“Green” Paint

Conventional paint contains a multitude of harmful chemicals that off-gas into the air, negatively affecting the health of people and the planet. These paints release Volatile Organic Compounds (VOCs), which are a class of carbon-based chemicals that have the capacity to evaporate readily at room temperature. VOCs are responsible for the smells we associate with new paint and cause some people to get headaches. “Green” paint refers not to the color, but to paint that contains fewer of these dangerous chemicals and heavy metals (such as formaldehyde, benzene, toluene, biocides, and cadmium) while still providing very high performance paint qualities. Fortunately, you can easily avoid generating pollution and unsafe living spaces and still have beautiful walls of any color by using low-VOC, zero-VOC, recycled, or natural paints.

PRODUCT COMPARISONS

“Greener” Paints	**Conventional Paints**
Low or No-VOCs	High-VOCs
Less formaldehyde, fungicide, biocide	More formaldehyde, fungicide, biocide
Sometimes natural, plant-based	Generally petrochemical-based
Less odor	Strong odor

LEED CREDITS

Using this material potentially contributes to obtaining these credits in the US Green Building Council’s LEED certification program:

Materials & Resources

MR Credit 4.1 Recycled Content (for recycled paints)

MR Credit 4.2 Recycled Content (for recycled paints)

MR Credit 6 Rapidly Renewable Materials (for milk paint and plant-based paints)

Indoor Environmental Quality

IEQ Credit 4.2 Low-Emitting Materials: Paints and Coatings

LEED stands for Leadership in Energy and Environmental Design. To find out more about it, visit www.leedbuilding.org.

ENVIRONMENTAL ATTRIBUTES

Energy Performance

Paint can have some sealing and insulation capabilities, but generally it does not have much effect on energy performance.

Resource Impacts

All paint has three major components: a pigment for color and hiding power (commonly, white titanium dioxide as well as some other extenders), a binder that holds the pigment to the surface and allows the solids to form a film, and a carrier or solvent (mineral spirits or water) to dissolve and maintain the pigment, solids, and binder in liquid form. 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 Environmental Protection Agency, nine percent 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.

However, latex paints generally use vinyl acetate or acrylic resins as binders, which create toxins in their manufacture. Furthermore, all paints contain pigments that are quite energy intensive to process, such as titanium dioxide, which accounts for approximately 25% of paint by weight. While paint extends the life of many building materials, consideration should be given to options that don't require paint, such integrally-colored plasters, ceramic tile wainscoting, and natural wood. Also, sometimes simply washing walls and/or using a little touch up paint can make them look like new.

Another type of "green" paint is recycled paint, which provides the environmental benefit of keeping existing paint from the landfill and avoiding having to expend energy to process new ingredients. Recycled paint is paint taken from household paint collections and consolidated with similar colored paints to produce a larger quantity. This process reduces the color choices and increases the likelihood that the paint obtained from such centers has a high chemical content. Therefore, recycled paint could be an excellent option for applications such as a garage, tool shed, or building exterior, but is not recommended for interior use.

Health Considerations

Chemicals utilized in the pigments, binders, and carriers include: petrochemicals, solvents, formaldehyde, and benzene. Additionally, cadmium and chromium can often be found in pigments. Paint often contains dangerous fungicides and biocides that preserve the paint and extend its shelf life. That distinctive smell of paint is actually dibutyl and diethyl phthalate – two very volatile compounds! Note that lead and mercury have not been allowed for use in paint since about 1980.

Once airborne, many VOCs have the ability to combine with each other, or with other molecules in the air, to create new chemical compounds. The American Lung Association reports that VOCs can produce a number of physical problems such as eye and skin irritation, lung and breathing problems, headaches, nausea, muscle weakness, and liver and kidney damage. 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… something to be avoided if possible!

When shopping for paint, do not be fooled by what some paint manufacturers or store clerks may tout as "Low-VOC" Paint. All household paints meet EPA and California regulations, which call for no more than 250 gm/l (grams per liter) of VOCs in "Low-VOC" latex paints and no more than 380 gm/l for "Low-VOC" oil-based paints. However, these limits are based primarily on reducing ozone formation in the outside air and not on human health considerations for indoor air. Toxic chemicals that do not form ozone are excluded from the required VOC calculations, as are toxic heavy metals.

Almost all large paint companies now offer low-VOC and even zero-VOC paints, and some companies have gone a step further by developing paints that do not contain formaldehyde, acetone, extenders, biocides, heavy metals, or drying agents. Look for flat paints that have no more than 75 g/l VOC content, and non-flat paints with no more than 150 g/l VOC content. The VOC levels listed for paints are measured from their base product without addition of tints. For most paint lines, tinting will increase VOC emissions. Adding biocides will also affect the relative toxicity of the final paint mix.

FUNCTIONAL CONSIDERATIONS

Cost

"Green" paint is comparable in cost to conventional mid- to high-quality paint. Recycled paint is much less expensive, costing about $10 or less per gallon. Paint is a very inexpensive component of any construction process (labor is where the cost lies), so the possible added cost of "green" paint is a very worthwhile investment for the health of occupants and the environment.

