

BUILD GREEN TODAY !



**HOW TO CHOOSE
RESOURCE EFFICIENT BUILDING
MATERIALS FOR YOUR HOME**

Building or buying a home is the largest financial and environmental investment many people will ever make. A home consumes more resources and produces more pollution than anything else most people own. As part of their commitment to environmental responsibility, more and more people are becoming interested in building houses that use less energy and fewer resources. People are recognizing that by reducing the environmental impact of our homes we can help contribute to a better quality of life and environment for ourselves and future generations. This booklet will tell you about products you can buy - wood, insulation, concrete, flooring, carpet, paint, decking and used building materials - that are good for both the environment and your pocketbook.

WHAT IS GREEN BUILDING?

Building, remodeling, maintaining and simply operating homes consume wood, water, energy and other natural resources. Today's average homes are larger and have more amenities than ever before, so they usually take more material to build and more resources to operate. Fortunately we have the opportunity to make homes more efficient through the materials used and the way they are applied. Choosing building products that reduce pollution, prevent waste, and reuse recycled materials significantly helps to reduce the impact that buildings have on the environment. Other considerations in green building involve reducing energy and water consumption, promoting good indoor air quality, and preserving habitat and green space.

WHY SHOULD I BUILD GREEN?

By building houses that are energy and resource efficient, we can help extend the world's supply of natural resources. Building green conserves renewable resources like trees, as well as nonrenewable minerals and petroleum. Additionally, building green helps prevent waste by producing and applying products efficiently, and by diverting waste for recycling. Also, by using building materials that involve less energy and pollution in their manufacture, green building helps keep air and water clean.



Building green also saves you money. When you choose materials that conserve energy, you can save with lower heating and cooling bills. By choosing more durable building supplies, you can avoid maintenance and replacement costs associated with many conventional building materials. This saves both time and money. Also, through careful ordering and application of materials, you can reduce disposal costs by preventing waste. In addition, recycling construction and demolition waste and selling building materials for reuse prevent waste disposal costs and can actually provide income.

The best part is that building green doesn't have to be expensive. Some green building materials cost less than conventional alternatives, while others reduce the total amount of material needed for a project. The true cost of building materials can't always be judged by their price at the time of purchase. In the long run, building green can help lower operating and maintenance costs to save you money every month. Overall, with its conservation of energy, money and resources, building green simply makes sense for people concerned about their pocketbook, their community and their environment.

WHO ELSE IS BUILDING GREEN?

“Green building” is an idea that's popping up everywhere. Newspapers, magazines and television are all covering national trends toward green building, and featuring ideas that people can use in their own homes. At the same time, homebuilders associations, building design professionals, utilities, and government agencies are also becoming involved in promoting green building. With their help, many states and communities are developing green building programs that establish criteria and provide special recognition for green homes and participating builders. Check with your local homebuilders association for programs that apply in your area.

People can certainly build green even in areas that don't have organized programs - and they are doing it! With the help of green building professionals, or using materials guides like this one, homeowners and builders across the country are making environmentally friendly choices for their homes. You can join in.





WHAT IF I'M NOT BUILDING A NEW HOUSE?

Green building works for remodeling and for small home improvement projects. Each time someone chooses a green product over other alternatives, we all benefit. So, whether you're building your dream home, remodeling the kitchen, or just painting a wall, you can still be part of the solution by choosing green materials.

WHAT IF I'M USING A CONTRACTOR TO SUPPLY THE MATERIALS AND DO THE WORK?

If you are working with an architect or builder on your project, check to see if they participate in green building programs, have received continuing professional education in green building or are certified by energy efficiency programs. Be sure to communicate your expectations for green products with your builder. Manufacturers can provide information and instructions for installing products the builder has not used before. You can write specifications requiring your builder to use particular green products on your project, but be aware that builders may charge more if they are required to use unfamiliar products.

HOW DOES GREEN BUILDING APPLY WHERE I LIVE?

EPA's Region 8 includes Montana, North Dakota, South Dakota, Wyoming, Colorado and Utah. Its beauty and abundance of natural resources attract many residents. By choosing environmentally-sound building products for our building and remodeling projects, we can all help protect this special Western heritage.

