

Wind

Parsons The New School for Design
School of Constructed Environments

Interior Design (AAS)

Environmental Design

PAID 1028-X1

SP-17

Hikida

The Wind

*I listen to the wind
To the wind of my soul
Where I'll end up well I think,
Only God really knows*

- Cat Stevens

Learning Objectives

- At the end of this presentation you should know:
 - Minimum and increased ventilation requirements;
 - How to specify low-emitting adhesives and sealants, paint and coatings, flooring systems, composite wood and agri-fiber, and systems furniture and seating;
 - How to document LEED-CI 2009 compliance for low-emitting adhesives and sealants, paint and coatings, flooring systems, composite wood and agri-fiber, and systems furniture and seating;

The Air That I Breathe

“Sometimes, all I need is the air that I breathe...”

- The Hollies

How much oxygen does a person consume in a day?

- *The average adult at rest inhales and exhales something like 7 or 8 liters (about one-fourth of a cubic foot) of air per minute. That totals something like 11,000 liters of air (388 cubic feet) in a day. **Imagine a 7'-0" x 7'-0" x 7'-0" cube = 343 cu ft.***
- *The air that is inhaled is about 20-percent oxygen, and the air that is exhaled is about 15-percent oxygen, so about 5-percent of the volume of air is consumed in each breath and converted to carbon dioxide. Therefore, a human being uses about 550 liters of pure oxygen (19 cubic feet) per day.*
- *A person who is exercising obviously uses a lot more oxygen than that. You could determine how much air is moving through your lungs by exhaling into a plastic bag of known volume at each breath and seeing how long it takes to fill the bag.*
- 

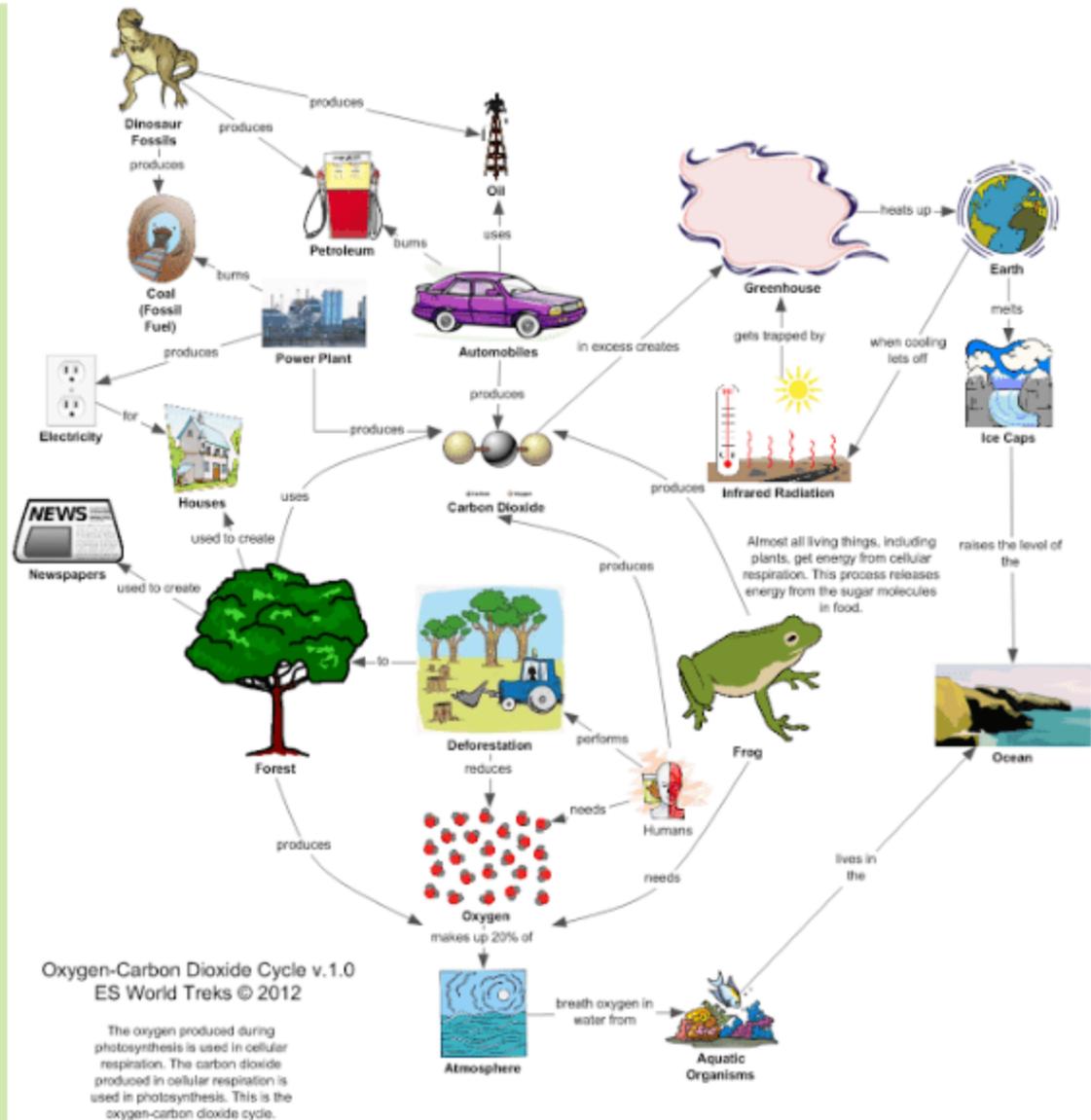
Oxygen to Carbon Dioxide Cycle

Oxygen makes up 20% of the earth's atmosphere.

Animals exhale carbon dioxide

Burning fossil fuels emits carbon dioxide

Photosynthesis, is the process by which green plants and certain other organisms use the energy of light to convert carbon dioxide and water into the simple sugar glucose. In so doing, photosynthesis provides the basic energy source for virtually all organisms. An extremely important byproduct of photosynthesis is oxygen, on which most organisms depend.



ASHRAE Standard 62.1- 1997, Table 6.1 Minimum Ventilation Rates

TABLE 6-1 MINIMUM VENTILATION RATES IN BREATHING ZONE *(continued)*
(This table is not valid in isolation; it must be used in conjunction with the accompanying notes.)

Occupancy Category	People Outdoor Air Rate R_p		Area Outdoor Air Rate R_a		Notes	Default Values		Air Class	
						Occupant Density (see Note 4)	Combined Outdoor Air Rate (see Note 5)		
	cfm/person	L/s-person	cfm/ft ²	L/s-m ²		#/1000 ft ² or #/100 m ²	cfm/person		L/s-person
Office Buildings									
Office space	5	2.5	0.06	0.3		5	17	8.5	1
Reception areas	5	2.5	0.06	0.3		30	7	3.5	1
Telephone/data entry	5	2.5	0.06	0.3		60	6	3.0	1
Main entry lobbies	5	2.5	0.06	0.3		10	11	5.5	1

Benefits of improved indoor air quality

- *The minimum ventilation rate in a commercial office space is 17 cubic feet per minute (cfm) – per ASHRAE 62.1, Section 6, Table 6.1*
- *Higher ventilation rates are on average associated with fewer adverse acute health effects and improved office work performance.*
- *There is also evidence that occupants of buildings with higher ventilation rates have lower rates of absence from work or school, and improved schoolwork performance.*
- *Benefits of increasing ventilation rates in U.S. offices from 17 cfm to 32 cfm per person include:*
 - *0.6% to 1% increases in work performance*
 - *10% to 19% decreases in sick building syndrome symptoms in 12 to 16 million workers,*
 - *7 to 10 million days of avoided absence.*
 - *The associated total annual economic benefit ranges from \$9 billion to \$14 billion.*
- *Source: <http://www.iaqscience.lbl.gov/benefits-rates.html>*

Economic benefit of increased ventilation rates

Table 2. Estimated value of work performance changes from changes in ventilation rates.

