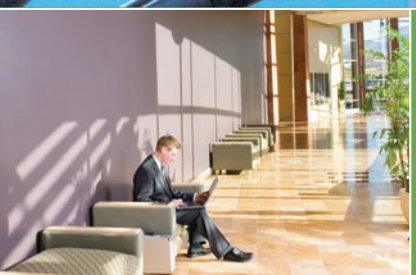
EcoLogical Building Solutions

It's Just Our Nature

PPG IdeaScapes™
Glass • Coatings • Paint



ecological
Building Solutions℠

PPG Glass, Coatings and Paint for Sustainable Design

green in construction

"Study nature,

love nature,

stay close to nature.

It will never fail you."

—Frank Lloyd Wright (1869-1959)

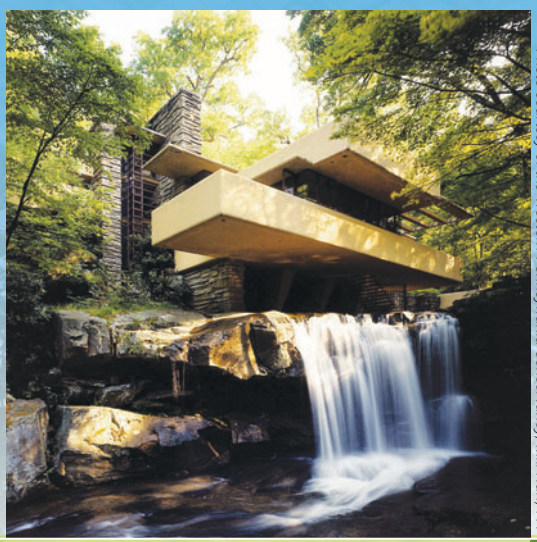


Photo courtesy of the Western Pennsylvania Conservancy, Mill Run, PA

Green Building in Construction

When the first edition of this brochure was published in 2003, green building was a relatively obscure phenomenon occupying a small niche in the commercial building market. Today, it is *the* driving force in the construction industry, revolutionizing everything from the writing of new building codes to the development of new products.

The growth shows no signs of abating. Membership in the U.S. Green Building Council (USGBC) has skyrocketed and, even more significantly, the volume of projects intended to meet their *Leadership in Energy and Environmental Design* (LEED) guidelines increased from 35 million square-feet in 2002 to more than 3.6 billion square-feet in 2008.

Future trends are even more robust. FMI Corporation, a leading consultant to the global construction industry, expects non-residential green construction to rise 32 percent between 2008 and 2012, reaching $26 billion. Research by Frost & Sullivan titled *LEED and Beyond*, indicates that LEED-registered projects will account for 25 percent of all new construction, with estimates reaching $42.6 billion by 2015.

In the meantime, the principles and practices that define green building are continually being refined. Green building rating systems, originally focused on commercial buildings, are now expanding to promote sustainable cities and communities, eliminate the impact of buildings on climate change and limit the depletion of natural resources.

Even the very definition of green building is evolving. With the advent of product certification programs and life-cycle analysis, architects and practitioners are now embracing a more holistic view of sustainable building that looks beyond a building's energy and environmental performance to where its materials come from, how they are manufactured and what impact they will have on the environment when the building's life is over.



EcoLogical Building Solutions™

To support architects in their pursuit of sustainable design, PPG offers ***EcoLogical Building Solutions***™***,*** an advanced collection of architectural glass, coatings and paint products that save energy, reduce greenhouse gas emissions, extend building life, and make buildings healthier and more comfortable.

PPG Exterior Metal Coatings

Green building principles relate to exterior coatings in terms of their ability to control and deflect heat. For architects specifying pre-finished metal roofs or wall panels, that often means limiting color choices to white and other light shades.

Now architects wishing to express a more creative and colorful vision for their exterior metal components have allies in ***Duranar***® ***ULTRA-Cool***® coatings by PPG. Formulated with a proprietary, infrared-reflective coating technology, ***Duranar ULTRA-Cool*** coatings allow architects to brighten metal roofs and wall panels with a bold selection of colors, including medium tones, while reaping their heat-reflective benefits. Many of these color options meet industry-recognized reflectance criteria and are listed in *Energy Star*® and Cool Roof Rating Council product directories.

With proven durability and performance in the most challenging building environments, it's no wonder that architects have trusted and specified ***Duranar*** coatings for more than 40 years.