Selecting building materials made in the region is another aspect of green building. By buying locally or regionally, you avoid the energy of transporting building products over long distances, and help support local businesses. Whether you live in an isolated rural area or a growing city, you can request regionally-made green building products.

HOW DO I FIND GREEN BUILDING PRODUCTS FOR MY PROJECT?

Many large building product manufacturers are beginning to offer recycled or other resource-efficient products throughout their national distribution networks. As a result, these products are now more widely available from local supply chains. In some areas, there are retail building supply businesses that specialize in green materials. If you have trouble finding green building products, ask your local building supply about green materials they carry, and encourage them to stock or special order the products that you would like to use.



In the next few pages we'll take a look at a few of the green building products made in our region. Many of these are available from local building supply centers.

FLY ASH CONCRETE

A waste product known as fly ash is collected by pollution control equipment at coal-burning power plants. This ash would ordinarily be buried in landfills, but because of its physical properties it can be used in concrete as a replacement for cement. The amount of fly ash that can be added to concrete varies by the type of concrete and the application, but substituting fly ash for at least 15-20% of the cement in concrete is common. Fly ash concrete usually costs the same as, or even less than, conventional concrete.

Substituting fly ash for cement saves energy and avoids the carbon dioxide and other pollutants generated by making cement. Fly ash concrete takes longer to cure, but it provides a stronger concrete known for its smooth surface finish. Many local ready-mix concrete companies already use fly ash and will mix it in concrete if you request it for your project. If your local company isn't familiar with fly ash, you may have to suggest a bulk supplier or obtain bagged fly ash for small jobs.

Boral Materials Technology

4380 S. Syracuse St. #305
Denver, CO 80237
(800) 255-0663
<http://www.boralmti.com>

Fly ash obtained in part from coal combustion facilities in Colorado and Wyoming.

ISG Resources Inc.

136 East South Temple Suite 300
Salt Lake City, UT 84111
(801) 236-9700
<http://www.flyash.com>

Fly ash obtained in part from power plants in North Dakota, Montana, Wyoming, Colorado and Utah.



FLY ASH CONCRETE

INSULATION

Insulation is often showcased as an exemplary green material, since it both promotes energy efficiency and can be made from recycled material. Recycled insulation products generally cost about the same as conventional insulation, although they can be more expensive in some locations.



One example of environmentally friendly insulation is cellulose insulation, made primarily from post-consumer recycled newspapers, and loose-fill or spray-applied in attics and walls. EPA's Comprehensive Procurement Guideline recommends cellulose insulation that contains 75% post-consumer content, and numerous products in this region meet these guidelines.

Fiberglass insulation can also contain recycled content, often in the form of post-industrial scrap, although some companies utilize significant percentages of post-consumer container glass. Fiberglass insulation products with at least 20% overall recycled content are recommended by EPA's Comprehensive Procurement Guideline, and products that meet these guidelines are manufactured within the region.

Cellulose insulation made from recycled newsprint:

Arctic Insulation Inc.
1218 North 11th Ave.
Greeley, CO 80631
(970) 353-2392

Mountain Fiber Insulation
P.O. Box 337
Hyrum, UT 84319
(801) 245-6081; (800) 669-4951

Redi-Therm Insulation Inc.
3061 South, 3600 West
Salt Lake City, UT 84119
(801) 972-6551; (800) 544-1409

Thermoguard Insulation
451 Charles St.
Billings, MT 59101
(406) 252-1938; (800) 821-5310

Tri-State Insulation Company
P.O. Box 106
Miller, SD 57362
(605) 853-2442

Fiberglass insulation products certified to have a minimum of 25% recycled glass, minimum 18% post-consumer:

Johns Manville Corp.
P.O. Box 5108
Denver, CO 80217-5108
(303) 978-3216
(800) 654-3103
<http://www.jm.com>

