

# Green Buildings: Recyclability and Sustainability of Commercial Bonded Polyurethane Carpet Cushion



Alliance for Flexible Polyurethane Foam

## What's Green?

Sustainability is today's hot issue, creating the need for a new culture in business and new criteria for purchasing decisions. The carpet industry is no exception. Suppliers are out in force, eager to tout the green features of their products. The trouble is, defining "green" and understanding the relationship to sustainability can be a confusing process.

The term often brings thoughts of nature, forests and the great outdoors. But in fact, green living can start indoors by selecting products with recycled plastic content. Here, "green" is best defined as protecting the environment by conserving and effectively using resources, with the ultimate goal of causing a relatively low impact on planet Earth. In the area of contract interiors, an outstanding product example is commercial-grade bonded polyurethane carpet cushion, a clear-cut recycling success story that fits well in the framework of sustainability.



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The current sustainability movement traces its roots to the mid-'80's when the World Commission on Environment and Development was established by the U.N. The commission developed the following definition of sustainability:

*"Meeting the needs of the present generation without compromising the ability of future generations to meet their needs."*

The re-use of pre-consumer and post-consumer flexible polyurethane foam (FPF) solid waste for use in bonded polyurethane carpet cushion is consistent with this definition. With the ability to be recycled and its high recycle content, bonded polyurethane carpet cushion creates a valuable use for a material that would otherwise require disposal. [1]

Backed by a history of proven performance, this is one of the most successful recycling programs ever implemented. Bonded polyurethane carpet cushion accounts for approximately 82% of all carpet cushion products sold in the U.S. with an annual volume of 873 million pounds. [2] This includes more than 850 million pounds of recycled flexible polyurethane foam, approximately 87% from pre-consumer sources and 13% from post-consumer sources, all of which is diverted from landfill or other means of disposal. [3]

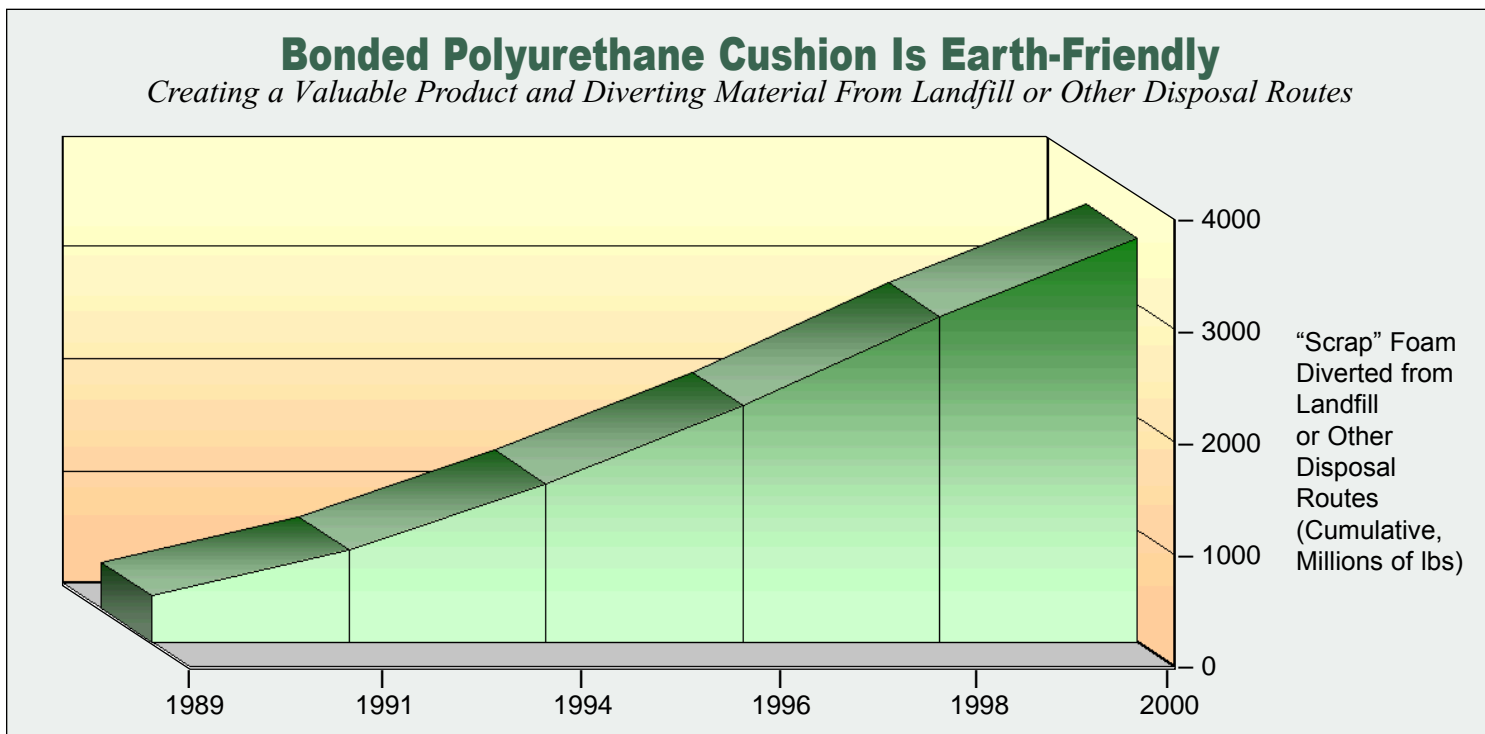
## Extended Life, Better Acoustics, and More...