Change in Ventilation Rate (rates in cfm per person)	Estimated Increase in Performance (%)	Annual Economic Benefit per Worker @ \$100K per Worker
15 to 20	0.6	\$600
15 to 25	1.1	\$1100
15 to 30	1.4	\$1400
20 to 25	0.4	\$400
20 to 30	0.8	\$800
20 to 40	1.4	\$1400
30 to 40	0.6	\$600
30 to 50	1.0	\$1000
30 to 60	1.4	\$1400

Source: <http://www.iaqscience.lbl.gov/benefits-rates.html>

Minimum ventilation requirements LEED CI, 2009 EQ Prerequisite 1

Natural Ventilation

Mechanical Ventilation

Reference Standards ASHRAE 62.1-2004

17 cfm for commercial office space

5 cfm for residential space



LEED-CI
LEED FOR COMMERCIAL BUILDINGS

LEED-CI 2.0 Letter Template
EQ Prerequisite 1: Minimum IAQ Performance



Option A: For naturally or mechanically ventilated buildings capable of meeting the ASHRAE 62.1-2004 minimum requirements:

(Responsible Party)

I, **Kent Hilda**, declare to USGBC that the project is fully compliant with Section 4, 5, 6 and 7 of ASHRAE 62.1-2004 and all accepted Addenda AND

Natural Ventilation

The building is naturally ventilated and complies with ASHRAE 62-2004 Section 5.1

I have provided the following supplementary documentation to support the declaration

- Plans and tables to demonstrate that the ratio of operable opening area to floor area meets the required standard, and that the occupied areas are all within the allowable distance from the openings.
- Calculations and a spreadsheet similar to Table 2 for this credit in the LEED-CI Reference Guide.

OR

Mechanical Ventilation

The building is mechanically ventilated

I have provided the following supplementary documentation to support the declaration

Calculations and a spreadsheet similar to Table 1 for this credit in the LEED-CI Reference Guide.

When one air handler supplies a mixture of outdoor air and recirculated return air to more than one zone, I have provided its multiple zone analysis.

- Yes
- Not Applicable

For multiple zone recirculating systems, the following was used to determine system ventilation efficiency:

- Table 6-3 of ASHRAE 62.1-2004
- Appendix A of ASHRAE 62.1-2004
- Not Applicable

Increased ventilation requirements

Increase ventilation rates by 30% above ASHRAE 62.1-2007

Note: energy efficiency may be negatively affected.

Intent

To provide additional air ventilation to improve indoor air quality for improved occupant comfort, well-being and productivity.

Requirements

CASE 1. Mechanically Ventilated Spaces

Increase breathing zone outdoor air ventilation rates to all occupied spaces by at least 30% above the minimum rates required by ASHRAE 62.1-2007 (with errata but without addenda') as determined by IEQ Prerequisite 1: Minimum Indoor Air Quality Performance.

CASE 2. Naturally Ventilated Spaces

Design natural ventilation systems for occupied spaces to meet the recommendations set forth in the Carbon Trust's Good Practice Guide 237 (1998). Determine that natural ventilation is an effective strategy for the project by following the flow diagram process shown in Figure 1.18 of the Chartered Institution of Building Services Engineers (CIBSE) Applications Manual 10: 2005, Natural Ventilation in Non-domestic Buildings

AND

OPTION 1

Use diagrams and calculations to show that the design of the natural ventilation systems meets the recommendations set forth in the CIBSE Applications Manual 10: 2005, Natural Ventilation in Non-domestic Buildings.

OR

OPTION 2

Use a macroscopic, multizone, analytic model to predict that room-by-room airflows will effectively naturally ventilate, defined as providing minimum ventilation rates required by ASHRAE 62.1-2007 Chapter 6 (with errata but without addenda'), for at least 90% of occupied spaces.

EQ Credit 4.1 Low-emitting adhesives and sealants

LEED CI 2009

EQ Credit 4.1 Low-emitting materials – adhesives and sealants

Based on SCAQMD Rule 1168 and Green Seal GS-36

Volatile Organic Compound (VOC) limits based on table
FOR EACH APPLICATION

Examples:

- Indoor carpet adhesives < 50 g/L less water
- Cove base adhesives < 50 g/L less water
- Ceramic tile adhesives < 65 g/L less water
- General Purpose Mist Spray maximum 65% VOCs by weight, based on Green Seal Standard for Commercial Adhesives, GS-36

- 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 were effective July 1, 2005 with a 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		

- 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

EQ Credit 4.1 Low-emitting adhesives and sealants

LEED CI 2009

EQ Credit 4.1 Low-emitting materials –
adhesives and sealants

Based on SCAQMD Rule 1168

Provide supporting product data or Material
Safety Data Sheet (MSDS) for **EACH**
application.

Example:

- Indoor carpet adhesives < 50 g/L less water
- This carpet adhesive contains 14 g/L, and meets the SCAQMD Rule 1168 requirement for less than 50 g/L



Product Performance Properties

Laboratory Tests	Results
Polymer type	SBR emulsion polymer
Percent solids	68% to 72%
VOC (Rule #1168 of California's SCAQMD)	14 g/L
pH	9 to 10
Trowability	Light, easy
Density	9 lbs./gal. (+/- 0.4), 1.1 g/mL (+/- 0.05)
Consistency	Buttery
Color	Off-white
Shelf life	2 years when stored in original packaging at 73°F (23°C)
Storage conditions	40°F to 100°F (4°C to 38°C)
Flash point (Tag)	> 212°F (100°C)
Protect from traffic	24 hours for light traffic, 72 hours for heavy traffic

Protect containers from freezing in transit and storage. Provide for heated storage on site and deliver all materials at least 24 hours before work begins.

Ultrabond
ECO 185

EQ Credit 4.1 Low-emitting adhesives and sealants

LEED CI 2009

EQ Credit 4.1 Low-emitting materials –
adhesives and sealants

Based on SCAQMD Rule 1168

Provide supporting product data or Material
Safety Data Sheet (MSDS) for **EACH**
application.

Example:

- Cove base adhesives < 50 g/L less water
- This cove base adhesive contains 0 g/L,
and meets the SCAQMD Rule 1168
requirement for less than 50 g/L

HENRY
The Professional's Formula For Success™

440 COVE BASE Adhesive

**Use for commercial and residential installations
of rubber and vinyl cove base.**

HENRY 440 Cove Base Adhesive

Description

HENRY is a high-performance wet-set adhesive for installing
rubber and vinyl cove base

Use For

Commercial and residential installations of rubber and vinyl
cove base.

Bonds To

Structurally sound, clean, smooth, dry wall surfaces. Glazed
or metal surfaces must be abraded. Refer to the cove base
manufacturer's specific recommendations for suitable
substrates.

Preparation

- Acclimate the installation area, adhesive and flooring in
an enclosed building at a minimum of 65°F (18°C) for
at least 48 hours before, during, and for 48 hours after
installation.
- Substrate must be sound, smooth, flat, clean, dry and
free of excess moisture and alkali. Remove dirt, wax,
grease, paints, oils, sealers, curing compounds and all

Skeleton Gun: Cut spout near tip to produce 1/8" bead.
Puncture inner seal and insert cartridge. Use two 1/8" beads
for 2-1/2" wall base, 3 beads for 4" wall base and 5 beads for
6" wall base. Be sure to use enough adhesive. Immediately
place wall base and roll toward previously installed section
using a hand roller.

Clean Up

Remove wet adhesive residue with a clean, white cloth
dampened with soapy water. Use mineral spirits for dried
adhesive residue, carefully following warnings on the container.

Warranty

10-Year Limited Warranty. For complete warranty details please
contact our Customer Service Center 1-800-232-4832.

Notes

Do not reuse container. Dispose of container and adhesive
residue in accordance with federal, state and local waste
disposal regulations. Do not flush adhesive down drains.
KEEP OUT OF REACH OF CHILDREN.

- Freeze/thaw stable to 10°F (-12°C). Avoid low
temperatures or multiple freeze/thaw cycles.
- Shelf life is one year if unopened.

• VOC content: 0 g/L, calculated & reported, SCAQMD 1168

PRECAUTIONS! May be mildly irritating to eyes and skin. May
cause allergic respiratory reaction. May cause allergic skin
reaction.

EQ Credit 4.1 Low-emitting adhesives and sealants

LEED CI 2009

EQ Credit 4.1 Low-emitting materials –
adhesives and sealants

Based on SCAQMD Rule 1168

Provide supporting product data or Material
Safety Data Sheet (MSDS) for **EACH**
application.

Examples:

- Ceramic tile adhesives < 65 g/L less water
- This ceramic tile adhesive contains 0.00 g/L, and meets the SCAQMD Rule 1168 requirement for less than 65 g/L



254 Platinum

DS-677.0-0614

Globally Proven
Construction Solutions



1. PRODUCT NAME

254 Platinum

2. MANUFACTURER

LATICRETE International, Inc.
1 LATICRETE Park North
Bethany, CT 06524-3423 USA
Telephone: +1.203.393.0010, ext. 235
Toll Free: 1.800.243.4788, ext. 235
Fax: +1.203.393.1684
Internet: www.laticrete.com

3. PRODUCT DESCRIPTION

The ultimate one-step, polymer fortified, thin-set mortar for interior and exterior installation of ceramic tile, stone, quarry tile, pavers and brick. 254 Platinum, designed to just mix with water, has a long open time with unsurpassed adhesion and workability. 254 Platinum is a LATICRETE approved substitute for 211 Powder mixed with 4237 Latex Additive.

