

WALLTITE® / WALLTITE ECO™

LEED – Indoor Air and Environmental Quality

In the process of designing LEED compliant buildings, designers, technicians, contractors, professionals and other parties may require information to support product or material selection on the basis of volatile organic compound (VOC) content.

The purpose of this bulletin is to present information to enable LEED designs to attain their objectives, indoor air quality goals and credit requirements.

LEED Indoor Environmental Quality: EQ Credit 4, Low Emitting Materials

The LEED Reference Guide details four categories of low emitting materials with requirements specific to each category. The table below gives a brief outline of the categories and their requirements.

The intent applicable to each category is stated as

“Reduce the quantity of indoor air contaminants that are odorous, potentially irritating and/or harmful to the comfort and well-being of installers and occupants.”

Under Design Strategies (see Strategies, Calculations) we read

“This credit applies to products and installation processes that have the ability to adversely affect indoor air quality (IAQ) on site: those that are exposed to interior spaces accessible by occupants.”

EQ Credit Reference	Product/Material Category	Requirements
Credit 4.1	Adhesives and sealants	<ul style="list-style-type: none"> • must be less than the current VOC content limits of South Coast Air Quality Management District (SCAQMD) Rule #1168 • sealants used as fillers: must meet or exceed the requirements of the Bay Area Air Quality Management District Regulation 8, Rule 51
Credit 4.2	Paints and coatings	<ul style="list-style-type: none"> • VOC emissions must not exceed the VOC and chemical component limits of Green Seal’s Standard GS-11 requirements
Credit 4.3	Carpet	<ul style="list-style-type: none"> • must meet or exceed the requirements of the Carpet and Rug Institute’s Green Label Indoor Air Quality Test Program
Credit 4.4	Composite wood	<ul style="list-style-type: none"> • composite wood and agrifiber products must contain no added urea-formaldehyde resins

Currently there is no LEED category for VOC requirements for thermal insulation materials, including spray polyurethane foams.

CAN/ULC-S705.1: Standard for Thermal Insulation – Spray Applied Rigid Polyurethane Foam, Medium Density – Material – Specification

In Canada, standard CAN/ULC-S705.1 includes requirements addressing the intent of the LEED criteria for indoor environmental quality, as well as volatile organic emissions. Standard CAN/ULC-S705.1 is referenced in the National Building Code of Canada under article **1.3.1.2 Applicable Editions** (Table 1.3.1.2).



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Article 4.1.2, under the general requirements of standard CAN/ULC-S705.1, requires that,
"When applied the rigid polyurethane cellular plastic thermal insulation shall not present a health hazard to the potential occupants nor shall the cured insulation have any residual odour."

Article 5.5.10 of the same standard addresses specifically volatile organic emissions and requires that VOC's be tested and health hazards evaluated in accordance with the methods and guidelines stipulated in CAN/ULC-S774 (Standard Laboratory Guide for the Determination of Volatile Organic Compound Emissions from Thermal Insulating Systems).

VOC emissions for WALLTITE® / WALLTITE ECO™ were established in accordance with the requirements, methods and guidelines of CAN/ULC-S705.1 and CAN/ULC-S774 by the Saskatchewan Research Council, an independent laboratory accredited by the Standards Council of Canada. The results were then examined in detail by a toxicologist to complete the emissions evaluation.

Emissions of volatile organic compounds (VOC) during aging, for WALLTITE / WALLTITE ECO were established to be below the detection limit after 24 hours.

WALLTITE and WALLTITE ECO meet all the requirements of CAN/ULC-S705.1

Field Study: Worker's Exposure to Methylene Diphenyl Diisocyanate (MDI) during the Application of Spray Polyurethane Foam in Single Family Homes; Karoly, William; Lesage, Jacques and Stanley, Jennifer (Polyurethanes Expo, October 2003)

A research study, sponsored by the Alliance for the Polyurethanes Industry, was conducted to determine the level of exposure installers may encounter when polyurethane foam is sprayed on-site. MDI, a highly reactive organic chemical, was of primary interest. Work was conducted at five single-family homes: three near Montreal, QC (Canada), and two near Johnstown, PA (USA). The Institut de recherche Robert-Sauvé en santé et sécurité du travail (Occupational Health and Safety Research Institute Robert-Sauvé) participated in the collection and analysis of data for this project.

While protective measures are necessary when polyurethane foam is sprayed in place, findings documenting the level of exposure once spraying had stopped reported the following results:

- "Airborne concentrations of MDI decreased rapidly and were usually below detectable limits";
- "The airborne concentrations of MDI decreased with distance from the point of application";
- "Airborne concentrations of MDI decreased rapidly after spray foaming was completed";
- "No airborne concentrations of MDI were found beyond 45 minutes";
- "Air samples were taken 24 hours after foaming had been completed to determine whether there was any MDI off-gassing from the cured foam. No measurable airborne concentrations of MDI were found".

The authors of the study concluded,

- "Airborne concentrations of MDI fall off rapidly with distance from the point of application";
- "Airborne concentrations of MDI fall off very rapidly after spraying has been completed";
- "Based on the results of these surveys, fully cured foam did not emit airborne concentrations of MDI."