Commercial bonded polyurethane carpet cushion represents more than just a great recycling story. It offers benefits that include easier carpet maintenance, improved workplace acoustics, better ergonomics and comfort underfoot. [4] For the facility manager, bonded polyurethane carpet cushion contributes to better carpet appearance retention, a key factor in extending the useful life of carpet.

Longer carpet life means less frequent carpet replacement and less carpet requiring disposal. The advantage is obvious considering that an estimated 4.7 billion pounds of carpet entered the waste stream in 2002 alone, 96% of which went to landfill. [5]

## Use Cushion, Save Energy

Adding to the checklist of environmental features, polyurethane carpet cushion enhances the insulating ability of carpet, a property often measured by "R-value." Commercial bonded polyurethane cushion, with an R-value around 1.0, works together with the carpet to improve thermal insulation, contributing to the overall R-value and offering the potential of lower energy costs. [6]



Source: End-Use Market Survey(s) on the Polyurethane Industry in the U.S., Canada and Mexico by API.

*Carpet with cushion looks better longer, meaning fewer floor covering replacements over the life of a building. This reduces the amount of carpet sent to landfill, cuts raw material usage for new carpet, and improves the life cycle costs of the floor covering.*

## Installation is Important

Proper installation is important to long-term performance, particularly for the contract market. Professionals with specific training in commercial carpet installation are recommended. Many installers are certified by the International Certified Floorcovering Installers Association (Master or C-II), are members of the Floor Covering Installation Contractors Association (FCICA), or are employed by floor covering contractors certified by the Floor Covering Installation Board (FCIB). The preferred method for many commercial installations today is “double-glue” installation. Additional information on double-glue installation is published in the Alliance for Flexible Polyurethane Foam’s “Installation Guidelines for Commercial Carpet and Commercial Bonded Polyurethane Carpet Cushion,” downloadable at [www.afpf.com](http://www.afpf.com).

## Rating Sustainability

The movement to sustainable building practices is supported by various groups. Several sources are available, including:

- ▲ LEED, the Leadership in Energy and Environmental Design Rating System – represents the U.S. Green Building Council’s effort to provide guidelines for what constitutes a “green building.” With its recycled content, IAQ certification, and other features, specifiers may want to explore how bonded polyurethane carpet cushion can contribute to credit in the evolving LEED program.
- ▲ Energy Star – a rating system developed by the U.S. Environmental Protection Agency to help businesses and individuals protect the environment with products and techniques that promote energy efficiency ([www.energystar.gov](http://www.energystar.gov)).
- ▲ Building for Environmental and Economic Sustainability (BEES) – a life-cycle assessment tool developed by The National Institute of Standards and Technology (NIST) to facilitate the selection of cost-effective, environmentally

preferable building products. With respect to floor covering choices, BEES and life cycle analysis may be useful in revealing the economic and environmental value of extended carpet life derived from the use of commercial carpet cushion ([www.bfirl.nist.gov/oe/software/bees.html](http://www.bfirl.nist.gov/oe/software/bees.html)).

- ▲ U.S. Environmental Protection Agency’s Environmentally Preferable Purchasing Program – a federal-wide program that encourages and assists executive agencies in the purchasing of environmentally preferable products and services.
- ▲ Minnesota Sustainable Design Guidelines – guidelines designed as an education tool that can be used to overlay environmental issues on the design, construction, and operation of both new and renovated facilities.
- ▲ Green Globe - an online building and management environmental audit that helps property owners and managers measure the environmental performance of their buildings against best practices in areas such as energy, water, hazardous materials, waste management and indoor environment.