PPG Architectural Coatings

PPG has made top-quality commercial and residential paints for more than 100 years. ***Pittsburgh***® Paints, the company's national brand, offers a broad range of low- and zero-VOC paints that meet green building criteria.

In 2001, PPG became a pioneer in low-VOC paint technology with the launch of ***Pittsburgh*** Paints' ***Pure Performance***®, the first commercial paint to receive *Green Seal*™ Class A certification. Since that time, numerous ***Pittsburgh*** Paints products — including ***Manor Hall***®, ***WallHide***®, ***Speedhide***®, ***Speedcraft***®, ***Speedpro***®, ***Seal Grip***®, ***Pitt Glaze***® and ***Pitt-Tech***® — have either become *EcoLogo*ᴹ-certified or passed small chamber emissions testing established by the *Collaborative for High Performance Schools* (CHPS).

Through ***Pittsburgh*** Paints, ***Porter***® Paints and other coatings brands, PPG delivers products that maximize performance in every type of building project while meeting or exceeding stringent federal, state and local VOC regulations.

PPG Architectural Glass

For more than 70 years, since PPG introduced the world's first heat-absorbing, energy-efficient glass, the company has been a leader in the advancement of glass technology. Today, our trusted family of ***Solarban***® z50, ***Solarban*** 60, ***Solarban*** 70XL and ***Solarban*** 80 solar control, low-e glasses delivers the industry's best combination of visible light transmittance, solar control and insulating performance.

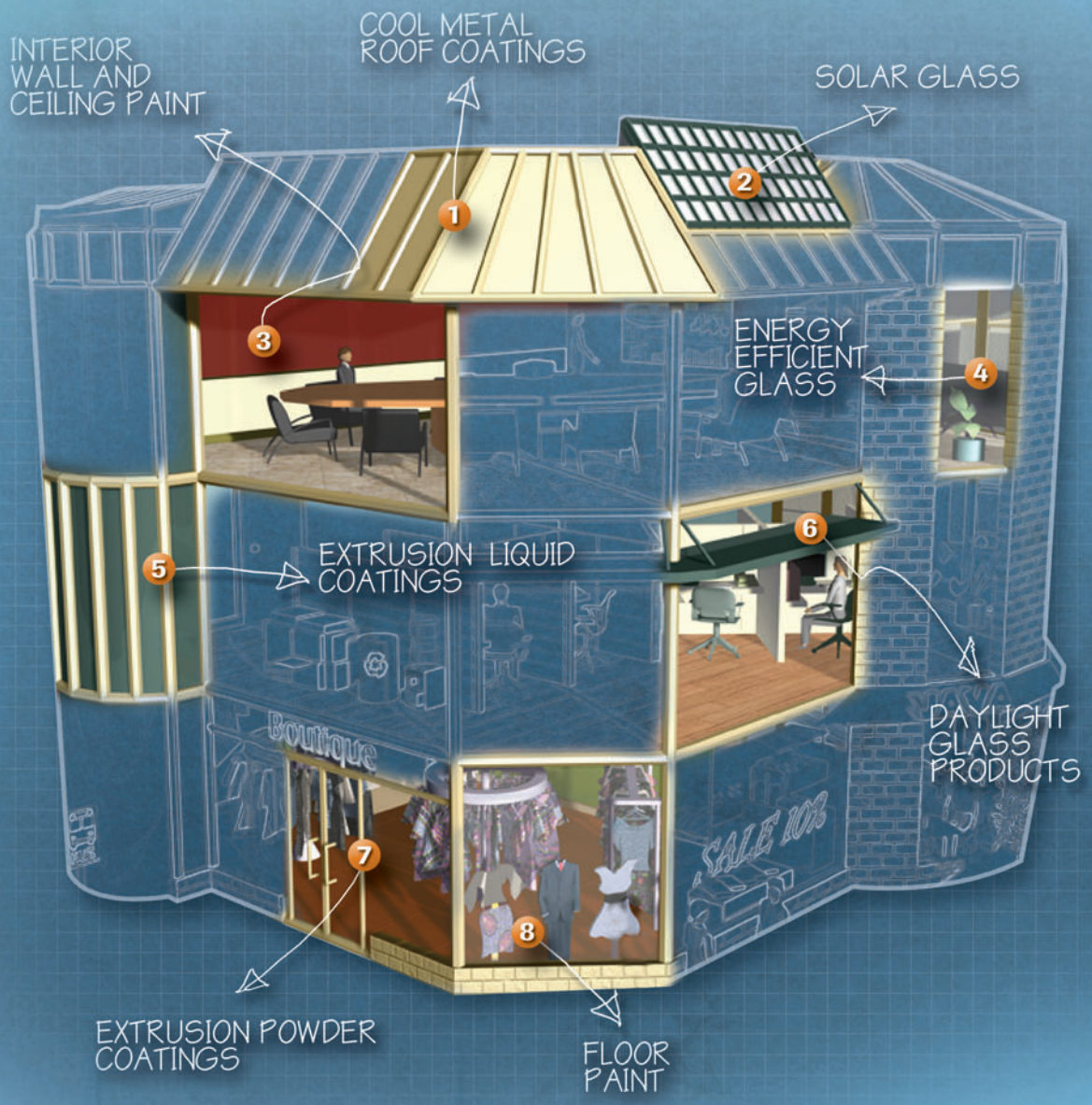
On their own, or combined with spectrally selective tints from the ***Oceans of Color***® collection by PPG, ***Solarban*** solar control, low-e or ***Sungate***® 500 passive low-e glasses offer architects an unparalleled selection of aesthetics and performance.

