

Marin County Community Development Agency

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GREEN BUILDING MATERIALS FACT SHEET

There are a lot of decisions to be made when you plan to build or remodel your home - price, aesthetics, ease of installation, compatibility with other materials, etc. Few people are aware of the environmental impacts that result from choosing one material over another. Most "environmentally preferable" construction products have only recently become widely available, although some of them, like straw bales or adobe, have been used for centuries.

Using these "green" products doesn't mean you have to sacrifice the design, price, or comfort of your home. In fact some of the products don't appear or act any differently from traditional ones. One of the best examples is paint. In April of 1999 the Aberdeen Proving Ground studied over 2200 different brands and types of paint. Their research showed that not only was there a big difference between the amount of heavy metals and volatile organic compounds in paints, but the environmentally preferable ones were on average \$1.76 less per gallon!

The following information is intended to:

- ~ Introduce you to the world of "green" building materials.
- ~ Provide a way for you to make choices that are best for you, your home, and the environment.
- ~ Offer some resources that will help you locate green builders and products.

Green Building Materials

A building material can be considered "green" for any number or combination of properties. Sometimes deciding whether or not a material is green can be complicated. For instance, slate roofing is made from an abundant, natural material, resists fire, is non-toxic, and lasts a lifetime. However, they are very heavy and might require greater structural support, which adds to the amount of wood framing necessary.

It's this type of dilemma that can understandably turn people off to the whole process, but most of the time, just taking that first step and deciding to search for the environmentally preferable option will result in lowered environmental impacts, and teach you a lot about your home. And once you've done it for one material, like roofing, the process becomes easier and easier. The following materials are some of the common ones that have environmentally preferable alternatives:



Insulation – There are pros and cons with all types of insulation. For example, typical fiberglass insulation is energy intensive to produce, rarely recyclable, and can be an irritant for installers. However, fiberglass is also a good insulator, and is water and fire resistant.

Cellulose insulation is made from recycled paper products (newspapers, telephone books), is recyclable and is as effective as fiberglass. However, it does need to be treated with nonrenewable minerals for fire resistance.

Mineral wool insulation is a byproduct of steel production, and is an efficient insulator. Unfortunately it is not yet widely available in all areas of the country. It might require more searching to find a distributor.

Lumber – Lumber is a renewable, versatile resource, but it isn't always used in the most efficient manner.



Many forests have been over-harvested, and the result is that trees being cut are smaller and smaller. Recently "engineered lumber" has become more popular. Engineered lumber uses smaller pieces of wood (which means it can be made with leftover pieces, and smaller, non-old growth trees) and small amounts of adhesives, combined under heat and pressure. Examples include glue-laminated beams, which are stronger than one-piece beams, and I-joists, which use plywood, set between small glue-laminated beams for floor and roof support instead of traditional 2x8s or 2 x 10s.

There are also ways to ensure that the lumber used in your home comes from responsibly managed forests. A number of certification systems are used to identify lumber that comes from “sustainably managed” forests. They include the WoodWise logo, and the Scientific Certification System (SCS).

Steel framing offers another option. The initial formation of steel is highly energy intensive, but many steel framing materials are made from recycled steel. These products show great promise.



Flooring – If you’ve decided you want wood flooring, you have a number of environmentally sound

alternatives from which to choose. Bamboo, which is actually fast-growing grass, is made into flooring that resembles traditional hardwood floors, and durable. (Bamboo that isn’t imported reduces the energy required to ship materials long distances.)

Traditional hardwood flooring is made from the same sustainably managed forests that lumber comes from. The same sustainability logos identified above for lumber may also be used for hardwood floors.

According to the Carpet Recycling Committee more than 1.8 million tons of carpets and rugs are sent to landfills every year! There are some good options available. Some carpets are made from recycled PET while others are now made so that the carpet and its backing are the same material. This makes it a more recyclable product. Other options include carpets, rugs, and mats made from natural products such as wool or plants and grasses.

Tile and stone flooring, while not renewable, is abundant and some is essentially inexhaustible. It also requires little additional processing before it is ready for installation, and can help to regulate the temperature inside your home.



