CSR)

- sostanze **chimiche** utilizzate  
(es. REACH)

- Emissioni

# SOSTANZE CHIMICHE E SALUBRITA'

## LEED V 3 (2009)

### VOC

- Emissione o contenuto

## LEED V 4

### VOC

- Emissione
- Contenuto

### Trasparenza sostanze chimiche

- CASRN
- HPD
- ...

### Ottimizzazione sostanze chimiche

- REACH
- Elenco sostanze da non utilizzare

# MATERIALI BASSO EMISSIVI COLLANTI, SIGILLANTI,...

PRODOTTI	LEED V 2009		LEED V 4	
	ITA	(or) US	General emissions evaluation	(in addition) Voc Evaluation
	GEV Emicode	SCAQMD #1168	<p>(1) the CDPH standard method (2010)</p> <p>or</p> <p>(2) the German AgBB Testing and Evaluation Scheme (2010).</p> <p>Test products either with (1) the CDPH Standard Method (2010), (2) the German AgBB Testing and Evaluation Scheme (2010), (3) ISO 16000-3: 2010, ISO 16000-6: 2011, ISO 16000-9: 2006, ISO 16000-11:2006 either in conjunction with AgBB, or with French legislation on VOC emission class labeling, or (4) the DIBt testing method (2010).</p>	<p>(CARB) 2007; (SCAQMD) Rule 1113; SCAQMD Rule 1168; European Decopaint Directive (2004/42/EC)</p> <p>or</p> <p>ASTM D2369-10; ISO 11890, part 1; ASTM D6886-03; or ISO 11890-2.</p>
Silicone				

## Intent

To reduce concentrations of chemical contaminants that can damage air quality, human health, productivity, and the environment.

## Requirements

This credit includes requirements for product manufacturing as well as project teams. It covers volatile organic compound (VOC) emissions in the 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 and exterior are organized in seven categories, each with different thresholds of compliance. The building interior is defined as everything within the waterproofing membrane. The building exterior is defined as everything outside and inclusive of the primary and secondary weatherproofing system, such as waterproofing membranes and air- and water-resistive barrier materials.

### Option 1. Product Category Calculations

Achieve the threshold level of compliance with emissions and content standards for the number of product categories listed in Table 2.

**Table 1. Thresholds of compliance with emissions and content standards for 7 categories of materials**

Category	Threshold	Emissions and content requirements
Interior paints and coatings applied on site	At least 90%, by volume, for emissions; 100% for VOC content	<ul style="list-style-type: none"><li>▫ General Emissions Evaluation for paints and coatings applied to walls, floors, and ceilings</li><li>▫ VOC content requirements for wet applied products</li></ul>
Interior adhesives and sealants applied on site (including flooring adhesive)	At least 90%, by volume, for emissions; 100% for VOC content	<ul style="list-style-type: none"><li>▫ General Emissions Evaluation</li><li>▫ VOC content requirements for wet applied products</li></ul>
Flooring	100%	General Emissions Evaluation
Composite wood	100% not covered by other categories	Composite Wood Evaluation
Ceilings, walls, thermal, and acoustic insulation	100%	<ul style="list-style-type: none"><li>▫ General Emissions Evaluation</li><li>▫ <b>Healthcare, Schools only</b> Additional insulation requirements</li></ul>
Furniture (include in calculations if part of scope of work)	At least 90%, by cost	Furniture Evaluation
Healthcare and Schools Projects only: Exterior applied products	At least 90%, by volume	Exterior Applied Products

categorie

Cosa  
analizzare

**Table 2. Points for number of compliant categories of products**

Compliant categories	Points
NC, CS, NC Retail, DC, WDC, NC Hos projects without furniture	
2	1
4	2
5	3
NC, CS, NC Retail, DC, WDC, NC Hos projects with furniture, CI, CI Retail, CI Hos	
3	1
5	2
6	3
Schools, HC without furniture	
3	1
5	2
6	3
Schools, HC with furniture	
4	1
6	2
7	3



### Option 2. Budget Calculation Method

If some products in a category do not meet the criteria, project teams may use the budget calculation method (Table 3).

**Table 3. Points for percentage compliance, under budget calculation method**

Percentage of total	Points
≥ 50% and < 70%	1
≥ 70% and < 90%	2
≥ 90%	3

The budget method organizes the building interior into five assemblies:

- flooring;
- ceilings;
- walls;
- thermal and acoustic insulation;
- furniture

Include furniture in the calculations if it is part of the scope of work. Walls, ceilings, and flooring are defined as building interior products; each layer of the assembly, including paints, coatings, adhesives, and sealants, must be evaluated for compliance. Insulation is tracked separately.

Determine the total percentage of compliant materials according to Equation 1.