PPG also is the first manufacturer to have its entire collection of architectural glasses *Cradle to Cradle Certified*ᶜᴹ, which signals our commitment to environmentally responsible, high-performance products.

At one time the largest green building in the U.S., PNC Firstside uses energy-efficient glass, durable coatings and low-VOC Pittsburgh Paints, all from PPG.

Putting EcoLogical Building Solutions™ to Work for You

Here are just a few of the ways ***EcoLogical Building Solutions*** by PPG can help architects and building owners design and construct healthier, more energy-efficient buildings and pursue certification for their projects.



1 Cool Metal Roof Coatings

Reducing roof surface temperatures can lessen the Heat Island Effect and Optimize Energy Performance. PPG's ***Duranar***® ***ULTRA-Cool***® coatings meet *Energy Star* reflectance levels and various Solar Reflectance Index (SRI) criteria in many colors.

Benefit: Greater solar reflectance lowers surface temperatures and reduces thermal entry through roof materials, cutting cooling load demand.

2 Solar Glass

PPG is one of the only North American producers of solar-stable, low-iron cover glass for use in the solar marketplace as On-Site Renewable Energy. ***Solarphire***™ glass has the lowest iron content of any commercially available float glass product in the world, allowing maximum light penetration for the energy conversion process.

Benefit: Enhances renewable energy production, which lessens CO_2 emissions, global warming concerns and power grid dependence.

3 Interior Wall & Ceiling Paint

When concerned with healthy indoor air quality, Low-Emitting Materials are important. Within the PPG portfolio, there are 100 different ***Pittsburgh***® Paints and ***Porter***® Paints products that are low- or zero-VOC.

Benefit: By reducing air contaminants that are odorous, irritating or harmful, the comfort and well-being of installers and occupants are improved.

4 Energy Efficient Glass

PPG low-e and spectrally selective glasses give architects many options to Optimize Energy Performance and promote Design Innovation. ***Solarban***® solar control, low-e glasses, ***Sungate***® 500 glass and the ***Oceans of Color***® collection of spectrally selective tinted glasses can manage solar heat gain and improve u-value for any building type.

Benefit: PPG glass products can reduce energy consumption, operating costs and associated CO_2 emissions. They also are *Cradle to Cradle Certified*.

Blue-highlighted text on this page corresponds with major green building certification criteria that present potential areas of contribution by PPG products.

5 Extrusion Liquid Coatings

PPG ***Duranar*** Liquid Coatings have 40 years of proven performance and durability for exterior metal. They meet AAMA 2605 long-term durability performance specifications by using *Kynar*® resins.

Benefit: Durability and predicted service life are elements in sustainability when considering gloss and color retention, chalk and fade resistance, and less frequent maintenance or field-applied touch-ups.

6 Daylight Glass Products

An architect's design to maximize interior Daylight and Views for occupied spaces involves a careful balance of heat gain and loss, glare control and visual quality. PPG solar control glasses, such as the ***Solarban*** family of low-e glasses, deliver the highest possible visible light transmittance with excellent solar heat gain coefficients, resulting in some of the highest light to solar gain (LSG) ratios on the market.