Always use high-quality paint. With paint, you generally get what you pay for; look for paint that has high solids content. Choose colors with versatility in mind, as art, furniture, and decorations change more often than wall color. Remember that the more durable a paint is, the less expensive in the long run. A 10-year paint may cost a little more than a 5-year paint, but there is only a one-time labor cost, which is by far the most expensive part of most painting jobs. See Health section above for attributes to seek in a green paint.

Installation

As with any paint, proper preparation is critical for a durable paint application. All surfaces must be clean and dust free, with any visible cracking, peeling, or blistering removed. When repainting an older building, be sure to test for the presence of lead in the existing paint and use the appropriate handling and disposal methods before sanding or other prep work. Contact the Alameda County Lead Abatement Program at **(510) 567-8280** for more information on lead-based paint precautions, and visit www.aclppp.org/regs.shtml. For more information on containment, download the HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing at:
www.hud.gov/offices/lead/guidelines/hudguidelines/index.cfm

Always read and follow manufacturer's instructions for safe handling of paints during application, storage, and disposal. Note that "less toxic" does not necessarily mean "non-toxic." Remember that elderly people, pregnant women, small children, and those with compromised immune systems or environmental allergies are especially sensitive to the effects of paint. Always apply any paint when occupants are not present, and be sure to provide adequate ventilation. Carefully ventilate newly painted areas, preferably with large fans placed in an open window to exhaust fumes. Offgassing is highest during the first four days after painting, and smaller amounts are emitted over time. VOCs also cling to fabrics and carpeting and later release them into the air, exacerbating the problem, so ventilate a freshly painted room immediately.

Finally, store or dispose of any leftover paint in a responsible manner. Minimize leftovers by ordering only what you need in the first place. Ask the manufacturer or retailer if they have a "take back" policy. Tightly seal partially-used containers and store them in a cool, dry place that is ventilated to the outside. Otherwise, drop off unused paint to the Alameda County Household Hazardous Waste program, **(800) 606-6606**, or at a paint recycling facility.

Maintenance

Consider using a satin or eggshell finish rather than flat paints in areas that are likely to need washing, such as kitchens and bathrooms.

Other Data / Comments

Some manufacturers produce paints that don't contain any petroleum products, relying instead on plant-based ingredients like citrus oils, carnauba wax, shellac, and natural latex. Pigments are generally chalk-based, adding to their environmental desirability. While installation is more complicated for many of the natural paints and can be considerably more expensive, the feel and subtle variations in the finish can be stunningly beautiful.

RESOURCES

"Greener" Paint is widely available. For up-to-date product and retailer information, visit the manufacturer's website or search the Green Materials Database, www.builditgreen.org/guide.

Manufacturers: Low- or No-VOC Paints

American Formulating and Manufacture (AFM)
(Safecoat Enamels)
(800) 239-0321
www.afmsafecoat.com

Benjamin Moore
(Pristine Eco-Spec)
(800) 344-0400
www.benjaminmoore.com

ChemSafe Products
(EnviroSafe)
(210) 657-5321
www.ecowise.com

ICI DuLux Paints
(Lifemaster 2000)
(800) 984-5444
www.icipaintstores.com

Kelly-Moore Paint Co.
(Enviro-Cote)
(800) 874-4436 x198
www.kellymoore.com

Miller Paint Company
(Acro, Super Acro)
Portland, OR 97230
(503) 255-0190
www.millerpaint.com
(stores throughout OR & WA)

Devoe Paint
(Wonder-Pure)
(866) 391-1955
www.devoepaint.com

The Glidden Company
(ProMaster)
(800) 834-6077
www.glidden.com/

Pittsburgh Paints
(Pure Performance)
(888) 774-7732
www.pittsburghpaints.com

Sherwin-Williams
(Harmony)
(800) 321-8194
www.sherwinwilliams.com

Manufacturers: Recycled Content Paints

Amazon Environmental, Inc.
(Amazon Select Recycled Paint)
(800) 566-2396
www.amazonpaint.com

Dunn-Edwards Paints
(Recover)
(800) 733-3866 x7596
www.dunnedwards.com

Kelly Moore Paint Co.
(E-Coat)
(800) 874-4436 x198
www.kellymoore.com

Rasmussen Paint
Beaverton, OR
(800) 992-6692
www.rasmussenpaint.com

Visions Recycling
(800) 770-7664
www.visionsrecycling.com

Manufacturers and Retailers: Natural Paints

Antique Drapery Rod Co. Inc.
(Healthy Milk Paint)
Dallas, TX
(214) 653-1733
www.antiquedraperyrod.com

AURO USA
Petaluma, CA
(888) 302-9352
www.aurousa.com

D. O. Siever Products
(Real Milk Paint)
Quakertown, PA
(800) 339-9748

EcoDesign
(BioShield)

Livos
www.livos.de/index.php3?lang=en

Natural Home
(AURO products)
Sebastopol, CA
(707) 824-0914
www.naturalhomeproducts.com

Old Fashioned Milk Paint Co.
Groton, MA
(978) 448-6336
www.milkpaint.com

Woodshanti
(Livos products)
San Francisco, CA
(415) 656-0177
www.woodshanti.com

(800) 621-2591
www.bioshieldpaint.com

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