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L E E D®

assessment for
Glass Déco Fabrics



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LEED

LEED



assessment for Glass Déco Fabrics

The United States Green Building Council (USGBC) has established the LEED® (Leadership in Energy and Environmental Design) Green Building Rating System as a

voluntary, consensus-based program for developing high-performance, sustainable buildings. Based on well-founded scientific standards.

for New Construction & Major Renovations

New projects register as LEED-NC 2.2, however some existing projects may register under 2.1.

The following document provides architects, specifiers, designers, building owners and other professionals with a brief overview of Vitrulan® Glass Déco Fabrics that potentially contribute to earning LEED points and credits.

This document is designed to serve as a guide to design professionals and LEED consultants evaluating products based on LEED credit and point criteria for their buildings with selection of Vitrulan® Glass Déco Fabrics.

The LEED programs currently available include:

- **LEED-NC 2.2:** New commercial construction and major renovation projects
- **LEED-EB 2.0:** Existing building operations
- **LEED-CI:** 2.0 Commercial interiors projects
- **LEED-CS:** Core and shell projects
- **LEED-H:** Homes
- **LEED-ND:** Neighborhood development
- **LEED Application Guides:** Retail (currently in pilot), Multiple Buildings/ Campuses, Schools, Healthcare, Laboratories, Lodging



Understanding LEED programs, points and credits

There are five environmental and one »Innovation« categories that are further divided into credits. For each credit, the rating system identifies the intent, requirement, and technology or strategy to attain the credit. One or more points are available within each credit that are then added up towards achieving a certain level of Certification.

Most categories contain prerequisites. ALL seven prerequisites MUST be met in order to qualify for ANY certification level.

In addition to the five environmental categories, there is also an “Innovation and Design Process” category.

69 points total:

- Sustainable Sites: 8 credits, 14 points
- Water Efficiency: 3 credits, 5 points
- Energy and Atmosphere: 6 credits, 17 points
- Materials and Resources: 7 credits, 13 points
- Indoor Environmental Quality: 8 credits, 15 points
- Innovation: 4 points
- LEED Accredited Professional: 1 point

Vitrulan® Glass Déco Fabrics LEED assessment

Vitrulan Corporation put together this information based on the understanding that each project is situational and that Vitrulan’s products will vary in point contributions from project to project. This report is suggesting potential areas where Vitrulan® Glass Déco Fabrics could aid in contribution to LEED points and credits.



LEED-NC	MR Credit 1.1-1.2	Building Reuse	1–2 Points
	MR Credit 1.3	Building Reuse 50% Interior	1 Point
	EQ Credit 4.1	Low Emitting Materials – Adhesives & Sealants	1 Point
	ID Credit 1.1-1.4	Innovation in Design	1–4 Points
LEED-CI	MR Credit 1.2-1.3	Building Reuse 40% / 60%	1–2 Points
	EQ Credit 4.1	Low Emitting Materials – Adhesives & Sealants	1 Point
	ID Credit 1.1-1.4	Innovation in Design	1–4 Points
LEED-EB	MR Credits 3.1 & 3.2	Optimize Use of IAQ Compliant Products	2 Points
	IUOM Credit 1	Innovations in Upgrades, Operations and Maintenance	1–4 Points

According to the Greening Federal Facilities: An Energy, Environmental, and Economic Resource Guide for Federal Facility Managers and Designers SECOND EDITION - DOE/GO-102001-1165, NREL/BK-710-29267, May 2001. The most significant environmental concern with most wall coverings is their potential for emitting volatile organic compounds, or VOCs. Also, by affecting the ability of moisture to migrate through a wall surface, coatings and wall coverings can affect the potential for condensation and microbial growth in buildings. Other considerations include the raw materials used to make the products, additives used to install and finish them, durability, and disposal or recycling at the end of their useful life.

