

Navigating the Materials Maze



Longleat Hedge Maze in Wiltshire, England. Source: commons.wikimedia.org



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BuildingGreen

A Roadmap

- Before Picking Products
- Picking Products: Environmental Qualities, Appropriateness, Availability, and Cost
- Sources for Information



The Problem With Products

- Filling a building with environmentally friendly products does not necessarily make it green.
- Green buildings are designed for energy, water, and material efficiency, among other things.



The Greenest Product....

Designing for materials use reduction:

- Build a smaller building
- Open the layout
- Design to standard dimensions
- Use structural materials as finish materials



Source: "Building Green on a Budget." *Environmental Building News*. Vol. 8, No. 5 (May, 1999).

Picking Products

- Environmental qualities
- Appropriateness
- Availability
- Cost



Picking Products: Life-Cycle Thinking

- What is it made of and how is it made?
- Where did it come from?
- How long will it stay in place and does it use energy or water?
- What happens to it at the end of its useful life?



Picking Products: Certifications

Forestry



Emissions



Multi-Attribute



Water



Energy



Picking Products: Appropriateness

- Where will it be used?
- How will it be used?
- How will it affect occupant health?
- How will it perform?
- What will it look like?



Picking Products: Availability

- Does the manufacturer distribute product near the project?
- Is the material readily available?



Picking Products: Cost

- How much does the product cost up front (first costs)?
- How much will a product cost over its lifetime, including costs for maintenance and disposal (life-cycle costs)?



A Thought Experiment: Sheet Marmoleum



- Linoleum flooring made by Forbo, Inc.
- Available in sheet and tile form (also available as "click" flooring for residential market)



A Thought Experiment: Sheet Marmoleum

- What is it made of and how is it made?

Linseed oil, pine rosin, sawdust, cork dust, limestone, and jute

- Where did it come from?

Europe

- How long will it stay in place and does it use energy or water?

About 20 years; maintenance requires water and energy

- What happens to it at the end of its life?



Biodegradable

Source: Forbo, Inc. and

"Linoleum; The All-Natural Flooring Alternative." *Environmental Building News*. Vol. 7, No. 9 (October 1998).

A Thought Experiment: Sheet Vinyl

- What is it made of and how is it made?
Polyvinyl chloride (PVC)
- Where did it come from?
Probably the U.S.
- How long will it stay in place and does it use energy or water?
20 years; maintenance requires water and energy
- What happens to it at the end of its life?
Recyclable; usually landfilled



Source: Sheila Jones, "Resilient Flooring: A Comparison of Vinyl, Linoleum, and Cork." Report for the Georgia Tech Research Institute. Fall 1999.

A Thought Experiment: Certifications

- Marmoleum and some sheet vinyl meet Collaborative for High Performance Schools criteria for low emissions



A Thought Experiment: Appropriateness

- Where will it be used?
Hallways and kitchens
- How will it be used?
High-traffic areas
- How will it perform?
Durable and low-maintenance
- What will it look like?
Similar aesthetics



A Thought Experiment: Appropriateness

How will it affect occupant health?

- Volatile organic compound (VOC) emissions
- Cleanability



A Thought Experiment: Availability

- Does the manufacturer distribute product near the project?

Wide distribution

- Is the material readily available?

Usually available



A Thought Experiment: Cost

How much will the product cost up front?

- Marmoleum: \$3–\$6 per square foot installed
- Vinyl: \$1.10–\$6 installed



Jessica Boehland, "Floorcoverings: Including Maintenance in the Equation."
Environmental Building News. Vol. 12, No. 5 (May 2003).

A Thought Experiment: Cost

How much will a product cost over its lifetime, including costs for maintenance and disposal?

- Marmoleum: \$0.50–\$1.50 per square foot per year
- Vinyl: \$0.75–\$1.50 per square foot per year



Jessica Boehland, "Floorcoverings: Including Maintenance in the Equation."
Environmental Building News. Vol. 12, No. 5 (May 2003).

Finding Products: BuildingGreen's Resources



GREEN BUILDING PRODUCTS

The GreenSpec® Guide to Residential Building Materials

GREENSPEC Directory
7th Edition



Edited by Alex Wilson and MI
FOREWORD BY SARAH

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The Leading Newsletter on Environmentally Responsible Design & Construction

Building Information Modeling and Green Design

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