



Green Paints

From Green Business Incubation Department
CII-Sohrabji Godrej Green Business Centre

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Green Paints for Green Buildings

Introduction

Paints can have a major impact on the overall aesthetics of a space; sometimes more than even flooring and furnishings because of the enormous square footage of coverage.

Paints may also have a major negative impact on the indoor air quality of a building, because they may contain chemicals called Volatile Organic Compounds (VOCs) and other toxic components that evaporate into the air and are harmful to the health of the occupants. VOCs are a primary contributors to smog generation.

Environmental effects of Paints

Paint has three major components: a pigment for color, a binder that holds the pigment to the surface and a carrier or solvent (mineral spirits or water) to dissolve and maintain the pigments. Latex, water-



based paints have significantly lower environmental impacts than oil or solvent-based paints since they don't use petroleum carriers or have nearly as many smog-forming emissions. According to the US Environmental Protection Agency(USEPA), 9% of the airborne pollutants creating ground level ozone come from the VOCs in paint. Low and zero VOC paints have little or no smog-forming emissions.

Benefits of Low VOC Paints

Environmental

VOCs react with sunlight and nitrogen oxides in the atmosphere to form ground-level ozone, a chemical that has a detrimental effect on human health, agricultural crops, forest and ecosystems. These problems can be eliminated using low VOC paints

Economic

Healthy occupants are more productive and have less illness-related absenteeism. Use of high-VOC content materials can cause illness and may decrease occupant productivity. These problems result in increased expenses and liability for building owners, operators and insurance companies.

Indoor Environment

Selecting materials that are low in VOC helps reduce sources of pollutants during the construction process and in the finished building. Also low VOC paints have little odor.

Potential Health Effects of Paints



Paint is applied wet and must undergo a drying process, and sometimes a chemical reaction, in order to form a solid paint film on the wall or other surface . It is during this drying or chemical process that VOCs and other paint components are released. Many paints contain a high percentage of VOCs so that they will dry faster. Paints also continue to offgas somewhat for many days, weeks, and months after application and especially each time the temperature and humidity in the room rises.



VOC refers to a class of chemicals which evaporate readily at room temperature. They are in all oil-based paints as solvents. Many latex paints (which use water as the "solvent" or carrier) also contain VOCs as part of their paint chemistry. When these VOCs off-gas, they may cause a variety of health problems like nausea, dizziness, irritation of the eyes & respiratory tract, and more serious illnesses like heart, lung or kidney damage and cancer.

Certain people are particularly susceptible to these effects, including those with weakened immune systems or chemical sensitivities, asthmatics, young children and the elderly. In the case of these sensitive occupants, be sure products are tested for VOCs before applying. Since low- or no-VOC paints





have a lesser impact on air quality, they are excellent for use in buildings where it is desirable to have very low levels of toxicity, such as hospitals, schools, or the homes and workplaces.

Once airborne, many VOCs have the ability to combine with each other, or with other molecules in the air, to create new chemical compounds. Air quality testing shows that indoor VOC levels are consistently ten times higher than outdoor levels, and can be as much as 1,000 times higher after a new coat of paint.

Green Building Requirement

The Green Buildings rated by US Green Building Council (USGBC) & Indian Green Building Council (IGBC) for LEED (Leadership in Energy & Environment Design) Certification use paints with VOCs as shown in the table. Low VOC paints are manufactured and sold by numerous companies.

LEED rated green buildings in India with low VOC paints

- CII - Sohrabji Godrej Green Business Centre, Hyderabad
- ITC - Green Centre, Gurgaon

- WIPRO Technologies-Gurgaon Development Centre , Gurgaon
- Grundfos Pumps (India) Private Ltd, Chennai
- Technopolis, Kolkata



VOC requirement for LEED rated buildings

Coating Type	VOC in grams/ litre of product minus water
Non-flat	150
Flat	50



Making Good Choices

- Sometimes simply washing walls and/or using a little touch - up paint can make them appear new. When it is necessary to paint, use least toxic and/or Low- or No-VOC products, and water-based paints. This will also eliminate the need for toxic solvents for cleanup.
- Remember that a more durable paint is less expensive in the long run. A 10-year paint may cost a little more than a 5-year, but there is only a one-time labor cost, which is the most expensive part of most paint jobs.
- Proper preparation is also critical for a durable paint application. All surfaces must be clean and dust free, with any visible cracking, peeling, or blistering removed.
- If there is existing paint, determine what it is and appropriately prepare for the next coat. Be sure to choose primers and top coats that are compatible.



Green vs. Conventional Paints

Green Paints	Conventional Paints
Cleaner air; reduced ozone depletion	Contribute to environmental pollution and ozone depletion
Minimal health risks	Significant health risks
Total Cost: same as any High quality paint & low O & M costs	Low but with high O & M costs

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For further details, please contact:



Confederation of Indian Industry
CII-Sohrabji Godrej Green Business Centre

Subrata Ray
Senior Counsellor

Survey No 64, Kothaguda Post, Near Hi-Tech City, Hyderabad 500 032.
Tel: +91 40 23112971-73 Ext : 231, Fax: +91 40 23112837
Email: subrata.ray@ciionline.org/madhav.kamath@ciionline.org
www.greenbusinesscentre.com