Per the GreenGuide for Healthcare, some building materials are associated with substantial dioxin releases during their life cycle that are directly related to the product content, hence making product selection a useful strategy for dioxin elimination. For example, the plastics that contain chlorine, such as PVC, and cement from kilns fired with hazardous waste are targeted by this credit because direct dioxin generation is associated with their manufacture as well as with many forms of disposal and accidental combustion of chlorine-containing materials in building fires or landfills. Materials, such as Vitrulan® Glass Déco Fabrics do not contain chlorine and are not associated with these types of dioxin releases.

Perm Rating. A measure of a material's ability to pass water vapor

Mold, which has become a major health concern in commercial buildings, often occurs when moisture trapped in the wallboard and adjacent air space is unable to migrate through a non-permeable wall covering. Materials can be separated into three classes based on their perm ratings [a perm measures, at 73.4 degrees F (23 degrees C), the number of grains of water vapor that pass through a square foot of material per hour at a differential vapor pressure equal to one inch of mercury]:

- 0 to 1 – Impermeable (Vapor Barrier);
- 1 to 10 – Semi-permeable (Vapor retarder);
- More than 10 – Permeable (Breathable).

Vitrulan® Glass Déco Fabrics have a perm of 63-93 (ASTM E 96 Method B) and are ideal as a breathable wall surface in combination with a compatible low VOC paint or other coating.

Indoor Air Quality

The choice of interior finishes has a particularly acute impact on Indoor Air Quality (IAQ). Many interior materials involve the use of toxins which are frequently found in adhesives, paints, binders, finishing products. Other pollutants include molds, bacteria, fibers, and dusts. Accumulation of pollutants can cause Building Related Illness (BRI). Buildings which repeatedly trigger building related illness are referred to as having Sick Building Syndrome (SBS). While ventilation systems are intended to exhaust pollutants, the systems often fail to perform this task effectively and often reduce the energy efficiency of the building. The best method to control the quality of indoor air is to reduce or eliminate pollutants at their source through informed material selections. The Indoor Environmental Quality (IEQ) of

the modern workplace has become increasingly important to the building owner, the tenant, and its employees. Because the average employee spends up to 95% of the time indoors, the environment can have a direct effect on health, comfort, and productivity.

When selecting interior products and treatments for walls, there are a host of products ranging from paints & coatings to flexible materials such as vinyl, foil, fabric, felt, cork, carpet, wood veneer, various laminate, tile and Glass Déco Fabric. Beyond the obvious aesthetic considerations a designer must consider performance in regards to resistance to mold, high impact tolerance, value added extended life benefits, flexibility in design application and compliance.

IAQ contributing attributes:

Many factors contribute to IAQ challenges. Among these potential factors are the following:

Biological contaminants –

including molds, bacteria, and dust mites – can result from roof leaks, water vapor entry from walls, basements, inadequate drainage around buildings, leaking pipes, and condensation from air conditioning equipment. Relative humidity that consistently exceeds 50% should be avoided.

Volatile organic compounds,

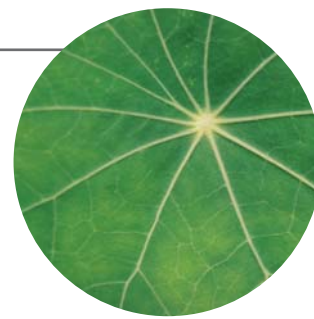
or VOCs, can cause IAQ problems, particularly in new (or newly remodeled) buildings. Common sources of VOCs are paints, carpeting, adhesives, wall coverings and furnishings.

Particulates

from a number of sources can cause IAQ problems.

California 01350

is a Special Environmental Requirements standard specification developed by the State of California to cover key environmental performance issues related to the selection and handling of building materials. It represents a significant step forward in specification to evaluate and reduce the impact of building materials on indoor air quality and health in buildings and could become a major driving force for better products and healthier buildings.



buildings as its use spreads. The key elements affecting indoor air quality are in the specification for screening building materials (primarily major interior finishes) based on:

- **emissions** testing protocol
- **hazardous content** screening and
- avoiding **mold and mildew** from construction practices

Understanding Green Product Labeling

An »eco-label« identifies a product that meets specified environmental performance criteria or standards, and is awarded by a third-party organization to products or services that are determined to meet the criteria or standards. Many labels are understood including Energy Star, Green-

Seal, GreenGuard and others. However, with the influence of ISO 14021 and international »green« labeling programs, it has become more difficult to recognize legitimate programs.