4. TECHNICAL DATA

VOC/LEED Product Information



This product has been certified for Low Chemical Emissions (ULCOM/IG UL2818) under the UL GREENGUARD Certification Program for Chemical Emissions for Building Materials, Finishes and Furnishings (UL 2818 Standard) by UL Environment.

Total VOC Content pounds/gallon (grams/liter) of product in unused form is 0.00 lb/gal (0.00 g/l).

Suitable Substrates

- Exterior Glue Plywood
- Properly Prepared Vinyl Tile*
- Concrete/Masonry
- Concrete Block
- Cement Mortar Beds
- Non-Water Soluble Cut-Back Adhesive*
- Cement Terrazzo
- Cement Backer Boards**
- Gypsum Wallboard*
- Gypsum Plaster*
- Plastic Laminate*
- Existing Ceramic Tile And Stone

* Interior use only.

**Consult cement backer board manufacturer for specific installation recommendations and to verify acceptability for exterior use.

Packaging

50 lb bag (22.7 kg); 54 bags per pallet

Color: Grey and White

Approximate Coverage

80-85 ft ² /50 lb bag (7.4-8.8 m ² /22.7 kg bag) with 1/4" x 1/4" (6 mm x 6 mm) notched trowel.
50-60 ft ² /50 lb bag (4.6-5.6 m ² /22.7 kg bag) with 1/4" x 3/8" (6 mm x 9 mm) notched trowel.
40-45 ft ² /50 lb bag (3.7-4.2 m ² /22.7 kg bag) with 1/2" x 1/2" (12 mm x 12 mm) notched trowel.

Coverage will vary depending on trowel notch size, type and size of tile and substrate.

Shelf Life

Factory sealed containers of this product are guaranteed to be of first quality for one (1) year*** if stored off the ground in a dry area.

***High humidity will reduce the shelf life of bagged product.

Limitations

	4.5	5 mm (0.2 in.)	(0.13-0.14 in.)
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254 Platinum is ISO 13007-1 C2TES1P1

Working Properties

Open Time	40 minutes
Pot Life	2 hours
Time to Heavy Traffic	24 hours
Wet Density	103 lbs/ft ³ (1653 kg/m ³)

Specifications subject to change without notification. Results shown are typical but reflect test procedures used. Actual field performance will depend on installation methods and site conditions.

EQ Credit 4.1 Low-emitting adhesives and sealants

LEED CI 2009

EQ Credit 4.1 Low-emitting materials –
adhesives and sealants

Based on Green Seal Standard for
Commercial Adhesives, GS-36

Provide supporting product data or Material
Safety Data Sheet (MSDS) for **EACH**
application.

Examples:

- General Purpose Mist Spray maximum
65% VOCs by weight
- This multi-purpose spray adhesive
contains <25% VOCs

3M

3M™ Super 77™ Multi-Purpose Spray Adhesive – Low VOC <25%

Technical Data

March 2012

Product Description

A high tack and fast drying mist spray adhesive.

Key Features

- Securely bonds many lightweight materials such as attaching foils, carpeting, lightweight paper, cardboard, felt, and cloth to painted or unpainted metals, wood.
- Meets CARB / OTC VOC Requirements.
- Helps contribute to LEED® credits.
- GREENGUARD Indoor Air Quality Certified®.

Typical Properties

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Product	3M™ Super 77™ Multi-Purpose Spray Adhesive – Low VOC <25%
Base:	Synthetic Elastomer
Solids Content - (by wt.):	19.4%
Density (lbs/gal):	6.6
Viscosity (cps):	N/A
Color(s):	Translucent
Volatile Organic Compounds (VOC):	< 25%
Hazardous Air Pollutants (HAPS) % wt (calculated):	No
CARB Compliant:	Yes
GREENGUARD Indoor Air Quality Certified®:	Yes
LEED® Eligible:	Yes
Coverage @ 1 gram /ft ² per Can:	99
Spray Pattern:	Mist
Dry Time:	15 - 30 sec.
Bonding Range:	15 sec. – 30 mn.
Shear Adhesion Failure Test - SAFT ⁽¹⁾ :	205
Flammable Solvent:	Yes
Flammable Propellant:	Yes

⁽¹⁾SAFT Shear Adhesion Failure Test with birch plywood, 1 inch overlap, 100 grams used, temperature start at 90F and ramped 10F every 10 sec. until complete failure.

Available Sizes

Container Size	3M Stock Number	UPC Number
24 Fl. Oz. (Net Wt. 18.0 oz) - clear	62-4876-4930-3	00-051111-97956-3

EQ Credit 4.1 Low-emitting adhesives and sealants

LEED CI 2009

EQ Credit 4.1 Low-emitting materials – adhesives and sealants

Based on SCAQMD Rule 1168 and Green Seal GS-36

Volatile Organic Compound (VOC) limits based on table
FOR EACH APPLICATION

Examples:

- Indoor carpet adhesives < 50 g/L less water
- Cove base adhesives < 50 g/L less water
- Ceramic tile adhesives < 65 g/L less water
- General Purpose Mist Spray maximum 65% VOCs by weight, based on Green Seal Standard for Commercial Adhesives, GS-36

LEED-CI 2.0 Letter Template
EQ Credit 4.1: Low-Emitting Materials, Adhesives & Sealants
construction

 LEED-CI
SECTION FOR COMMERCIAL INTERIORS 2.0

(Architect, Interior Designer or Other Responsible Party)
I, **Kent Hikida**, declare to USGBC the following:

The VOC levels in all Adhesives, Sealants and Sealant Primers do not exceed the South Coast Air Quality Management District (SCAQMD) Rule #1168 requirements in effect on January 1, 2003 and rule amendment dated October 3, 2003.

The VOC levels in all Aerosol Adhesives do not exceed the Green Seal Standard GS-36 requirements in effect on October 19, 2000.

I have completed the following table to support the declarations made above.

List of Sealants and Adhesives	Corresponding VOC Levels	Corresponding VOC Limit	Applicable Standard	Classification of Material
Indoor carpet adhesive	14 g/L	< 50 g/L	SCAQMD Rule 1168	Complies
Cove base adhesive	0 g/L	< 50 g/L	SCAQMD Rule 1168	Complies
Ceramic tile adhesive	0 g/L	< 65 g/L	SCAQMD Rule 1168	Complies
General purpose mist spray	<25%	65 %	Green Seal GS-36	Complies

EQ Credit 4.2 Low-emitting paint and coatings

Provide supporting product data or Material Safety Data Sheet (MSDS) for EACH application.

Reference Standards:

- Green Seal Standard GS-11 for paints for interior walls and ceilings
 - Primers 100 g/L
 - Non-flat paint 50 g/L
- Green Seal Standard GS-03 for anti-corrosive paints <250 g/L
- SCAQMD Rule 1113 for architectural coatings for Clear wood finishes, floor coatings, stains, primers, and shellacs
 - Clear wood finishes 275 g/L

Table 1. Standard VOC Limits

VOCs (g/L, minus water, minus exempt compounds)

Coating	Coating Limit*	Current Limit	Effective Date					
			1/1/03	1/1/04	1/1/05	7/1/06	7/1/07	7/1/08
Dust breakers	250							
Clear Wood finishes - Stain - Sanding - Sealer - Lacquer	250 250 250 680	550			275	275 275		
Clear finishing lacquer	680				275			
Concrete curing compounds	300						100	
Concrete curing compounds for roadways and bridges**	350							150
Dry-fog coatings	600							150
Fire-proofing exterior coatings	650	350						
Fire-retardant coatings*** - Clear - Pigmented	550 550							
Fills	200	100						50
Floor coatings	620		100					50
Graphic arts liquid coatings	600							
Industrial maintenance (oil) coatings High temperature lin coatings Zinc-rich lin primers	620 620		420 340	250		100 100		
Japanese finishing coatings	700	350						
Magnesium cement coatings	600	450						
Mastic coatings	300							
Metallic Pigmented coatings	500							
Multicolor coatings	620	250						
Neutral coatings	250	100					50	
Neutral high gloss	250		150					50
Pigmented lacquer	680	550			275			
Pre-treatment wash primers	780		420					
Primers, sealers, undercoaters	350		200			100		
Primers, sealers, undercoaters	250		200			100		
Quick-dry enamels	600		250			150	50	
Quick-dry primers, sealers, undercoaters	250		200			100		
Repeal coatings		250						
Roof coatings Aluminum roof coatings	300 550		250		50 100			
Roof primers, bituminous	350		250					
Rust preventive coatings	620		400			100		
Shellac - Clear - Pigmented	720 550							
Specialty primers	350					250	100	
Stains - Interior	250 250		250					100
Swimming pool coatings - Repair - Other	650 340		340					
Traffic coatings	250	100						100
Waterproofing sealers	600		250			100		
Waterproofing concrete, masonry sealers	600					100		
Wood preservatives - below-ground	250							
Other	300							

* The specified limits remain in effect until revised.