Paint – There are two issues to consider when choosing paint. One is the relative toxicity of the paint. The other involves its origin. Many green builders prefer

water-based paint. Even stains and varnishes have non-oil-based alternatives now. One thing to look for is the amount of Volatile Organic Compounds (VOCs) in your paint. The lower the amount, the more environmentally friendly it is.

Recycled paint is available now as well. It comes in a wide variety of colors, is just as durable and easy to apply as traditional paint, and is often less expensive.

Green Product Selection Criteria

There are many factors to consider when deciding which material is best for your home. The list that follows outlines some criteria you may use to help evaluate the pluses and minuses of each product. Undoubtedly, price and availability play a significant role in this process, but often the reduced long term costs and impacts of the environmentally preferable product can make-up the difference.



Local production – Products that are produced locally help keep money circulating in the local economy. And it is not necessary to transport them long distances, adding to vehicle emissions and traffic congestion.

Recycled Content/Recyclability –

Products made from recycled material can be produced with less energy and help create markets for recycled material. When a market for recycled materials exists, it is more likely that the material will be recycled more efficiently in the future.



If the product you choose is also recyclable, it can be re-used and is more likely to be salvaged, thus reducing the amount of material entering local landfills.



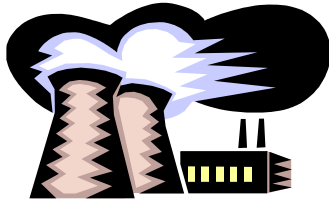
Embodied Energy – This refers to the amount of energy that goes into the manufacturing, processing, and transporting of a product. For example, a brick from China would contain a lot of embodied energy by

the time it was used in your home. The material would have to be mined, the bricks fired (which uses fossil fuels), packaged, and transported all the way across the Pacific before they reach your home. On the contrary, lumber, especially in Northern California, contains less embodied energy. The lumber is “manufactured” using energy from the sun, and only needs to be transported a short distance. (Keep in mind that sustainably harvested lumber has substantially fewer environmental impacts.)



Durability – Often more durable products cost more initially but cost less in the long run. Durable products aren’t replaced as often, saving the homeowner time and money.

Effect on Global Warming – Chlorofluorocarbons (CFCs) and Carbon Dioxide are the concerns here. Carbon Dioxide is released when fossil fuels are



burned. Usually, the manufacturing of building materials requires the use of fossil fuels. Products that have undergone the least amount of processing generally

involve the smallest release of carbon dioxide.

Cellulose insulation and natural fiber carpets are two examples. CFCs are being phased-out but there are still some applications. When purchasing refrigerants and insulation look to see if they were produced using CFCs.

Renewable – The sun, wind, and some living materials are renewable. Products that come from living materials are only renewable over a long time frame. Therefore, consider how long it takes for the resource to renew. Old-growth forests are renewable but not in the timeframe that allows us to harvest them all at once. Natural fiber carpeting and sustainably harvested lumber are good examples of renewable products.



Toxicity – Products that aren't necessarily toxic to humans in the home can still contribute to environmental degradation. Most plastic production involves energy and chemical intensive processes.

Toxins in your home can emanate from certain types of paints, insulation, carpeting, treated lumber, and a wide variety of other things.

Green Building Material Resources

Books

- *Eco-Renovation*, Edward Harland
- *The Natural House*, David Pearson
- Solar Living Sourcebook, Real Goods

Material Guides

- *Guide to Resource Efficient Building Elements*, Center for resourceful Building Technology
- *Green Pages*, Co-Op America
- *Green Guide*, The Architectural Machine, P.O. Box 3808, Redwood City, CA, 94064
- *The Natural House Catalog*, David Pearson
- *Regional Resource Directory*, Building Concerns(415) 389-8049
- Sustainable Building Sourcebook, City of Austin, TX

Internet Sites

- www.greendesign.net – offers a list of local builders and retailers that specialize in green building techniques and products.
- www.ebuild.com – the home of Environmental Building News.
- www.greenpages.org – Co-Op America's Green pages online.
- www.greenconcepts.com – “tools to build more energy and resource efficient homes.”
- www.greenseal.org – a non-profit group that certifies environmentally preferable products and produces the “Choose Green Report”.