<http://www.oekotex.com/en/2/main100.html>

OEKO-TEX 100:



The OEKO-TEX label is an internationally registered mark. Textile and clothing producers are working successfully to design products with no harmful substances present in any significant amounts and to achieve this, a significant technological effort is required by the industry. In this standard, the relevant harmful substances are defined together with limiting values,

taking into consideration the intended use of the product.

Textiles with this mark are

- Textiles that do not contain allergenic dye stuffs and dye stuffs that form carcinogenic arylamines of the MAK-groups III A1 and III A2.
- Textiles free from formaldehyde or containing trace amounts significantly lower than the required legal limits
- Textiles with a skin friendly pH
- Textiles free from chloro-organic carriers
- Textiles that had been tested for pesticides and chlorinated phenols
- Textiles that have been tested for the release of heavy metals under artificial perspiration conditions

Visionary wall performance

»Modern construction, based less and less on any interest in permanence, uses then releases large material flows at faster rates than ever before.«

John Fernandez, MIT Associate Professor, Building Technology

Vitrulan® Glass Déco Fabrics

Fabric created from glass filaments into textured yarn and cloth, woven, roll stock, available with optional factory primed finish and/or self adhesive backing.

Extended life strategies

Vitrulan® Glass Déco Fabrics provide an impact resistive surface that can prolong the life of a wall and hide cracks in new construction and existing buildings with a monolithic appearance. When painted with a compatible low VOC paint, the surface is washable and can be scrubbed.

Light-colored wall surfaces

can save energy by reducing the amount of light that must be introduced to illuminate the space. Carefully designed walls and ceilings can bounce daylight from perimeter windows or interior skylights deep into the building. Vitrulan® Glass Déco Fabrics can be painted to achieve this design goal while providing a unique visual appearance. This is valid as a load reduction design strategy.

Wall hygiene

Vitrulan® Glass Déco Fabrics, in conjunction with selected coating systems, provide clean and sealed surfaces. They are easy to clean, and they offer no pores and pockets in which micro-organisms could accumulate. On the smooth, sealed surfaces, any impurity or contamination can be easily and completely removed. Depending on the paint selected, even caustic cleansing agents and rough cleaning techniques can be used. The result: extreme wear-resistance also in critical areas.



LEED-NC Version 2.2

MR Credit 1.1: Building Reuse: Maintain 75% of Existing Walls, Floors & Roof

MR Credit 1.2: Building Reuse: Maintain 95% of Existing Walls, Floors & Roof

1 Point each credit

Intent:

Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

Requirements:

Maintain at least 75% (MR 1.2 95%) (based on surface area) of existing building structure (including structural floor and roof decking) and envelope (exterior

MR Credit 1.3: Building Reuse Maintain 50% of Interior Non-Structural Elements

1 Point

Intent:

Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

Requirements:

Use existing interior non-structural elements (interior walls, doors, floor coverings and ceiling systems) in at least 50% (by area) of the completed building (includ-

ID Credits 1.1-1.4: Innovation in Design

1 Point

Intent:

To provide design teams and projects the opportunity to be awarded points for exceptional performance above the requirements set by the LEED Green Building Rating Systems and/or innovative performance in Green Building categories not specifically addressed by a LEED Green Building Rating System.

skin and framing, excluding window assemblies and non-structural roofing material). Hazardous materials that are to be remediated as a part of the project scope shall be excluded from the calculation of the percentage maintained. If the project includes an addition to an existing building, this credit is not applicable if the square footage of the addition is more than 2 times the square footage of the existing building.

ding additions). If the project includes an addition to an existing building, this credit is not applicable if the square footage of the addition is more than 2 times the square footage of the existing building.

Vitrulan® Glass Déco Fabrics may contribute to the building reuse interior non-structural elements by protecting existing walls during construction that already utilize Vitrulan fabrics for extended life strategy.