Benefit: By connecting occupants to the outside, increases in worker productivity, student performance and patient recovery have been reported. Additionally, a proper daylight design can reduce energy consumption by limiting reliance on artifical lighting.

7 Extrusion Powder Coatings

PPG ***Duranar*** Powder Coatings protect curtain wall, storefront and architectural accents. They meet AAMA 2605 long-term durability performance specifications by using *Kynar* resins, and provide environmental benefits by not containing VOCs.

Benefit: Powder coatings reduce the application's environmental footprint by reclaiming overspray waste and minimizing VOC emissions.

8 Floor Paint

The aesthetics of existing or new concrete floors can be enhanced with Low-Emitting Materials when using ***MegaSeal***® flooring system products. ***MegaSeal*** SL is a 100% solids, self-leveling epoxy that protects even in the most demanding floor applications. Other ***MegaSeal*** products offer color, safety and durability often with VOC levels of less than 50 g/l.

Benefit: By reducing air contaminants that are odorous, irritating or harmful, the comfort and well-being of installers and occupants are improved.

For more information on how ***EcoLogical Building Solutions*** by PPG can help you design a more energy-efficient or sustainable building, and contribute toward green building certification, call 1-888-PPG-IDEA or visit www.ppgideascapes.com.

Beyond the Environmental and Energy Attributes of Products

A Global Commitment to Environmental Responsibility

At PPG, we're proud to be on the leading edge of the sustainable building revolution. In these pages, you've learned about *EcoLogical Building Solutions*, a unique collection of architectural glass, coatings and paint products that possess energy or environmental attributes and help architects construct sustainable buildings.

Beyond making green products, PPG also has a long-standing commitment to being a responsible corporate citizen. For decades, our company has pursued business practices that help our people, our customers and our suppliers build strong communities and sustain a healthy environment.

We actively pursue these goals in the following areas:

- Manufacturing Excellence
- Supply Chain Management and Materials
- Research & Development
- Social and Community Outreach

PPG Statement on Greenhouse Gas Emissions

In late 2007, PPG announced its intent to reduce its total energy intensity by 25 percent from 2006 to 2016 and its total global greenhouse gas (GHG) emissions by 10 percent from 2006 to 2011. The reduction of GHG emissions demonstrates PPG's corporate-wide commitment to improving the global environment and increasing the efficiency of its operations. Accordingly, in September 2008, PPG was recognized as a top scorer in the U.S. Carbon Disclosure Project (CDP) Leadership Index, a distinction that further acknowledges PPG's commitment to transparency and emissions management.

Manufacturing Excellence

To achieve its goals of being both a fiscally sound and environmentally responsible firm, PPG has re-engineered many of the manufacturing processes at its glass, coatings and paint facilities to minimize energy consumption, improve air and water quality, and cut waste. These initiatives include:

- ***Oxy-Fuel Furnace Technology.*** PPG was one of the first companies to install oxygen-fuel furnace technology on a float glass production line in North America. Today, this technology, which PPG now licenses to glass manufacturers around the world, reduces fuel consumption by 15 percent and carbon dioxide emissions by 10 percent. Emissions of nitrogen oxides have been lowered by half at these facilities.

- ***Cullet Recovery System.*** PPG equips its glassmaking plants with extensive systems to recover and store discarded (or scrap) glass, known as "cullet," a valuable feedstock that reduces the procurement of virgin materials and the amount of energy consumed during the melting process. Greater than 99 percent of the unused glass PPG manufactures is reutilized in production.

- ***Reusable Shipping Racks.*** PPG ships many of its glass products on reusable steel racks, which has reduced the amount of disposable packaging that accompanies architectural glass products by 65 percent.

- ***Dispense Cell Technology.*** PPG has integrated dispense cell technology into its coatings manufacturing, which facilitates the production of smaller batches of liquid coatings. This process technology eliminates the need for cleaning solvents, and reduces hazardous waste and inventories by permitting more accurate order fulfillment.

- ***Energy Recovery Unit.*** For traditional coatings manufacturing, PPG converts hazardous waste into a sludge-like fuel that powers an energy recovery unit at a separate PPG facility. This fully eliminates hazardous waste disposal and reduces the company's non-renewable energy demands.

- ***Reusable Shipping Containers.*** PPG ships liquid coatings in 55-gallon drums, 300-gallon totes, and 5,000-gallon tank wagons that are reconditioned for use by PPG and its customers. Working together with raw material suppliers, PPG reuses more than 7,000 drums and 10,000 pigment sacks yearly.