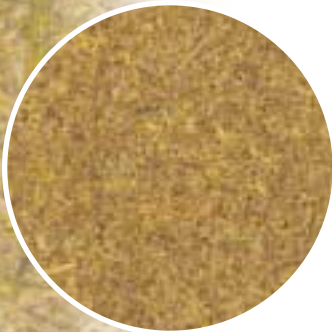




AGRICULTURAL FIBER PRODUCTS

Agricultural fiber is finding favor in green building as an annually renewable source of raw material. The most common agricultural fiber building product is fiberboard that can serve as a substitute for particle board or medium density fiberboard in flooring underlayment, cabinetry, shelving, or countertop substrate. Around the world, fiberboard is made from many different crop fibers, while in this country most agricultural fiber boards are made from cereal straws. Strawboard is manufactured in several places in the United States, and more manufacturing facilities are planned or under construction, including some in our region. Strawboard is usually more expensive than wood-based fiberboards, in part because it uses an adhesive binder that is moisture resistant and does not off-gas formaldehyde.

PrimeBoard, Inc.
2111 N. 3M Drive
Wahpeton, ND 58075
(701) 642-1152
<http://www.primeboard.com>



REUSED BUILDING MATERIALS

One of the most environmentally responsible building materials is a material that has already been used once. This saves all the energy and resources that would be required to make a new product, and it also keeps used building products from becoming waste. Materials that are carefully salvaged from existing buildings during remodeling or demolition can be often be reused in homes. Reused materials lend a project a special character, because they may be something that you couldn't get, or couldn't afford, if you tried to buy new.

Avoid reused materials that may contain lead paint or asbestos, which require special management and disposal because of the health risks they pose. Also, don't reuse energy and resource consumptive products like old toilets or single-pane windows, since over time they will waste more resources and money than were saved by reusing them.

Some salvaged building materials can be reused the same way they were originally used. Other products might inspire you to come up with innovative new uses. If you need some examples: reuse old doors, either as interior doors or parts for furniture; reuse hardwood flooring; remill old lumber for use as trim, stair parts, or flooring; reuse brick for patios; reuse glass block or old windows to bring light through interior walls to dark rooms.

Sources of salvaged building materials range from businesses that deal only in high-end architectural antiquities to those who handle discount used materials. Used materials can also be found directly from remodeling contractors, through classified advertisements, or by word of mouth.

A selection of companies in the region that deal with salvaged wood or other building materials:

Big Timberworks

P.O. Box 368
Gallatin Gateway, MT 59730
(406) 763-4639
<http://www.bigtimberworks.com>

Buds Warehouse

1111 Osage Denver, CO 80204
(303) 623-1049

Construction Junction

0695 Buggy Circle
Carbondale, CO 81623
(970) 963-1016

Resource 2000

1702 Walnut Boulder, CO 80302
(303) 441-3278
http://bcn.boulder.co.us/environment/becc/becc_resource.html

Superior Hardwoods

P.O. Box 4731
Missoula, MT 59806
(406) 251-2272; (800) 572-9601

Trestlewood

P.O. Box 1728 Provo, UT 84603
(801) 375-2779
<http://www.trestlewood.com>

Take a look at some other green products worth considering for green building projects, and available from manufacturers or possibly distributors in your own community.

PAINT

There are a few national companies that offer recycled paints in a standard range of colors, through carefully controlled reformulation processes. However, there is another common source for recycled paint. Many communities that accept paint in household hazardous waste collection efforts make usable paint available to the public at low or no cost. In some areas agencies remix collected paint for sale as primer. Inquire at your city, county or state waste or recycling office about paint recycling efforts in your community.

Kelly Moore Paint
Co., E-Coat Division
Sacramento, CA
(916) 920-0550
<http://www.ecoatonline.com>

*Recycled latex paint,
from 50 - 80%
post-consumer collected
paint, for interior and
exterior application.*



CARPET

Recycled carpet is one of the easiest green material substitutions to make, since it looks and performs just like ordinary carpet. Carpet face fiber can be made from recycled PET plastic bottles, and carpet backing can be made from recycled carpet. Although carpet isn't manufactured in this region, several brands of carpet with recycled face fibers and/or backing material are distributed here. Recycled content is most often available in commercial-grade carpet, which tends to be more expensive but more durable than typical residential carpet. Carpet padding is another place to use recycled material, and products with recycled rubber, foam, and textile fibers are available in several price ranges. Ask your flooring dealer for carpet and cushions that contain recycled material.

