

CHAPTER 13

Finishing the Home Interior


Energy efficient appliances and HVAC systems, and non-toxic paints and sealants for walls, woodwork, floors and cabinets are important “finishing elements” for your homes, ensuring healthy, durable, comfortable and low-cost conditions for the families that own the homes.

The finishes inside the home should have low toxicity to protect indoor air quality. Energy-efficient appliances and HVAC products are an important part of meeting green building objectives and balancing integrated systems. Recycled products in woodwork, countertops, and other durable structures should be used whenever possible to conserve natural resources.



Energy-Efficient and Water-Efficient Appliances

Installing energy-efficient appliances will reduce home utility bills and operating costs over the lifetime of the home. The sum of the purchase price and the energy cost of running an appliance over its lifetime are called its lifetime cost. Lifetime costs of energy-efficient appliances are generally much lower than the cost of an average model.

There can be a significant difference in the energy consumption of major appliances like refrigerators, dishwashers, room air conditioners and water heaters. EnergyGuide labels, found on all major appliances, can help you with your selection. The most efficient appliances are those that use the least amount of electricity and water to get a job done. Certain features of an appliance, such as the amount of flow allowed by a faucet or shower head, can also tell you a lot about its efficiency. 



FAST FACT

Energy Star-qualified appliances use 10 to 50 percent less energy and water than standard models. The Energy Star labeled appliance may cost a little more upfront (or not!) but the money saved on utility bills can more than make up the difference. You may also qualify for a federal or state tax credit or a utility rebate if you purchase Energy Star-labeled products.

Implementation

- Install ceiling fans in main rooms and bedrooms to reduce air conditioning use.
- Install front-loading clothes washers, which can bring a 50 percent savings in both energy and water use.
- Install fluorescent and compact fluorescent bulbs, or the Energy Star advanced lighting package. Consider LED lighting for ambient lighting situations.
- Install programmable thermostats.
- Install top-freezer model refrigerators, which outperform side-by-side models, or choose the most efficient partial automatic or manual defrost models.
- For outdoor lights, use photo cell, motion-detected, or solar-powered lighting; prevent up-lighting pollution; and use timed or automatic light switches.
- Install water-efficient shower heads, ideally those with a flow of less than 2.5 gallons per minute (gpm).
- Install faucets and aerators with flows less than 2.2 gpm.
- Install toilets with less than 1.6 gallons per flushes (gpf), or power-assist and dual-flush toilets.
- Install dishwashers that use less than 7 gallons of water per load.

FAST FACT

Energy Star offers product comparisons, energy savings calculators and 'bulk purchase' calculator links on its web site. YouthBuild programs may save by buying multiple Energy Star labeled appliances and other products for new or rehab construction projects.

Paint and Adhesives

All oil and many latex-based paints contain organic solvents that disperse and bind other paint components. These volatile organic compounds (VOC) are known to have bad effects on human health, and there is evidence that VOCs from paint contribute to ground-level smog. In response to such concerns, more governmental agencies are acting to limit the VOC levels in house paints and other common products.

Carpeting and wall paper may use adhesives to bind fibers or install to surfaces. Many of these adhesives are also irritating to lungs and skin. Look for natural fibers in carpeting, and low-VOC adhesives in rubber backing or carpet binding, in wall paper and laminate or stick-down flooring materials. [See "Floor Finishes" below.]

Implementation

- Use low- or non-VOC paints and adhesives (do not exceed 100 grams per liter VOC).
- Avoid paints containing heavy metals and other health hazards.
- Use low-VOC wallpaper.
- Use recycled paint and paint primer with a minimum of 50% postconsumer content. There are two types of recycled-content paint: reprocessed and re-blended.
- Provide good ventilation to ensure a minimum of exposed soft surfaces during installation.
- Take care to buy the right amount of paint in order to save money and prevent waste.

Floor Finishes


Whether you are finishing floors with carpet, tile, wood, or other material, there are ways to lessen the environmental and human health impacts of the manufacture, installation, and use of floor finishes.

Implementation

Design the building to use the structural floor as the finished floor to avoid the use of floor finishes altogether.