- ***Recycling and Conservation Programs.*** Each paint manufacturing plant has an active recycling process that includes the reuse of washwater from the production process, the re-work of obsolete inventory, and the recycling of raw material containers and packaging. Other packaging goods — such as plastic and stretch films, super-sacs, cardboard and pallets — are recycled or recovered by suppliers, secondary users and scrap dealers, or through third-party contracts.

- ***Container Recovery Program.*** In 2008, PPG was the first national paint supplier to initiate a recovery program for five-gallon plastic pails used for water-based products. Empty and dry pails are returned to company-owned stores, consolidated and sent to distribution centers for shredding and recycling. In addition to its environmental benefits, this program reduces customer costs by eliminating the need to pay for empty-pail disposal.

- ***Recycled Containers.*** All gallon pails used for latex products are made from 100 percent recycled polypropylene, and are 100 percent recyclable.


Supply Chain Management and Materials

PPG works closely with its suppliers to encourage adoption of environmental stewardship strategies. One successful example is our *Supplier Added Value Effort ($AVE)* program, which offers incentives to suppliers to reduce their environmental footprint throughout the supply chain by methods such as:

- Implementing supplier product or technology changes that lower energy consumption
- Improving yield and throughput to minimize waste in the production process
- Using alternative or eco-friendly materials or processes with an environmental label or certification
- Optimizing package design or recycling to reduce waste
- Participating in the Carbon Disclosure Project (CDP), through which companies measure their greenhouse gas (GHG) emissions and seek to implement climate change mitigation strategies
- Registering with *Responsible Care*®, meeting ISO 14000 standards or establishing a Corporate Social Responsibility Policy.

Research & Development

Over the past century, PPG engineers and scientists have produced environmental advances that intersect with human activity at nearly every moment of daily living. These advances encompass the green-oriented *EcoLogical Building Solutions* highlighted in this brochure, as well as the development of photovoltaic cells for the concentration and collection of solar power, lightweight turbines for the production of wind energy, organic inks for the product packaging and printing industries, and waterborne coatings for buildings, cars and other metal surfaces.

With research and development centers strategically located around the world, PPG is broadly recognized as a technological leader. In fact, PPG has earned an R&D 100 Award from *R&D Magazine* for seven consecutive years. The company continues to invest hundreds of millions of dollars each year in developing new and improved products and processes, and to adapting existing technologies to fit the needs of new markets and applications. As a result, 30 percent of the company's sales are generated by products that are four years old or younger.

Social and Community Outreach

For more than 50 years, *The PPG Industries Foundation* has sought to reflect our company's values by enhancing the quality of life in communities where PPG families live and work. The *Foundation* believes PPG stands for the ***P****ower of* ***P****ositive* ***G****iving* and strives to build partnerships with organizations devoted to developing educational opportunities in the community.

Over the past five years, PPG has provided more than $25 million in support of programs and grants to hundreds of charitable causes and events that help educate, motivate and inspire. We are proud of our work in the cities and towns we call home, and are committed to improving the lives of those who need us most.

PPG's commitment to the environment is further articulated through ongoing partnerships with government agencies and environmental groups around the world. Our partnership with these organizations promotes environmental stewardship by encouraging adherence to strict standards for resource conservation, habitat preservation, energy efficiency and cleaner air and water.

For more information on how ***EcoLogical Building Solutions*** by PPG can help you design a more energy-efficient or sustainable building, and contribute toward green building certification, call 1-888-PPG-IDEA or visit www.ppgideascapes.com.

This document was developed while considering standards and guidelines regarding environmental claims. Sources, such as: Federal Trade Commission, Part 260 – Guides for the Use of Environmental Marketing Claims; ISO 14021, Environmental labels and declarations – Self-declared environmental claims (Type II environmental labeling); ASTM E2129-05 – Standard Practice for Data Collection for Sustainability Assessment of Building Products.

FSC Mixed Sources Product group from well-managed forests, controlled sources and recycled wood or fiber www.fsc.org Cert no. SCS-COC-00648 © 1996 Forest Stewardship Council

10%

PRINTED WITH SOY INK

PPG IdeaScapes™
Glass • Coatings • Paint

1-888-PPG-IDEA
www.ppgideascapes.com

PPG INDUSTRIES • ONE PPG PLACE • PITTSBURGH, PA 15272

CMT 107 10/08 (10M) Printed in U.S.A.