Requirements:

In writing, identify the intent of the proposed innovation credit, the proposed requirement for compliance, the proposed submittals to demonstrate compliance, and the design approach (strategies) that might be used to meet the requirements. Vitrulan® Glass Déco Fabrics could be part of an overall IEQ innovative credit that goes beyond the requirements of the stated credits.

LEED-CI Version 2.0

MR Credit 1.2: Building Reuse: Maintain 40% of Interior Non-Structural Components

MR Credit 1.3: Building Reuse: Maintain 60% of Interior Non-Structural Components

1 Point each credit

Intent:

Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

Requirements:

Maintain at least 40% (MR 1.3 60%) by area of the existing non-shell, non-structure components (walls, flooring and ceilings). Vitrulan® Glass Déco Fabrics may contribute to the building reuse interior non-structural elements by protecting existing walls during construction that already utilizing Vitrulan fabrics for extended life strategy.

ID Credits 1.1-1.4: Innovation in Design

1 Point

Intent:

Provide design teams and projects the opportunity to be awarded points for exceptional performance above the requirements set by the LEED Green Building Rating System and/or innovative performance in Green Building categories not specifically addressed by a LEED Green Building Rating System.

Requirements:

Identify the intent of the proposed innovation credit, the proposed requirements for compliance, the proposed submittals to demonstrate compliance, and the design approach (strategies) that might be used to meet the requirements.

Vitrulan® Glass Déco Fabrics could be part of an overall IEQ innovative credit that goes beyond the requirements of the stated credits.

LEED-EB Version 2.0

IUOM Credit 1: Innovations in Upgrades, Operations and Maintenance

1-4 Points

Intent:

To provide building operation and upgrade teams with the opportunity to be awarded points for additional environmental benefits achieved beyond those already addressed by LEED-EB Rating System.

Requirements:

Provide documentation of each proposed innovation credit, including a description

of the achievement, the additional environmental benefits delivered and the performance metrics used to document the additional environmental benefits delivered over the performance period.

Vitrulan® Glass Déco Fabrics could be part of an overall IEQ innovative credit that goes beyond the requirements of the stated credits.

Additional References:

This product is classified under the following categories:

In **GreenSpec**

- Builder Categories: Interior Finish & Trim: Wall Covering
- CSI Divisions: Finishes: CSI #09720 Wall Covering
- Green Topics: Indoor Environmental Quality: Indoor Pollution from Materials: Reduction of Indoor Pollutants
- Green Topics: Resources and Materials: Outdoor Emissions from Materials: Toxic Upstream or Downstream Burdens

• **Green Healthcare Construction Guidance Statement**

American Society for Healthcare Engineering

http://www.ashe.org/ashe/products/pdfs/ashe_guidance_sustainconst_rev2_0410.pdf

• **Labs 21 Environmental Performance Criteria (EPC)**

Laboratories for the 21st Century, U.S. Environmental Protection Agency

<http://www.labs21century.gov/>

• **Green Star Green Building Rating System**

Green Building Council of Australia

<http://www.gbcaus.org/greenstar>

• **High Performance Building Guidelines**

New York City Department of Design and Construction, Office of Sustainable Design

<http://www.ci.nyc.ny.us/html/ddc/html/ddcgreen/>

• **2003 Savings By Design Healthcare Modeling Procedures**

Pacific Gas and Electric Company

<http://www.gghc.org/Documents/PGEModProc.pdf>

• **Greener Hospitals: Improving Environmental Performance**

Edited by: Environment Science Center, with support of Bristol-Myers Squibb

www.wzu.uni-augsburg.de/Publikationen/WZU_Publikationsreihe.html

• **OEKO-TEX 100:** <http://www.oeko-tex.com/en/2/main100.html>

NOTE:

This evaluation is offered in good faith based on an independent LEED AP reviewer's knowledge of the LEED rating system and intended design strategy. This product potentially contributes to earning points and credits for the credits listed in the evaluation. Verification of qualifying points and credits is achieved according to the LEED documentation reporting, calculation requirements and methods.

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