** Does not include compounds used for curbs and gutters, sidewalks, islands, driveways, and other miscellaneous concrete areas.

*** The fire-retardant coating category was eliminated on January 1, 2007, and subsumed by the coating category for which it was formulated.

EQ Credit 4.2 Low-emitting paint and coatings

Provide supporting product data or Material Safety Data Sheet (MSDS) for EACH application.

Reference Standards

- Green Seal Standard GS-11 for paints for interior walls and ceilings
 - Primers 100 g/L. This primer has 0.0 g/L VOCs and complies.



ECO SPEC® WB
INTERIOR LATEX
PRIMER N372

Features

- Minimal Odor
- Zero VOC's in any base and any color
- Quick return to service
- Spatter-resistant
- Exhibits excellent holdout properties

General Description

A low odor, zero VOC (Volatile Organic Compounds), 100% acrylic interior latex primer sealer with spatter resistant properties. Ideally suited for commercial, facility management, and residential applications. Eco Spec® WB Interior Latex Primer (N372) does not have the odor of conventional primers which contain ingredients known as VOC's. Always use Eco Spec® WB Interior Latex Primer (N372) as a first coat when a low-odor, VOC free primer/finish system is required.

Recommended For

Priming interior drywall, plaster, masonry and non-bleeding wood surfaces when a low odor, solvent free primer/finish system is desired.

Limitations

- Do not paint when temperature of air and surface is below 50°F (10°C).

Product Information																	
Colors: —Standard: White (00) (May be tinted with up to 2.0 fl. oz. of Genex® Waterborne Colorants per gallon)		Technical Data¹															
—Tint Bases: Genex® Waterborne Colorant Base, Deep Base (04)		White															
—Special Colors: Contact your Benjamin Moore representative		Vehicle Type 100% Acrylic Latex															
Certification: VOC compliant in all regulated areas Formulated to provide a zero VOC (Volatile Organic Compounds) finish system in any base and any color. Master Painters Institute MPI # 50, 149, 50 X-Green, 149 X-Green Class A (D-25) over non-combustible surfaces when tested in accordance with ASTM E-84		Pigment Type Titanium Dioxide															
<p>The Green Promise® designation means that the product has been tested by independent third parties and meets or exceeds each standard shown in the first row of the following chart.</p> <table border="1"> <thead> <tr> <th>LEED®</th> <th>CHPS (Collaborative for High Performance Schools)</th> <th>MPI Green Performance™</th> <th>VOC (in any color)</th> </tr> </thead> <tbody> <tr> <td>YES</td> <td>YES</td> <td>YES</td> <td>0 g/L</td> </tr> </tbody> </table> <p>Products that have the Green Promise® designation also meet or exceed the published chemical restriction and performance criteria included in the standards shown below, based on independent, third-party testing, but have not been certified under any of these standards.</p> <table border="1"> <thead> <tr> <th>Green Seal™</th> <th>GS-11</th> <th>2015</th> </tr> </thead> <tbody> <tr> <td>YES</td> <td></td> <td></td> </tr> </tbody> </table>		LEED®	CHPS (Collaborative for High Performance Schools)	MPI Green Performance™	VOC (in any color)	YES	YES	YES	0 g/L	Green Seal™	GS-11	2015	YES			Volume Solids 30%	
		LEED®	CHPS (Collaborative for High Performance Schools)	MPI Green Performance™	VOC (in any color)												
YES	YES	YES	0 g/L														
Green Seal™	GS-11	2015															
YES																	
		Coverage per Gallon at Recommended Film Thickness 400 – 500 Sq. Ft.															
		Recommended Film Thickness — Wet 4.0 mils															
		— Dry 1.2 mils															
		Depending on surface texture and porosity, be sure to estimate the right amount of paint for the job. This will ensure color uniformity and minimize the disposal of excess paint.															
		Dry Time @ 77°F — To Touch ½ to 1 Hour															
		(25°C) @ 50% RH — To Recoat 1 to 2 Hours															
		High humidity and cool temperatures will result in longer dry, recoat and service times.															
		Dries By Evaporation, Coalescence															
		Viscosity 94 ± 3 KU															
		Flash Point None															
		Gloss / Sheen Eggshell (10-16 @ 85°)															
		Surface Temperature — Min. 50°F															
		at Application — Max. 90°F															
		Thin With Clean Water															
		Clean Up Thinner Clean Water															
		Weight Per Gallon 10.0 lbs															
		Storage Temperature — Min. 40°F															
		— Max. 90°F															
		Volatile Organic Compounds (VOC)															
		0 Grams / Liter 0 LBS / Gallon															
		Zero VOC post tint (any base and any color)															
Technical Assistance Available through your local authorized Benjamin Moore® retailer. For the location of the retailer nearest you, call 1-800-828-2623, see www.benjaminmoore.com , or consult your local Yellow Pages																	

¹Reported values are for White. Contact Benjamin Moore for values of other bases or colors.

Benjamin Moore & Co., 101 Paragon Drive, Montvale, NJ 07645 Tel: (201) 573-9600 Fax: (201) 573-9046 www.benjaminmoore.com M72 N372 US 042612

EQ Credit 4.2 Low-emitting paint and coatings

Provide supporting product data or Material Safety Data Sheet (MSDS) for EACH application.

Reference Standards

- Green Seal Standard GS-11 for paints for interior walls and ceilings
 - Non-flat paint 50 g/L. This eggshell paint has 0.0 g/L VOCs.



Material Safety Data Sheet

Revision Date: 06-Jan-2010

Revision Number: 6

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	NATURA INTERIOR WATERBORNE PAINT, EGGSHELL
Product Code	513
Product Class	WATER THINNED PAINT
Color	All
Manufacturer	Emergency Telephone Number(s)
Benjamin Moore & Co. 101 Paragon Drive Montvale, NJ 07645 Phone: 201-573-9600 www.benjaminmoore.com	CHEMTREC: 800-424-9300

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	liquid
Odor	little or no odor
Density (lbs/gal)	9.2 - 11.6
Specific Gravity	1.10 - 1.40
pH	Not available
Viscosity (centistokes)	Not available
Evaporation Rate	Not available
Vapor Pressure	Not available
Vapor Density	Not available
Wt. % Solids	40 - 60
Vol. % Solids	30 - 50
Wt. % Volatiles	40 - 60
Vol. % Volatiles	50 - 70
VOC Regulatory Limit (g/L)	0
Boiling Point (°F)	212
Boiling Point (°C)	100
Freezing Point (°F)	32
Freezing Point (°C)	0
Flash Point (°F)	Not applicable
Flash Point (°C)	Not applicable
Flash Point Method	Not applicable
Upper Explosion Limit	Not applicable
Lower Explosion Limit	Not applicable

EQ Credit 4.2 Low-emitting paint and coatings

Provide supporting product data or Material Safety Data Sheet (MSDS) for EACH application.

Reference Standards

- Green Seal Standard GS-03 for anti-corrosive paints <250 g/L. This anti-corrosive paint has 133 g/L.

Date Printed: 4/4/2012

Page 1 / 4

Material Safety Data Sheet

24 Hour Assistance:
1-847-367-7700
Rust-Oleum Corp.
www.rustoleum.com

1. Identification

Product Name: METAC QT SCARLET RED Revision Date: 4/4/2012
Identification Number: 253612
Product Use/Class: Metallic Paint/Topcoat
Supplier: Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA Manufacturer: Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Date Printed: 4/4/2012

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Canadian WHMIS Class: D2A

16. Other Information

HMIS Ratings:
Health: 1* Flammability: 1 Physical Hazard: 0 Personal Protection: X

NFPA Ratings:
Health: 1 Flammability: 1 Instability: 0

VOLATILE ORGANIC COMPOUNDS, g/L: 133

REASON FOR REVISION: Regulatory Update

EQ Credit 4.2 Low-emitting paint and coatings

Provide supporting product data or Material Safety Data Sheet (MSDS) for EACH application.