- Choose carpets that have high recycled content and are recyclable.
- Specify carpet tile instead of broadloom so that 100 percent of the carpet does not have to be removed when only 20 percent of it shows wear.
- Find carpet tile with low toxicity. For example, look for carpets made of recycled plastic.
- Use natural-fiber carpets such as sea grass carpet or wool.
- Carpet underlayment should have recycled content and provide both insulation value (R-12) and sound barrier properties.
- Avoid solvent-based floor finishes that can cause air quality problems, and use alternatives such as water-based urethane finishes for wood floors.
- Choose durable flooring, avoid vinyl products, and choose alternatives such as cork, natural linoleum, recycled-content rubber, or chlorine-free polymer resin tile.
- With wood flooring, find locally or regionally grown and processed products if possible. Avoid exotic tropical woods (which are shipped long distances, burning fuel) or virgin timber or endangered woods. Look for FSC (Forest Stewardship Council) seal of safely harvested wood products. Alternatives such as bamboo and cork are a strong and rapidly renewable substitute.
- When using ceramic tile, find products that have recycled content such as glass.
- Substitute particleboard with formaldehyde-free materials for new, finished wood flooring.
- Use exterior grade plywood for interior uses.
- Seal all exposed particleboard or medium-density fiberboard (MDF).
- Use no adhesives on finish flooring, or choose a non-VOC adhesive.
- Look for Green Label or Green Label Plus certified carpets and adhesive products as they have been tested to meet strict indoor air quality standards by the Carpet and Rug Institute.

Cabinetry

Most conventional cabinets are made of hardwood, plywood, laminated or painted particle board, or medium-density fiberboard—all of which off-gas formaldehyde and other noxious or toxic gasses from the use of urea formaldehyde glue. Solvent-based adhesives used to attach a wood grain or veneer may also off-gas toxic fumes. 



Implementation

- Use water-based exterior coatings.
- Use interior cabinet materials that have no added formaldehydes, such as Medite II, medium-density fiberboard, solid wood, metal, wheatboard, or glass. Look for the KCMA ESP label. 

FAST FACT

Formaldehyde is a colorless strong-smelling gas widely used in the manufacture of building materials and household products. Its most common use is as a glue resin in pressed wood products. At high levels, formaldehyde can cause acute health effects: It has caused cancer in lab animals and may cause cancer in humans.

Benefits of Using Green Finishing Touches

- Many states offer rebates for purchasing energy-efficient appliances.
- Many states offer income-tax credit or elimination of state sales tax for purchase of high-efficiency appliances.
- Since burning oil or gas in the furnace creates CO² directly, choosing a more efficient furnace will reduce this pollutant from the home by about one ton per year.
- New energy-efficient furnaces will save about 800 kWh per year – or up to 10% of your annual home energy bill.
- Inhabitants can save about \$65 per year through reduced electric bills by using energy-efficient models of clothes washers alone – and up to 20% of the total home energy bill by using only Energy Star labeled major home appliances.
- Zero- or low-VOC paints and adhesives improve indoor air quality, reduce smog, and are healthier for installers and occupants.
- Sealing particleboard assures the long-term availability of wood resources while protecting ancient, old-growth forests.
- Using finger-jointed trim uses material more effectively, saves money and resources, and is straighter and more stable than conventional clear wood.

Challenges of Using Green Finishes

- More efficient or less toxic products may have a higher initial purchase price than conventional ones. Energy savings and health benefits usually repay these upfront costs within four years.



Link and Learn

Energy Star:

<http://www.energystar.gov>

RSMeans, *Green Building: Project Planning & Cost Estimating* (Contributing Authors, 2002)

Spiegel, Ross & Dru Meadows, *Green Building Materials- A Guide to Product Selection and Specification*. John Wiley & Sons, Inc.

Energy Builder:

<http://www.energybuilder.com/greenhome-basics.htm>

Sustainable Building Products and Materials, Minnesota Office of Environmental Assistance:

<http://www.moea.state.mn.us/greenbuilding/products.cfm>

Johnston, David and Kim Master, LEED AP. *Green Remodeling, Changing the World One Room at a Time*. New Society Publishers

Green California, Environmentally Preferable Purchasing Best Practices Manual:

<http://www.green.ca.gov/EPP/Introduction/default.htm>

IAP Fact Sheet, *Formaldehyde*:

http://www.nsc.org/news_resources/Resources/Documents/Formaldehyde.pdf

Forest Stewardship Council: <http://www.fsc.org/buy-fsc-products.html> and the FSC product database of certified wood products: <http://info.fsc.org/>

Kitchen Cabinet Manufacturer's Association (KCMA) Environmental Stewardship Program:

<http://www.greencabinetsource.org/index.cfm?fuseaction=Defining.welcome>

The Carpet and Rug Institute (CRI)'s Green Label and Green Label Plus Program:

<http://www.carpet-rug.org/commercial-customers/green-building-and-the-environment/green-label-plus/>