

Indoor Air Quality

Paints, finishes, and flooring contribute greatly to indoor air quality according to their VOC "volatile organic compounds" levels. These materials release VOCs into the air - a process known as "off gassing." These toxins can cause respiratory, skin and eye irritation, headaches, nausea, muscle weakness, and more serious ailments and diseases, according to the EPA. Studies show that Americans spend about 90% of their time indoors and 30% percent of buildings have poor indoor air quality. In addition to VOCs, many paints are made with toxic substances and chemicals that come from nonrenewable resources. Some are energy-intensive or polluting to produce, so even non-VOC paints and stains can affect the environment.

Standards

EPA, state and local rules are intended to reduce emissions of VOCs that cause smog, *not to* improve indoor air quality. These rules allow paints labeled "zero-VOC" or "no-VOC" to contain up to five grams of VOCs per liter (g/L) in addition to VOCs that have been exempted from the rules. Green Seal, a nonprofit organization offers more comprehensive environmental requirements for paint standards.

Below is an outline of the different types of paints and their benefits and costs. Product Stewardship Institute hosts a list of recycled paint manufacturers at <http://www.productstewardship.us/displaycommon.cfm?an=1&subarticlenbr=141>.

Pigment (color)

The deeper the hue, the more pigment needed, and therefore the more VOCs the colored paint contains. If you must paint in deep, dark shades, consider purchasing paint from a no or low-VOC line that includes no or low-VOC pigments. Toxic substances used in a pigment should be listed on its Material Safety Data Sheet (MSDS). Avoid cadmium, chromium, mercury and other heavy metals.

Latex (acrylic and vinyl acetate binders)

- Have lower VOC levels than oil-based paints
- Are as durable as an oil paint
- Contain no latex, so it won't affect people with latex allergies
- Clean up easily with water, does not require harsh VOC-emitting solvents
- Can be "recycled" by combining leftovers unlike oil paints
- Avoid fungicides and biocides like formaldehyde

Acrylic

- 100% acrylic paint is more water resistant than vinyl acetate paint
- Good for kitchen, bath and exterior applications
- Less expensive
- Look for solids content of over 30% to hide stains, cover in fewer coats and cover more surface area per gallon. This information should appear on the paint's label or Technical Data Sheet (TDS).

Natural (natural oil and casein binders)

- Made mostly of renewable or abundant naturally occurring materials such as citrus oil, lime, clay, linseed oil
- Healthier and more environmentally sound than latex or oil paints
- Cleaner manufacturing process - as some manufacturers claim they produce no hazardous waste
- Not all natural materials are safe: for example, cadmium, used as a bright yellow pigment, is toxic. Check the MSDS and ingredient lists when considering natural

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- paints. For other materials often used in natural paints, check the list of ingredients in Beeck and Aglaia paint.
- Not always compatible with existing synthetic latex paint surfaces, so more extensive prepping and priming may be necessary
- May require the addition of synthetic (and not always nontoxic) additives for better compatibility with existing surfaces

Milk-based Paint

- Made from powdered casein, a milk protein
- Simplest, least toxic and least environmentally damaging paint
- Contains no VOCs, lead, formaldehyde, oils or biocides
- Can purchase premixed or mix it yourself, which saves shipping costs and transport-related pollution
- Unsuitable for the kitchen or bathroom as heavy moisture can damage milk-based paint and lead to mold growth
- Best on raw, clean wood, where it gives a soft, old-world look
- Use a low-VOC, water-based sealer; otherwise you will negate many of the paint's health and environmental benefits.

Oil (petrochemical and synthetic binders)

- High durability, scrubability and water resistance make them well suited to high-abuse areas like kitchens, bathrooms and hallways, and to exterior applications
- Give the highest-gloss finish of all paints
- Typically emit more VOCs than other paint types
- Contain more compounds with known health effects, such as formaldehyde, toluene, xylene and benzene, and take longer to dry, allowing higher concentrations of VOCs to be emitted for longer periods of time
- Typically require fewer coats, which could reduce the total amount of VOCs emitted during the painting process and the lifetime of the painted surface
- Contain naturally occurring preservatives, so they are inherently toxic to mold and mildew and require fewer additional biocides than latex paints
- Cannot be recycled as latex paints can, but must be "downcycled" into other petroleum-based products or incinerated for energy after they are brought to disposal sites.
- When buying oil paints, look for the lowest-VOC product that will do the job. The EPA requires VOC content of less than 380 g/L, but check a paint's MSDS for lower levels. Mercury-free oil paints are available; this heavy metal and other toxins should be on the MSDS.

Carpet + Flooring

Like paints and finishes, carpet and flooring also release VOCs. Using sustainable flooring options can improve air quality and mitigate health problems caused by toxic carpets. Look for eco-friendly materials made from natural fibers or recycled materials with little or no chemical treatment. The most eco-friendly flooring option is often avoiding them altogether. Here are some of the best alternatives:

- **Hardwood Floors:** For home-owners sold on traditional hardwood floors, the Forest Stewardship Council can make sure that your lumber comes from sustainably managed forests. Dozens of types of wood are produced in FSC-certified forests in which the trees are regenerated, biodiversity is conserved, and air and water quality are preserved. FSC-certified wood flooring comes in hundreds of different shades and styles.

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- **Cork:** While softwoods are rarely considered ideal flooring material, cork is an excellent choice for many reasons. The natural elasticity of cork makes these floors especially comfortable; the wood provides thermal and acoustic insulation; and the durable floors recover well from marks left by furniture or high heels. The floors are also hypo-allergenic, so they won't attract dust; are fire-resistant; and can even serve as a natural insect repellent. Better yet, the floors are produced using the bark of the cork oak tree, which grows back every three years.
- **Bamboo:** Bamboo, a popular green flooring option, is 13% harder than maple and 27% harder than northern red oak, so it lasts longer and can withstand more use than conventional hardwood floors. The floors are naturally resistant to water, mildew, and insects, and they are sustainable since bamboo grows quickly and abundantly.
- **Tile and Linoleum:** You can add life to any room with a colorful floor made of recycled glass tiles, which are ideal for modern bathrooms and kitchens. Natural linoleum floors are also hypo-allergenic and biodegradable.
- **Recycle:** Every year people send 1.8 million tons of rugs and carpets to local landfills. Instead of adding to that total, try to purchase flooring from companies that will recycle or donate your old carpet.