Reference Standards

- SCAQMD Rule 1113 for architectural coatings for clear wood finishes, floor coatings, stains, primers, and shellacs
 - Clear wood finishes 275 g/L. this product contains 275 g/L

MINWAX Makes and Keeps Wood Beautiful™

Region: USA

Products | How-To | Get Inspired | Woodworking Projects

HOME \ PRODUCTS \ CLEAR PROTECTIVE FINISHES \ INTERIOR \ MINWAX® WATER BASED OIL-MODIFIED POLYURETHANE Hardwood Floors

Minwax® Water Based Oil-Modified Polyurethane

Like 0 Tweet 3-1

Restore, Refinish, Repair

Overview | Product Details | Directions | FAQs | MSDS | GHS SDS

Product Details

Sheens:	gloss, semi-gloss, satin
Application Tool:	synthetic bristle brush, foam brush, or lambwood applicator
Location:	interior wood surfaces
Recoat:	after 2 hours
Dry Time:	24 hours before light use
Cleanup:	warm water
Coverage:	125 square feet per quart
Coats:	3
VOC Content:	Maximum VOC of 275 g/L
Recommended Uses:	woodwork, furniture, doors, cabinets, floors

Products

- Minwax Stains Color Guide
- Preparation
- Stains
- One-Step Stain & Finishes
- Clear Protective Finishes**
- Hardwood Floors
- Maintenance & Repair
- Specialty Finishes
- Brushes
- Product Finder

EQ Credit 4.2 Low-emitting paint and coatings

Provide supporting product data or Material Safety Data Sheet (MSDS) for **EACH** application.

Sample LEED CI EQ Credit 4.1 Form

LEED-CI 2.0 Letter Template
EQ Credit 4.2: Low-Emitting Materials, Paints & Coatings
construction

 LEED-CI
LEED FOR COMMERCIAL INTERIORS 2.0

(Architect, Interior Designer or Other Responsible Party)

I, **Kent Hikida**, declare to USGBC that interior paints and coating applied on-site meet the limitations and restrictions concerning chemical components set by the following standards:

- Topcoat Paints: Green Seal Standard GS-11, Paints, First Edition, May 20, 1993.
- Anti-Corrosive and Anti-Rust Paints: Green Seal Standard GS-03, Anti-Corrosive Paints, Second Edition, January 7, 1997. For applications on ferrous metal substrates.
- All other Architectural Coatings, Primers and Undercoats: South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004.

I have completed the following table to support the declarations made above.

List of Paints and Coating	Corresponding VOC Levels	Corresponding VOC Limit	Applicable Standard	Classification of Material
Benjamin Moore primer N372	0.0 g/L	100 g/L	Green Seal GS-11	Interior primer paint
Benjamin Moore eggshell	0.0 g/L	50 g/L	Green Seal GS-11	Interior non-flat paint
Rust-Oleum metallic topcoat	133 g/L	<250 g/L	Green Seal GS-03	Anti-corrosive paint
Minwax polyurethane	275 g/L	275 g/L	SCAQMD Rule 1113	Clear wood finish

EQ Credit 4.3 Low-emitting flooring systems

- Carpet System: CRI Green Label Plus
- Carpet Pad: CRI Green Label Plus
- Carpet Adhesive: < 50 g/L VOC
- Hard surface flooring: FloorScore
- Clear sealants: SCAQMD Rule 1113
- Tile setting adhesives and grouts: SCAQMD Rule 1168

OPTION 1

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

- All carpet installed in the building interior must meet the testing and product requirements of the Carpet and Rug Institute Green Label Plus' program.
- 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 have less than 50 g/L VOC.
- All hard surface flooring must be certified as compliant with the FloorScore² standard (current as of the date of this rating system, or more stringent version) by an independent third-party. Flooring products covered by FloorScore include vinyl, linoleum, laminate flooring, wood flooring, ceramic flooring, rubber flooring and wall base.
- An alternative compliance path using FloorScore is acceptable for credit achievement: 100% of the noncarpet finished flooring must be FloorScore-certified, and must constitute at least 25% of the finished floor area. Examples of unfinished flooring include floors in mechanical rooms, electrical rooms and elevator service rooms.
- 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, effective January 1, 2004.
- 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.

OR

OPTION 2

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

EQ Credit 4.3 Low-emitting flooring systems

- Carpet System: CRI Green Label Plus
- Interface, PH210, carpet tile, CRI Green Label Plus #GLP0820

Specifications



PH210

Modular, 25cm x 1m	127840AK00
Backing System	GlassBac® Tile
Yarn Manufacturer	Aqua®
Yarn System	100% Recycled Content Type 6 Nylon
Color System	100% Solution Dyed
Construction	Tufted Pattern Loop
Preservative Protection	Intersept®
Soil/Stain Protection	Protekt®
Pile Thickness	0.100 in., 2.5 mm
Pile Density	5,143
Total Recycled Content	60%
Indoor Air Quality	CRI Green Label Plus #GLP0820



EQ Credit 4.3 Low-emitting flooring systems

- Carpet Pad: CRI Green Label Plus
- Interface, GlasBac carpet tiles
- Carpet Adhesive: < 50 g/L VOC
- Interface, GlasBacRe, TacTiles Connectors: 0 VOCs



GlasBac®/GlasBacRE TacTiles® Connectors Technical Data Sheet

CHEMICAL COMPOSITION

Compounded acrylic adhesive, applied to PET polyester backing with PET polyester release liner.

APPEARANCE

Clear 3" x 3" polyester squares with colored print, supplied on white polyester release liner. Available in rolls or sheets.

PRODUCT SPECIFICATIONS

Solids (%) Greater than 99 %
Dimensions 3" x 3"

PRODUCT DESCRIPTION/APPLICATIONS

GlasBac/ GlasBac RE TacTiles connectors replace adhesives when used to install InterfaceFLOR modular carpet with GlasBac® and GlasBac RE backings, only. TacTiles connectors have an exceptionally low odor and "zero" calculated VOCs, which make them ideal for use in schools, healthcare facilities, public and private buildings and any place where odor is a concern.

TacTiles connectors use a small quantity of a pressure sensitive adhesive, applied on one side of a polyester film, to connect InterfaceFLOR carpet modules together.

TacTiles connectors facilitate installation of InterfaceFLOR modular carpet tile products in a flooring system that is "stable, firm, and slip-resistant and does not pose a tripping hazard." See United States Access Board – Americans With Disabilities Act Accessibility Guidelines – Bulletin #4: "Ground and Floor Surfaces"

Surface preparation requirements for installations with TacTiles connectors are the same as those for installations where adhesives would be used.

TacTiles connectors are not to be used for installing InterfaceFLOR modular carpet onto stairs, over existing carpet surfaces, or on sloped surfaces such as ramps and inclines.

The flammability performance of InterfaceFLOR modular carpet remains the same when TacTiles connectors are used in place of adhesives.

The adhesive used on TacTiles connectors for GlasBac/ GlasBacRE resists water and alkaline solutions, and resists plasticizer migration.

STORAGE CONDITIONS

TacTiles connectors are generally resistant to both moisture and temperature. TacTiles connectors that become wet should be allowed to air-dry before being used.

PRODUCT INSTALLATION

Please refer to the GlasBac/ GlasBac RE TacTiles Installation Instructions for full details. Installation Instructions are available at <http://www.interfaceflor.com/installation>.

EQ Credit 4.3 Low-emitting flooring systems

- Carpet System: CRI Green Label Plus
- Carpet Pad: CRI Green Label Plus
- Carpet Adhesive: < 50 g/L VOC
- Hard surface flooring: FloorScore
- Clear sealants: SCAQMD Rule 1113
- Tile setting adhesives and grouts: SCAQMD Rule 1168



LEED-CI
LEED FOR COMMERCIAL INTERIORS 2.0

LEED-CI 2.0 Letter Template
EQ Credit 4.3: Low-Emitting Materials, Carpet Systems
construction

(Architect, Interior Designer or Other Responsible Party)

I, Kant Hikida, declare to USGBC the following:

- Carpet systems meet or exceed the Carpet and Rug Institute's Green Label Plus testing and product requirements. (Green Label Plus does not address backer or adhesive).
- Carpet pad meets or exceeds CRI Green Label testing and product requirements.
- Carpet adhesive meets the requirements of EQ Credit 4.1.