Talisman Mills

Mequon, WI
(800) 482-6183

Envirelon recycled carpet made from 100% recycled PET in commercial grades.

Carpet Cushion Associates

Los Angeles, CA
(800) 344-6977

A consortium of makers of several different types of recycled carpet padding.

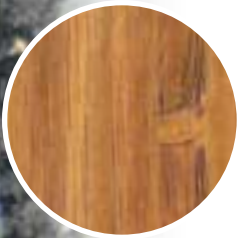
Collins & Aikman Floorcoverings

Dalton, GA
(800) 241-4902
<http://www.powerbond.com>

Carpet with recycled backing and face fiber in commercial grades.



FLOORING



In addition to carpet, there are many other green floorings. These range from indoor/outdoor paving products to decorative ceramic tiles, and may contain as much as 100% recycled glass, plastic, or rubber. Ask your local flooring supplier for recycled flooring, or renewable flooring products such as laminated bamboo. Also, don't forget that hardwood flooring can often be salvaged and reused locally.

Dodge-Regupol
Lancaster, PA
(877) 326-7873
<http://www.regupol.com>

Recycled rubber roll and tile floorings.

TimberGrass, LLC
Seattle, WA
(800) 929-6333
<http://www.timbergrass.com>

Laminated bamboo flooring.

Terra Green Ceramics Inc.
Richmond, IN
(765) 935-4760
<http://www.terragreenceramics.com>

Ceramic tile made with 58% recycled auto glass.



DECKS, DOCKS, AND OUTDOOR FURNISHINGS

Recycled plastic lumber products are becoming increasingly popular for use in decks, docks, outdoor furnishings, fences and landscaping. These products may contain up to 100% recycled plastic, or may combine recycled plastic in composite with recovered wood fiber, for greater dimensional stability. Recycled plastic lumber diverts waste from landfills, eases demand on wood species that are especially desirable for outdoor use, and avoids leaching of chemicals from treated lumber. Finally, recycled plastic products have comparatively long life and don't require the maintenance that outdoor wood products need. Many distributors supply recycled plastic and composite lumber products throughout our region. Request products like these from your local building supply retailer:

Trex Company

Winchester, VA
(800) BUY-TREX
<http://www.trex.com>

Recycled plastic and wood fiber composite.

Eagle One Golf Products

Orange, CA
(800) 448-4409
<http://www.eagleonegolf.com>

Recycled plastic lumber products.

U.S. Plastic Lumber

Boca Raton, FL
(561) 394-3511
<http://www.usplasticlumber.com>

Several brands of recycled plastic lumber, manufactured at numerous locations nationally.



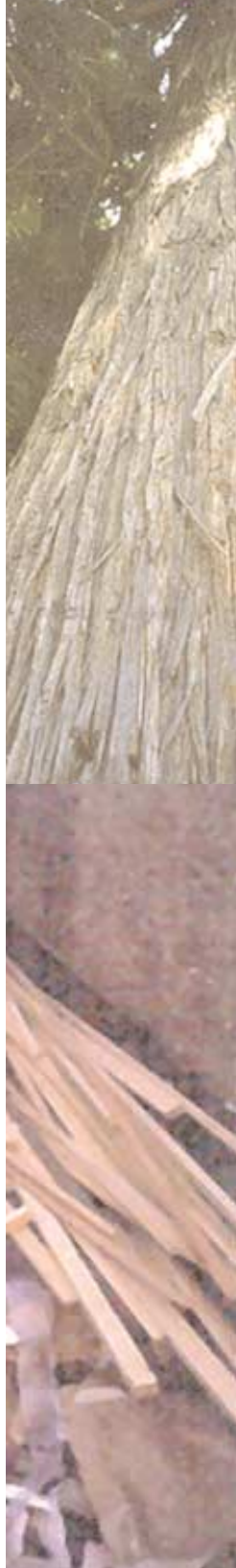
CERTIFIED WOOD

Sometimes it's possible to make design and engineering choices that reduce the amount of wood a project uses, or to substitute alternative recycled materials in place of wood. But in other applications, there's nothing that can provide the desired look, feel, or structure the way that wood can. For these applications, one environmentally-friendly option is to choose wood that has been independently certified as sustainably produced. The Forest Stewardship Council (FSC) logo appears on wood that meets FSC standards for sustainable production. Although no FSC certified suppliers are located within our region, suppliers in other parts of North America can be located through the Certified Forest Products Council web site at <http://www.certifiedwood.org> or (888) 737-3877. Also, check with local retailers for certified wood products. Certified wood products carry a price premium compared to standard lumber.