Calculate surface area of assembly layers based on the manufacturer's documentation for application.

If 90% of an assembly meets the criteria, the system counts as 100% compliant. If less than 50% of an assembly meets the criteria, the assembly counts as 0% compliant.

Manufacturers' claims. Both first-party and third-party statements of product compliance must follow the guidelines in CDPH SM V1.1–2010, Section 8. Organizations that certify manufacturers' claims must be accredited under ISO Guide 65.

Laboratory requirements. Laboratories that conduct the tests specified in this credit must be accredited under ISO/IEC 17025 for the test methods they use.

### **Emissions and Content Requirements**

To demonstrate compliance, a product or layer must meet all of the following requirements, as applicable.

*Inherently nonemitting sources.* Products that are inherently nonemitting 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.

*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. The default scenario is the private office scenario. The manufacturer's or third-party certification must state the exposure scenario used to determine compliance. Claims of compliance for wet-applied products must state the amount applied in mass per surface area.

Manufacturers' claims of compliance with the above requirements must also state the range of total VOCs after 14 days (336 hours), measured as specified in the CDPH Standard Method v1.1:

- 0.5 mg/m<sup>3</sup> or less;
- between 0.5 and 5.0 mg/m<sup>3</sup>; or
- 5.0 mg/m<sup>3</sup> or more.

Projects outside the U.S. may use products tested and deemed compliant in accordance with either (1) the CDPH standard method (2010) or (2) the German AgBB Testing and Evaluation Scheme (2010). Test products either with (1) the CDPH Standard Method (2010), (2) the German AgBB Testing and Evaluation Scheme (2010), (3) ISO 16000-3: 2010, ISO 16000-6: 2011, ISO 16000-9: 2006, ISO 16000-11:2006 either in conjunction with AgBB, or with French legislation on VOC emission class labeling, or (4) the DIBt testing method (2010). If the applied testing method does not specify testing details for a product group for which the CDPH standard method does provide details, use the specifications in the CDPH standard method. U.S. projects must follow the CDPH standard method.

*Additional VOC content requirements for wet-applied products.* In addition to meeting the general requirements for VOC emissions (above), on-site wet-applied products must not contain excessive levels of VOCs, for the health of the installers and other tradesworkers who are exposed to these products. To demonstrate compliance, a product or layer must meet the following requirements, as applicable. Disclosure of VOC content must be made by the manufacturer. Any testing must follow the test method specified in the applicable regulation.

- All paints and coatings wet-applied on site must meet the applicable VOC limits of the California Air Resources Board (CARB) 2007, Suggested Control Measure (SCM) for Architectural Coatings, or the South Coast Air Quality Management District (SCAQMD) Rule 1113, effective June 3, 2011.
- All adhesives and sealants wet-applied on site must meet the applicable chemical content requirements of SCAQMD Rule 1168, July 1, 2005, Adhesive and Sealant Applications, as analyzed by the methods specified in Rule 1168. The provisions of SCAQMD Rule 1168 do not apply to adhesives and sealants subject to state or federal consumer product VOC regulations.
- For projects outside the U.S., all paints, coatings, adhesives, and sealants wet-applied on site must either meet the technical requirements of the above regulations, or comply with applicable national VOC control regulations, such as the European Decopaint Directive (2004/42/EC), the Canadian VOC Concentration Limits for Architectural Coatings, or the Hong Kong Air Pollution Control (VOC) Regulation.
- If the applicable regulation requires subtraction of exempt compounds, any content of intentionally added exempt compounds larger than 1% weight by mass (total exempt compounds) must be disclosed.
- If a product cannot reasonably be tested as specified above, testing of VOC content must comply with ASTM D2369-10; ISO 11890, part 1; ASTM D6886-03; or ISO 11890-2.
- For projects in North America, methylene chloride and perchloroethylene may not be intentionally added in paints, coatings, adhesives, or sealants.

*Composite Wood Evaluation.* Composite wood, as defined by the California Air Resources Board, Airborne Toxic Measure to Reduce Formaldehyde Emissions from Composite Wood Products Regulation, 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. For projects outside the U.S., composite wood must be documented not to exceed a concentration limit of 0.05 ppm of formaldehyde (0.06 mg/m<sup>2</sup>-h when expressed as emission rate) as tested following either EN-717-1:2004, following ISO 16000-3: 2010, ISO 16000-6: 2011, ISO 16000-9: 2006, ISO 16000-11:2006, or following CEN/TS 16516: 2013 either in conjunction with AgBB or with Belgian or French legislation on VOC emission class labeling.

Salvaged and reused architectural millwork more than one year old at the time of occupancy is considered compliant, provided it meets the requirements for any site-applied paints, coatings, adhesives, and sealants.