I have completed the following table to support the declarations made above.

	Product	Applicable Standard and Product Number
Carpet System	Interface, PH210	CRI Green Label Plus #GLP0820
Carpet Pad	Product	Applicable Standard and Product Number
	Glasbac Tile	0 VOCs
Carpet Adhesive	Product	Applicable Standard and Product Number
	Interface, GlasBac® TacTiles Connectors	0 VOCs

Project Name:

Credit: EQ Cr 4.3 (1 point possible): Low-Emitting Materials, Carpet Systems

Points Documented: 1

READY TO SAVE THIS TEMPLATE TO LEED-ONLINE? Please enter your first name, last name and today's date below, followed by your LEED-Online Username and Password associated with the Project listed above to confirm submission of this template.

First Name Last Name Date Username (Email Address) Password

EQ Credit 4.4 Low-emitting composite wood and agri-fiber

No added urea-formaldehyde resins

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

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. Laminate adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies must not contain added urea-formaldehyde resins.

Composite wood and agrifiber products are defined as: particleboard, medium density fiberboard (MDF), plywood, wheatboard, strawboard, panel substrates and door cores. Materials considered fixtures, furniture, and equipment (FF&E) are not considered base building elements and are not included.

Formaldehyde is a naturally occurring VOC found in small amounts in animals and plants but carcinogenic and irritating to most people when present in high concentrations, causing headaches, dizziness, mental impairment, and other symptoms. When present in the air at levels above 0.1 ppm parts of air, it can cause watery eyes, burning sensations in the eyes, nose and throat; nausea; coughing; chest tightness; wheezing; skin rashes; and asthmatic and allergic reactions.

EQ Credit 4.4 Low-emitting composite wood and agri-fiber

Example of a LEED-CI 2009 EQ Credit 4.4 compliant composite wood



Lumin™ plywood and LEED®

Lumin plywood is manufactured with no added urea-formaldehyde resin and can contribute toward 1 credit within the USGBC LEED green building program.

2. Hazardous Ingredients/Identity Information

Name	CAS#	Percent	Agency	Exposure Limits	Comments
Wood	None	85-99	OSHA	PEL-TWA 15 mg/m ³	Total dust
			OSHA	PEL-TWA 5 mg/m ³	Respirable dust fraction
			ACGIH	TLV-TWA 1 mg/m ³	Inhalable fraction, All other species
			Recommended ^A	OEL-TWA 5 mg/m ³	Softwood or hardwood total dust
			Recommended ^A	OEL-STEL 10 mg/m ³	Softwood or hardwood total dust
Phenol formaldehyde resin solids ^{B,C}	9003-35-4	1-15 (Cured solids)	OSHA OSHA ACGIH	PEL-TWA 0.75 ppm PEL-STEL 2 ppm TLV-Ceiling 0.3 ppm	Free gaseous formaldehyde Free gaseous formaldehyde Free gaseous formaldehyde

^A Weyerhaeuser recommended occupational exposure limits based on 1989 OSHA PEL's, which were overturned by the U.S. Court of Appeals in 1992. Wood dust is now regulated by OSHA as "Particulates Not Otherwise Regulated" (PNOR), or Nuisance Dust. However, some states have incorporated the 1989 OSHA PELs in their state plans. Additionally, OSHA indicated that it may cite employers under the OSH Act general duty clause in appropriate circumstances for noncompliance with the 1989 PELs.

^B The VOC content of adhesives and sealants used are equal or less than the current VOC content limits of South Coast Air Quality Management District (SCAQMD) Rule #1166, AND all sealants used as fillers meet or exceed the requirements of the Bay Area Air Quality Management District Regulation 8, Rule 51.

^C These products contain less than 0.05 ppm free formaldehyde, and contain no urea-formaldehyde resins. Large scale chamber studies conducted by the APA Engineered Wood Association have shown that the finished products off gas levels below 0.1 ppm as wet.



EQ Credit 4.4 Low-emitting composite wood and agri-fiber

Example of a LEED-CI 2009 EQ Credit 4.4 compliant agrifiber

Kirei WheatBoard Specifications:

Use Kirei WheatBoard in millwork, cabinetry and finished product applications for a renewable, non-toxic alternative to MDF or particleboard. Kirei WheatBoard can be painted or laminated with a wide variety of surface treatments including our Kirei Bamboo Veneers.

Dimensions:

Sheet Size	1220mm x 2440mm (48"x96")
Standard Thicknesses	12.7mm (1/2") 19.1mm (3/4") Tolerance +/- 0.005"
Sheet Weights	1/2" 54 lbs 3/4" 81 lbs
Density	750 kg/m ³ +/- 50 kg/m ³

(Larger sizes available for laminating applications)
Custom thicknesses & sizes available

Physical Properties:

Modulus of Rupture	2176 psi
Modulus of Elasticity	311,832 psi
Internal Bond	79.77 psi
Screw Holding Power	
Perpendicular to Plane	247 lbf
Withdrawal from Edge	157 lbf
Thickness Swell (24-hour immersion)	8%
Water Absorption (24-hour immersion)	20%
Moisture Content	8%



Environmental Benefits

Kirei WheatBoard reduces forest clear-cutting, air pollution and landfill use. The wheat stalks used in the manufacture of Kirei WheatBoard are a rapidly renewable resource left after the edible portion of the plant is harvested.

Reduced Waste
Until now, these stalks have been discarded or burned, adding to landfill waste and pollution. Kirei WheatBoard helps reduce this waste and ease deforestation by substituting for wood.

Zero VOC
In addition, Kirei WheatBoard is made with a no-added-urea-formaldehyde adhesive that does not emit toxic formaldehyde.

Kirei WheatBoard and LEED
Kirei WheatBoard can be an excellent way to help your projects qualify for LEED credit for environmentally friendly construction.

Kirei WheatBoard Adhesive
Kirei WheatBoard is manufactured using a no-added-urea formaldehyde MDI adhesive which does not contribute harmful Volatile Organic Compounds (VOC) to the indoor atmosphere.

Fabrication Guidelines

Kirei WheatBoard is machinable using standard fabricating techniques applicable for wood-based products.

Cutting:
For best results use a high-quality saw blade, feeding the material at a uniform speed through the saw. Solidly back panels to prevent chipping along kerf on the saw tooth exit side. Finishing material with a sealer coat can help avoid chipping along saw cuts.

Drilling:
A high-speed drill is recommended. To avoid chipout or breakage on the exit side, back the panel with scrap material.

Routing:
A speed of 20,000 RPM is recommended using double-fluted router bits.

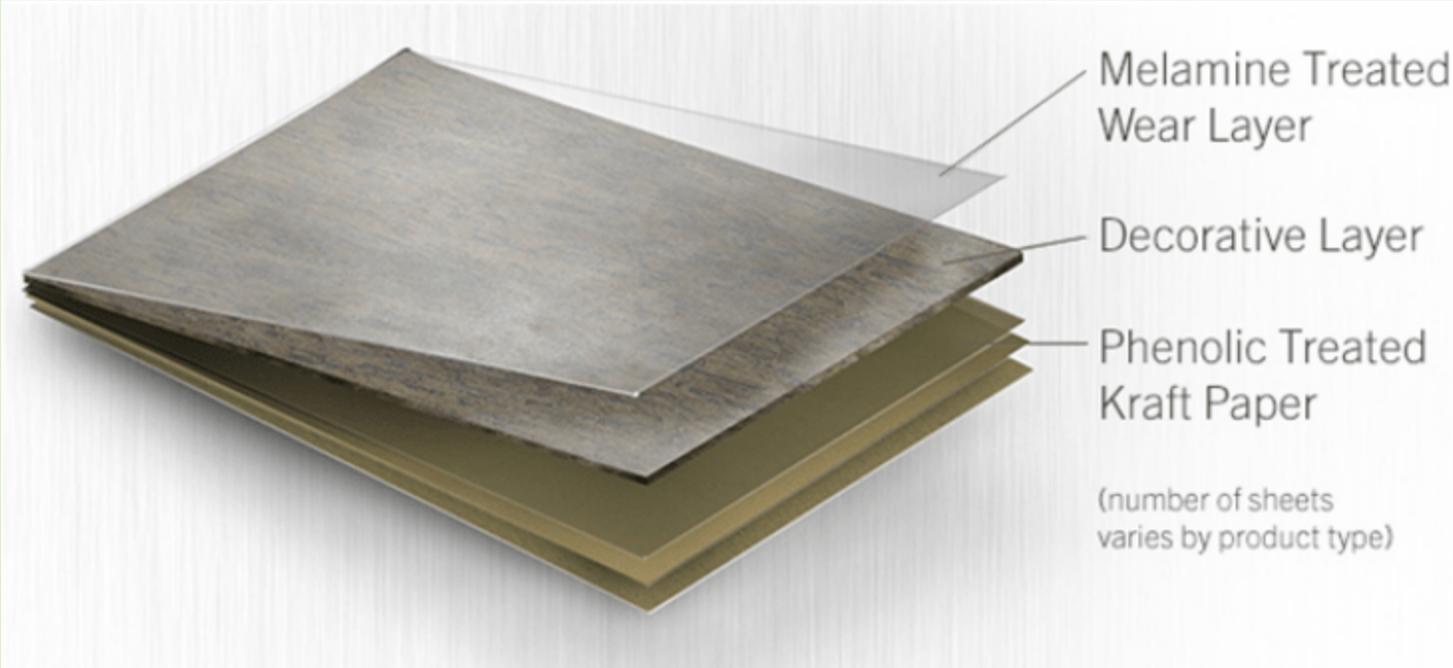
Filling:
Standard wood putty can be used to fill any chips or holes caused by cutting and sanding. Select a color that best matches the color of Kirei WheatBoard or your finish color.