## The Basics of Sustainable Purchasing

The purchase of carpet and carpet cushion should be an informed decision based on the specific needs of the application. Achieving sustainability objectives in building design and purchasing criteria requires balancing environmental considerations and energy efficiency with other important criteria such as product safety, price, performance, and availability.

Energy efficiency and environmental performance should be evaluated using a “systems” approach, focusing on how the combined performance of individual components interact within a building system. This provides the most meaningful basis to identify options with the greatest potential for improving energy efficiency and reducing overall environmental impact. The process for establishing “sustainable” building and product criteria should be science-based, transparent, available to all interested parties, and should consider new, and emerging technologies. Industry organizations and manufacturers of carpet and cushion can be excellent resources to assist in sustainability-conscious purchasing decisions. (See Resources section on back page.)

## About Bonded Polyurethane Carpet Cushion

Bonded polyurethane carpet cushion, sometimes referred to as 'rebond,' is cut from a fused log or block of chopped pieces of recycled and/or manufactured polyurethane foam. The bonded polyurethane cushion used for commercial installation is specifically engineered for this purpose and is considered commercial-grade bonded polyurethane cushion, a very different product than that specified for residential use.

Bonded polyurethane foam is made from flexible polyurethane foam (FPF) from pre-consumer and post-consumer sources. The FPF is processed through advanced chopping operations, then mixed with a polyurethane-binding polymer and processed to form the bonded cushion product. The final product is manufactured in several thicknesses, with tolerances suitable for contract installations.

[1] An online database of recycling companies is available from Alliance for the Polyurethanes Industry at [www.polyurethane.org](http://www.polyurethane.org)

[2] Carpet Cushion Council statistics (2002)

[3] End-Use Market Survey on the Polyurethane Industry in the U.S., Canada and Mexico (2000). Alliance for the Polyurethanes Industry

[4] See AFPP white papers at [www.afpf.com](http://www.afpf.com)

[5] Memorandum of Understanding for Carpet Stewardship (2003). [www.carpetrecovery.org/about/mou.asp](http://www.carpetrecovery.org/about/mou.asp)

[6] Advantages of Carpet & Rugs in Energy Conservation (Jun 1977) Carpet and Rug Institute

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Printed in U.S.A.

*This publication was developed as a service to the industry by the Alliance for Flexible Polyurethane Foam (AFPP), a joint program of the Alliance for the Polyurethanes Industry (API) and the Polyurethane Foam Association (PFA). It is not intended to provide specific legal or technical advice, nor to endorse specific proprietary products or processes, and is made WITHOUT WARRANTY, EXPRESSED OR IMPLIED AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE, OR ANY OTHER MATTER. Neither AFPP, API, nor PFA, nor their respective officers, directors, or members shall be liable for any loss, damage, or other injury arising out of use of this publication. Persons interested in more detailed information regarding bonded polyurethane carpet cushion should consult with their own technical advisors and other appropriate sources of technical information.*

*The Alliance for Flexible Polyurethane Foam is a joint program of the Alliance for the Polyurethanes Industry and the Polyurethane Foam Association  
AFPP is a corporate sustaining member of IFMA, the International Facility Management Association*

## Resources

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Polyurethane Foam Association

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[rluedeka@pfa.org](mailto:rluedeka@pfa.org), Contact: Bob Luedeka  
[www.pfa.org](http://www.pfa.org)

## Carpet Cushion Suppliers

Dalton Foam Division of NCFI  
Dalton, GA  
Phone: (800) 241-8778

Flex Foam  
Phoenix, AZ  
Phone: (602) 252--5819  
[www.flexfoam.net](http://www.flexfoam.net)

Future Foam  
Middleton, WI  
Phone: (800) 733-8063

GFI Carpet Cushion  
Linwood, PA  
Phone: (800) 497-3626

Hickory Springs  
Portland, OR  
Phone: (503) 255-4650  
[www.carpetcushion.com](http://www.carpetcushion.com)

Leggett & Platt  
Ft. Worth, TX  
Phone: (800) 475-0010  
[www.lpurethane.com](http://www.lpurethane.com)

Woodbridge Foam Corporation  
Woodbridge, Ontario, Canada  
Phone: (905) 851-3910 ext. 5276An updated list is available at [www.afpf.com](http://www.afpf.com)