

# Flooring for Sensitive Environments

– March 13, 2013 **Posted in:** [Green Cleaning](#), [Green Cleaning Knowledge Center](#), [Green News Roundup](#)

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Discussing what types of flooring should be installed in sensitive environments such as schools for young children, healthcare facilities, and nursing homes can be touchy. There is uneasiness because many involved in the manufacturing and selling of carpets are still smarting from the unfair treatment they received some 30 years ago when entire countries, such as Sweden, started banning carpeting from schools. These countries falsely assumed that carpeting contributed to allergic and respiratory reactions in children.

We now know that, in many ways, carpets do the opposite of what some people assumed. Carpeting can actually help keep indoor air quality cleaner and healthier, thus minimizing allergic reactions in sensitive environments. Carpets absorb and hold many impurities, preventing them from becoming airborne. These impurities can then be removed through the use of high-efficiency particulate air (HEPA) filtration vacuum cleaners and carpet extraction.

However, there are some legitimate concerns about carpeting, especially in sensitive environments. While there has been considerable improvement in the level of volatile organic compounds (VOCs) that vaporize at room temperature (called off-gassing), new carpets may still contain some. The U.S. Environmental Protection Agency (EPA) warns that some of the potential harmful effects of VOC off-gassing include eye, nose, and throat irritations; headaches; dizziness; visual disorders; [and] memory impairment. And the EPA adds that some carpeting as well as some wood adhesives, paints, composite wood laminates, and furnishings can be the worst offenders.

Although carpeting manufacturers now produce carpets that are low-VOC emitting, in some cases carpeting is still not the best flooring material for sensitive environments. So what is?

Determining what is the best flooring material is tricky because the various options available can all have an impact on different people, age groups, and even genders. Some designers and architects of school and healthcare buildings have gone as far as installing certain types of floors in only a few rooms, allowing clients to "sample" them to find out if there are any health implications. If all seems clear after about six months, the rest of the flooring is installed throughout the facility; if problems materialize, builders start over with a different floor covering.

However, there are hard-surface flooring materials that usually meet the demands of the most sensitive environments. These include:

• Low-emitting/low- or no-off-gassing ceramic tile and vinyl composite tile (VCT), which can be installed using adhesives that also have low VOCs

• Terrazzo as well as some solid wood materials that have no coatings or sealants

• "Natural" materials such as stone, granite, and marble

• A variety of environmentally friendly materials such as cork, bamboo, and even rubber

"A simple way to address this issue, or at least a good place to start, is to look for flooring materials that meet current LEED [certification] requirements," says Stephen Ashkin, President of The Ashkin Group and known in the professional cleaning industry as the "father of Green Cleaning." "There are actually a number of flooring materials that qualify [for LEED certification], along with some carpets, carpet cushions, and carpet adhesives."

### **A Closer Look at Cork and Bamboo**

Most cleaning professionals are familiar with ceramic tile, terrazzo, and the other flooring materials already mentioned that often meet the needs of sensitive environments. However, cork and bamboo are still relatively new floor covering options and in some cases are considered experimental. As a result, cork and bamboo require a closer examination of how they function as flooring materials and why they are considered ideal to use in sensitive environments.

Cork flooring has grown in popularity for a variety of reasons. It is considered a pure, natural material that does not off-gas. It helps "quiet" facilities. Cork is also hypoallergenic and naturally resistant to mold and mildew. It will not rot and is termite resistant, making it a perfect flooring selection for sensitive environments. Low-VOC-emitting adhesives, oils, and waxes (applied if needed) can be used to install and maintain cork flooring.

Bamboo is a more durable flooring than cork. In fact, it is actually as hard as, if not harder than, many commonly installed wood flooring materials. Bamboo grows all over the world but is most commonly found in Southeast Asia, especially China. Sold in planks, similar to other wood flooring materials, it can be installed with nails or floated over a wide variety of types of subflooring, potentially eliminating the need for glues or adhesives that may contain VOCs.

“Of course, one of the big benefits of cork and bamboo, other than they have minimal impact on the indoor environment, is how sustainable they are,” says Ashkin. “Cork is derived from the bark of a cork oak tree and can be safely harvested, causing no harm to the tree. And bamboo is essentially a natural grass that grows wild.”

## **Cleaning and Maintenance**

As mentioned, selecting flooring for a sensitive environment can be tricky, and in some cases architects and designers will even let clients “test-drive” a floor to determine potential health risks. Unfortunately, all of these efforts may be in vain if environmentally sensitive cleaning and maintenance procedures are not followed.

“The first step in properly maintaining these floors is to follow the manufacturers’ suggestions and make sure this information is passed on to custodial workers who are tasked with floorcare,” says Daniel Frimml a floorcare expert and Technical Service Coordinator for Tornado Industries, a leading manufacturer of floorcare equipment. “According to some floor installers, regardless of the floor type, many of the problems that surface after a new floor is installed are the result of the end customer not taking the time to review and share cleaning and maintenance requirements with custodial workers.”

For instance, the instructions may indicate that dust mopping should be avoided, specifically on floors designed for sensitive environments. “In these cases, cleaning technicians should use backpack vacuum cleaners, especially those with advanced or HEPA filtration systems,” says Frimml.

If the floors require mopping, microfiber flat mops are usually recommended. These mops tend to use less chemical and water. Additionally, because microfiber is made up of minute fibers, these mops can remove soils and dust from small floor cracks and crevices, which traditional string mops are often unable to reach. However, rubber floors typically have a textured, studded surface that can be difficult to clean using a flat mop. Therefore, a string mop may be the better choice.

Chemicals, of course, should be Green certified. However, many of the floors recommended for sensitive environments do not necessarily have to be finished. This can prove advantageous because many conventional finishes contain a variety of ingredients that are not environmentally friendly. If no finish is applied to the floor, then many of the harsh chemicals used to clean and scrub floors are not needed either.

“Flooring for sensitive environments also calls for more environmentally responsible floorcare equipment,” adds Frimml. “Some manufacturers are now introducing Greener floor machines or are manufacturing cylindrical brush floor machines that use chemical and water more efficiently so that less is often required.”

In addition, when using auto-scrubbers to clean and maintain sensitive floors, Frimml suggests using machines that have effective vacuum capabilities to capture impurities before they become airborne. “The machine should also have durable and flexible squeegee mechanisms for more

effective moisture recovery. Many of these floors, such as bamboo and cork, should remain as dry as possible.ö

Another issue that often comes up when caring for flooring installed in sensitive environments is concerns about costs. Is the flooring more expensive than more conventional floors? Does it cost more to clean and maintain? In most cases, the answer to both of these questions is no. In fact, often, less maintenance is required. This means the overall cost of ownership of the floor is less, making these flooring types cost effective while also meeting the needs of sensitive environments.

\*Carpets, carpet cushions, and carpet adhesives that qualify meet the product requirements of the Carpet and Rug Institute's Green Label Plus program. This designation means these carpeting materials are considered among the lowest-VOC-emitting carpet, adhesive, and cushion products on the market.