Fastening:
All fastening methods may be used, including nail, staples, rivets, screws, bolts, glue or combination. Type A or AB, sheet metal, twin fast types and fully threaded screws designed for use in particle board offer better withdrawal resistance than wood screws. Pre-drilled pilot holes are recommended for the size screw used. If nailing, use spiral or ring shank nails for extra holding power. (Note: Nailing or screwing into edge grain may result in lower screw holding power due to fewer cross-layers being engaged.)

Finishing:
Kirei WheatBoard panels can be filled, sealed, painted, stained or varnished with most commercial finishing materials including short and medium oil length primers, fillers, lacquers, and synthetic base coats and topcoats and high temperature bake and acrylic

EQ Credit 4.4 Low-emitting composite wood and agri-fiber

Example of a LEED-CI 2009 EQ Credit 4.4 compliant laminate adhesive



EQ Credit 4.4 Low-emitting composite wood and agri-fiber

Example of a LEED-CI 2009 EQ Credit 4.4 compliant laminate adhesive

The screenshot shows the Wilsonart website's sustainability page for adhesives. The header includes the Wilsonart logo and navigation links for Products, About Wilsonart, Press Room, Sustainability, and Careers. A breadcrumb trail reads: Home / Corporate / Sustainability / Adhesives. On the left, a 'Sustainability Information' sidebar lists categories: Laminate, Solid Surface, Decorative Metals, Adhesives (highlighted), and Upcycle That Sample. Below this is a 'Questions? Comments?' section with 'Email' and 'Chat' icons and the phone number 800.433.3222. The main content area is titled 'Wilsonart® Adhesives Sustainability Information'. It features a 'Product Construction' section stating that Wilsonart® Adhesives are specifically formulated for high performance. A 'Our Sustainability Adhesives Journey' section notes that products are made from virgin raw goods and are free of urea-formaldehyde and Methylene Chloride.

Wilsonart Products About Wilsonart Press Room Sustainability Careers

Home / Corporate / Sustainability / Adhesives

Sustainability Information

- Laminate
- Solid Surface
- Decorative Metals
- Adhesives**
- Upcycle That Sample

Questions? Comments?

Email Chat

800.433.3222

Wilsonart® Adhesives Sustainability Information

Product Construction

Wilsonart® Adhesives are specifically formulated to offer unparalleled bonding performance for High Pressure Decorative Laminate and other surfacing products. The Wilsonart Adhesive product line includes solvent-based and water-based contact adhesives, PVA-type white glues, wood glues, solvents, cleaners and custom colored matched caulk for Wilsonart® Laminate and Wilsonart® Solid Surface designs.

Our Sustainability Adhesives Journey

Wilsonart Adhesives manufactures products from virgin raw goods including rubber, resins, emulsions, alcohols and solvents, in order to maintain the highest level of performance and quality. All **Wilsonart Adhesives** are free of urea-formaldehyde and Methylene Chloride, which can be found in many competing adhesives.

EQ Credit 4.4 Low-emitting composite wood and agri-fiber

Example of a LEED-CI 2009 EQ Credit 4.4 Template

 **LEED-CI**
LEED FOR COMMERCIAL INTERIORS 2.0

LEED-CI 2.0 Letter Template
EQ Credit 4.4: Low-Emitting Materials, Wood & Agrifiber Products
construction

(Architect, Interior Designer or Other Responsible Party)

I, **Kent Hikida**, declare to USGBC that all composite wood and agrifiber products, including core materials, used in the building contain no added urea-formaldehyde resins. Furthermore, I declare to USGBC that Laminate Adhesives used to fabricate on-site and shop applied assemblies containing these laminate adhesives contain no added urea-formaldehyde.

I have provided the following supplementary documentation to support the declaration:

- Documentation that all core and laminate adhesive products used on the project contained no added urea-formaldehyde.
- A list of all composite wood and agrifiber products as noted below.

I have completed the following table to support the declarations made above.

Product	Application
Lamin plywood	Composite Wood
Kirai wheatboard	Agrifiber
Wilsonart	Laminate Adhesive

EQ Credit 4.5 Low-emitting systems furniture and seating

Greenguard Indoor Air Quality Certified

Or

Calculated

Or

Tested

Table 1. Maximum Indoor Air Concentrations

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

- 1 Systems furniture is defined as either a panel-based workstation comprised of modular interconnecting panels, hang-on components and drawer/filing components, or a freestanding grouping of furniture items and their components that have been designed to work in concert. Furniture other than systems furniture and task and guest chairs used with systems furniture is defined as occasional furniture and is excluded from the credit requirements.
- 2 Seating is defined as task and guest chairs used with systems furniture.
- 3 Salvaged and used furniture that is more than 1-year-old at time of occupancy is excluded from the credit requirements.

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

All systems furniture¹ and seating² that was manufactured, refurbished or refinished within 1 year prior³ to occupancy must meet 1 of the options below.

OPTION 1

Furniture and seating are Greenguard Indoor Air Quality Certified.

OR

OPTION 2

Calculated indoor air concentrations that are less than or equal to those listed 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.

OR

OPTION 3

Calculated indoor air concentrations that are less than or equal to those listed 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 Section 5 of ANSI/BIFMA X7.1-2007 is waived for LEED purposes. Section 5 requires that laboratories used to perform the emission testing and/or provide analytical results must be independently accredited to ISO/IEC 17025, "General requirements for the competence of testing and calibration laboratories."

EQ Credit 4.5 Low-emitting systems furniture and seating

Example of Greenguard Indoor Air Quality Certified Systems Furniture

<http://greenguard.org/en/index.aspx>

Table 1. Maximum Indoor Air Concentrations

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

- 1 Systems furniture is defined as either a panel-based workstation comprised of modular interconnecting panels, hang-on components and drawer/filing components, or a freestanding grouping of furniture items and their components that have been designed to work in concert. Furniture other than systems furniture and task and guest chairs used with systems furniture is defined as occasional furniture and is excluded from the credit requirements.
- 2 Seating is defined as task and guest chairs used with systems furniture
- 3 Salvaged and used furniture that is more than 1-year-old at time of occupancy is excluded from the credit requirements.