*Furniture evaluation.* New furniture and furnishing items 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 (for half credit, by cost) OR 7.6.2 (for full credit, by cost), 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. USGBC-approved equivalent testing methodologies and contaminant thresholds are also acceptable. For classroom furniture, use the standard school classroom model in CDPH Standard Method v1.1. Documentation submitted for furniture must indicate the modeling scenario used to determine compliance.

Salvaged and reused furniture more than one year old at the time of use is considered compliant, provided it meets the requirements for any site-applied paints, coatings, adhesives, and sealants.

**Table 4-1** Target CREL VOCs and their maximum allowable concentrations

No.	Compound Name	CAS No.	Allowable Conc. <sup>a</sup> ( $\mu\text{g}/\text{m}^3$ )
1	Acetaldehyde	75-07-0	70
2	Benzene	71-43-2	30
3	Carbon disulfide	75-15-0	400
4	Carbon tetrachloride	56-23-5	20
5	Chlorobenzene	108-90-7	500
6	Chloroform	67-66-3	150
7	Dichlorobenzene (1,4-)	106-46-7	400
8	Dichloroethylene (1,1)	75-35-4	35
9	Dimethylformamide (N,N-)	68-12-2	40
10	Dioxane (1,4-)	123-91-1	1,500
11	Epichlorohydrin	106-89-8	1.5
12	Ethylbenzene	100-41-4	1,000
13	Ethylene glycol	107-21-1	200
14	Ethylene glycol monoethyl ether	110-80-5	35
15	Ethylene glycol monoethyl ether acetate	111-15-9	150
16	Ethylene glycol monomethyl ether	109-86-4	30
17	Ethylene glycol monomethyl ether acetate	110-49-6	45
18	Formaldehyde	50-00-0	16.5 <sup>b</sup>
19	Hexane (n-)	110-54-3	3,500
20	Isophorone	78-59-1	1,000
21	Isopropanol	67-63-0	3,500
22	Methyl chloroform	71-55-6	500
23	Methylene chloride	75-09-2	200
24	Methyl <i>t</i> -butyl ether	1634-04-4	4,000
25	Naphthalene	91-20-3	4.5
26	Phenol	108-95-2	100
27	Propylene glycol monomethyl ether	107-98-2	3,500
28	Styrene	100-42-5	450
29	Tetrachloroethylene	127-18-4	17.5
30	Toluene	108-88-3	150
31	Trichloroethylene	79-01-6	300
32	Vinyl acetate	108-05-4	100
33-35	Xylenes, technical mixture (m-, o-, p-xylene combined)	108-38-3, 95-47-6, 106-42-3	350



### 2.3.5.5 Emissione dei materiali – Criteri Ambientali Minimi

Ogni materiale elencato di seguito deve rispettare i limiti di emissione esposti nella successiva tabella:

- pitture e vernici
- tessuti per pavimentazioni e rivestimenti
- laminati per pavimenti e rivestimenti flessibili
- pavimentazioni e rivestimenti in legno
- altre pavimentazioni (diverse da piastrelle di ceramica e laterizi)
- adesivi e sigillanti
- pannelli per rivestimenti interni (es. lastre in cartongesso)

Limite di emissione ( $\mu\text{g}/\text{m}^3$ ) a 28 giorni	
Benzene	1 (per ogni sostanza)
Tricloroetilene (trielina)	
di-2-etilesilfталato (DEHP)	
Dibutylfталato (DBP)	
COV totali <sup>21</sup>	1500
Formaldeide	<60
Acetaldeide	<300

Toluene	<450
Tetracloroetilene	<350
Xilene	<300
1,2,4-Trimetilbenzene	<1500
1,4-diclorobenzene	<90
Etilbenzene	<1000
2-Butossietanolo	<1500
Stirene	<350

**Verifica:** Il progettista deve specificare le informazioni sull'emissività dei prodotti scelti per rispondere al criterio e prescrivere che in fase di approvvigionamento l'appaltatore dovrà accertarsi della rispondenza al criterio tramite la documentazione tecnica che ne dimostri il rispetto e che dovrà essere presentata alla stazione appaltante in fase di esecuzione dei lavori, nelle modalità indicate nel relativo capitolato. La determinazione delle emissioni deve avvenire in conformità alla CEN/TS 16516 o UNI EN ISO 16000-9 o norme equivalenti. Tale documentazione dovrà essere presentata alla stazione appaltante in fase di esecuzione dei lavori, nelle modalità indicate nel relativo capitolato.

Come i sistemi LEED possono aiutare?

Nel credito LEED BD+C V4 EQ:  
Indoor environmental Quality - Low-Emitting Materials tra le metodologie di test accettate sono comprese quelle citate dal Criterio CAM a dimostrare il livello di emissione dei TVOC

# GRAZIE PER L'ATTENZIONE

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