AVOIDING WASTE

Wasted building products are actually the most expensive products on a building site. You pay for them twice - once to buy them and once to dispose of them. That's a big investment in a product that doesn't even get used. A few tips can help avoid wasted materials on your project:

- Plan carefully and purchase exactly the materials you need. Resist the temptation to buy extra materials.
- Design your plans to use framing 24" on center and standard sizes of materials whenever possible. This avoids complexity and saves labor time, as well as preventing waste.
- If you have to store materials on site, avoid damage by making sure that they're protected from the weather, and stored as the manufacturer recommends.
- Recycle packaging materials and construction material scraps, to save disposal costs.



WHERE CAN I FIND MORE INFORMATION?

- 1 The U.S. Environmental Protection Agency has designated recycled content construction products for use by Federal agencies. Visit <http://www.epa.gov/cpg> or call the RCRA hotline at (800) 424-9346. EPA's web site with information on purchasing environmentally preferable products is <http://www.epa.gov/oppt/epp>.
- 2 The ENERGY STAR® Homes Program has designed several tools to help you save money and energy in your home, whether you are building a new home or want to improve the energy efficiency of your existing home, see <http://www.energystar.gov>.
- 3 The Guide to Resource Efficient Building Elements is a searchable online database of recycled and resource efficient building products at <http://www.crbt.org>. Descriptions of more than 700 products and contact information for manufacturers are included in the E-Guide.
- 4 Planetary Solutions is a building material retail business that specializes in environmentally sensitive indoor finish products. They have a showroom at 2030 17th St., Boulder, CO 80302, or can be reached by phone at (303) 442-6228 or at the web site <http://www.planetearth.com> for mail orders.
- 5 Eco-Products is a distributor of recycled content and environmentally preferable building materials located at 3655 Frontier Avenue in Boulder, Colorado, 80301. Visit their web site at <http://www.ecoproducts.com> or call (303) 449-1876.
- 6 The Sustainable Design Resource Guide is a directory of building materials compiled by the Denver AIA Committee on the Environment and the Colorado chapter of Architects, Designers and Planners for Social Responsibility. The Guide can be browsed online, at <http://www.aiacolorado.org/SDRG/index.html>
- 7 Environmental Building News publishes a newsletter for the building trades and offers a free web site with a searchable database of back newsletter issues. Go to <http://www.BuildingGreen.com>.
- 8 If you are interested in learning about green building programs and examples of green building from all across the country, visit the Center of Excellence for Sustainable Development Website <http://www.sustainable.doe.gov>, Green Buildings section.
- 9 For a checklist on environmentally preferable building and finishing materials, see Built Green Colorado at <http://www.builtgreen.org>.
- 10 The Peaks to Prairies Pollution Prevention Information Center serves EPA Region 8. Their website offers a reference for green building, the "Residential Construction Tech Source," at <http://www.montana.edu/wwwpeaks/construction/default.htm> Information on preventing and recycling construction waste is offered through the Center.

Did this booklet help you to find a green building product,
or inspire you to build green?

Let us know at buildgreen@ncat.org

Do you have further questions?
Call the U.S. EPA Region 8 Information Line
at 1-800-227-8917.



This booklet was prepared by the Center for Resourceful Building Technology project of the National Center for Appropriate Technology (NCAT), with funding from US EPA Region 8. NCAT is a 501(c)(3) nonprofit organization whose mission is to champion sustainable technologies and community-based approaches that protect natural resources and assist people, especially the economically disadvantaged, in becoming more self-reliant.

Although this project was funded by the U.S. Environmental Protection Agency, it does not necessarily reflect the views of the agency and no endorsement should be inferred.

Printed on 100% recycled paper, 30% post-consumer, with soy inks.

Thanks to Paul Dix for his photographs

Design - Joanna Yardley