Haworth / Compose® System

GREENGUARD Certification

Standard: UL 2818 - 2013 Standard for Chemical Emissions for Building Materials, Finishes and Furnishings

Number: 2645-410

Certification Status: Certified

Certification Period(s): 4/2004 - 3/2016

Restrictions: Wood options included: worksurfaces and/or storage fronts only

GREENGUARD Gold Certification

Standard: UL 2818 - 2013 Gold Standard for Chemical Emissions for Building Materials, Finishes and Furnishings

Number: 2645-420

Certification Status: Certified

Certification Period(s): 3/2011 - 3/2016

Restrictions: Wood options included: worksurfaces and/or storage fronts only

Download Certificates

[GREENGUARD Certification](#)
[GREENGUARD Gold Certification](#)

Haworth

Manufacturer Website:

<http://www.haworth.com>

Link to this page

Certification Mark(s):



Manufacturer's Description:

Compose® adapts to your interiors with precision and freedom. Discriminating details and intentional restraint give Compose a simplistic style. With geometric shapes, a rectilinear appearance and a strict attention to detail, Compose complements your interiors without dominating. And Compose offers the freedom for unique expression. Whether it is monolithic, segmented, or integrated with Enclose moveable walls, Compose expands your design freedom. With a deliberate surface materials offering including textured paints or double-cut wood veneers, Compose can reflect simplicity or sophistication with ease. For more information please visit www.haworth.com

Sustainable Building Programs Credits & Codes: This Product Contributes To:

- ASHRAE 189.1
 - 8.4.2.5 : Office Furniture Systems & Seating
 - 8.5.2 : Office Furniture Systems & Seating
- Australian Green Star - Education
 - IEQ Credit 8 : Flooring/Furniture
- Australian Green Star - Office Interiors

EQ Credit 4.5 Low-emitting systems furniture and seating

Example of Greenguard Indoor Air Quality Certified Systems Furniture

<http://greenguard.org/en/index.aspx>

CERTIFICATE OF COMPLIANCE



Haworth

Compose® System

Restrictions: Wood options included: worksurfaces and/or storage fronts only

2645-410
Certificate Number

04/22/2004 - 03/22/2016
Certificate Period

Certified
Status

UL 2818 - 2013 Standard for Chemical Emissions for Building Materials, Finishes and Furnishings

Products tested in accordance with UL 2818 test method to show compliance to emission limits in UL 2818, Section 7.1.

Office furniture and furnishings are tested in accordance with ANSI/BIFMA M7.1-2011 and determined to comply with ANSI/BIFMA X7.1-2011 and ANSI/BIFMA E3-2014, Credit 7.6.1. Panelbased workstations are modeled in the open plan environment. Casework systems are modeled in the private office environment. Residential furniture is modeled in a residential bedroom environment.



Environment

UL Environment investigated representative samples of the identified Product(s) to the identified Standard(s) or other requirements in accordance with the agreements and any applicable program service terms in place between UL Environment and the Certificate Holder (collectively "Agreement"). The Certificate Holder is authorized to use the UL Environment Mark for the identified Product(s) manufactured at the production site(s) covered by the ULF Test Report, in accordance with the terms of the Agreement. This Certificate is valid for the identified dates unless there is non-compliance with the Agreement.

EQ Credit 4.5 Low-emitting systems furniture and seating

Example of Greenguard Indoor Air Quality Certified Seating

<http://greenguard.org/en/index.aspx>

Table 1. Maximum Indoor Air Concentrations

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

- 1 Systems furniture is defined as either a panel-based workstation comprised of modular interconnecting panels, hang-on components and drawer/filing components, or a freestanding grouping of furniture items and their components that have been designed to work in concert. Furniture other than systems furniture and task and guest chairs used with systems furniture is defined as occasional furniture and is excluded from the credit requirements.
- 2 Seating is defined as task and guest chairs used with systems furniture
- 3 Salvaged and used furniture that is more than 1-year-old at time of occupancy is excluded from the credit requirements.



Download Certificates

GREENGUARD Certification
GREENGUARD Gold Certification
Multi-attribute Sustainability Certification

Knoll, Inc.

For more information:

Contact Manufacturer:
 2123434015
 nmirchandan@knoll.com

Manufacturer Website:
<http://www.knoll.com>
 Product Website:
<http://www.knoll.com>

Link to this page

Certification Mark(s):



Knoll, Inc. / Chadwick

GREENGUARD Certification
 Standard:UL 2818 - 2013 Standard for Chemical Emissions for Building Materials, Finishes and Furnishings
 Number:2118-410
 Certification Status:Certified
 Certification Period(s)5/2003 - 10/2015

GREENGUARD Gold Certification
 Standard:UL 2818 - 2013 Gold Standard for Chemical Emissions for Building Materials, Finishes and Furnishings
 Number:2118-420
 Certification Status:Certified
 Certification Period(s)11/2007 - 10/2015

Multi-attribute Sustainability Certification
 Standard:ANSI/BIFMA e3-2012 LEVEL 3 - ANSI/BIFMA e3-2012, Furniture Sustainability Standard
 Number:2118-4230
 Certification Status:Certified
 Certification Period(s)5/2014 - 10/2015

Manufacturer's Description:

Smart. Comfortable. Easy. Accessible. Just Right. Drawing upon 30 years experience in designing award-winning furniture, Don Chadwick has created a chair that is refreshingly simple.

Sustainable Building Programs Credits & Codes:
 This Product Contributes To:

- ASHRAE 189.1
 - 8.4.2.5 : Office Furniture Systems & Seating
- Australian Green Star - Education
 - IEQ Credit 8 : Flooring/Furniture
- Australian Green Star - Office Interiors
 - IEQ Credit 11 : Furniture/Wall Systems
- Green Globes
- Green Guide for Health Care 2.2
 - EP Credit 3.6 : Furniture
 - IEQ Credit 4.5 : Furniture
- LEED 2009 for Commercial Interiors
 - IEQ Credit 4.5 : Systems Furniture & Seating
- LEED 2009 for Core & Shell
 - ID Credit : Systems Furniture & Seating
- LEED 2009 for Existing Buildings
 - ID Credit : Systems Furniture & Seating
- LEED 2009 for New Construction
 - ID Credit : Systems Furniture & Seating
- LEED 2009 for Retail: Commercial Interiors
 - IEQ Credit 4 : Option E : Furniture
- LEED 2009 for Retail: New Construction
 - IEQ Credit 4 : Option E : Furniture
- LEED 2009 for Schools
 - IEQ Credit 4.5 : Systems Furniture & Seating
- LEED Canada for Commercial Interiors
 - IEQ Credit 4.5 : Furniture
- LEED v4 - Building Design & Construction
 - IEQ Credit 1: Enhanced Indoor Air Quality Strategies - Option 2 Additional Enhanced IAQ Strategies - D

EQ Credit 4.5 Low-emitting systems furniture and seating

Example of Greenguard Indoor Air Quality Certified Seating

<http://greenguard.org/en/index.aspx>

CERTIFICATE OF COMPLIANCE



Knoll, Inc.
Chadwick

2118-410
Certificate Number

06/09/2003 - 10/29/2015
Certificate Period

Certified
Status

UL 2818 - 2013 Standard for Chemical Emissions for Building Materials, Finishes and Furnishings

Products tested in accordance with UL 2818 test method to show compliance to emission limits in UL 2818, Section 7.1.

Seating units are tested in accordance with ANSI/BFMA M7.1-2013 and determined to comply with ANSI/BFMA X7.1-2013 and ANSI/BFMA E3-2014. Credit 7.6.1. Seating units are modeled in the seating environment.



Environment

UL Environment investigated representative samples of the identified Product(s) to the identified Standard(s) or other requirements in accordance with the agreements and any applicable program service terms in place between UL Environment and the Certificate Holder (collectively, "Agreement"). The Certificate Holder is authorized to use the UL Environment Mark for the identified Product(s) manufactured at the production site(s) covered by the UL Test Report, in accordance with the terms of the Agreement. This Certificate is valid for the identified dates unless there is non-compliance with the Agreement.

EQ Credit 4.5 Low-emitting systems furniture and seating

Example LEED-CI 2009, Credit 4.5 Template

LEED-CI 2.0 Letter Template
EQ Credit 4.5: Low-Emitting Materials, Systems Furniture and Seating
Construction

 **LEED-CI**
LEED FOR COMMERCIAL INTERIORS 2.0

(Responsible Party)
I, **Kent Hikida**, declare to USGBC that all systems furniture and seating covered by this credit is included in the following listing:

Project Low-Emitting Systems Furniture and Seating Record

Manufacturer	Product Line	Description	Form of Compliance	Period of Manufacture [earliest date / latest date]	Form of Compliance	Test Date or Certification Period
Knoll	Chadwick	Seating	Greenguard pro	06/03-10/15	Certified	06/03-10/15
Haworth	Compose	Systems Furniture	Greenguard pro	04/04-03/16	Certified	04/04-03/16

Sources

- [REDACTED]
- [REDACTED]
- [REDACTED]
[body/systems/respiratory/question98.htm](#)
- <http://www.life.illinois.edu/govindjee/encyc/encarta.htm>
- [REDACTED]
- <http://www.iaqscience.lbl.gov/benefits-rates.html>
- Manufacturers' websites for products
- LEED CI-2009 and related credit templates