

Cover Focus Articles

General/Information

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Maintain The Ground You Walk On

Flooring Is An Important Yet Often Neglected Part Of Your Data Center



When you think about data center maintenance, the floor is usually at the bottom of the priority list. But where is any good data center without a properly maintained flooring system? Without proper maintenance, your data

center floor can cause myriad problems, such as contaminating equipment or affecting business operations. The good news is that regular flooring maintenance and upkeep, along with advice from the pros, can help you thwart these problems.

What's Your Type?

Any flooring maintenance and upkeep plan must consider the floor type first. David Long, says data center floors are installed directly over bare concrete or on raised access floors, and any type of installation requires some amount of periodic maintenance. Long says static control flooring is a popular flooring type because it inhibits static on the people working there and has low maintenance requirements.

But you can't have flooring maintenance without considering a host of other factors, says Bob Cogan.

He says all the electronic equipment within computer rooms and surrounding areas should also be regularly maintained, as the need for high levels of contamination control within the environments in which they are stored is essential. He says subfloor contamination in particular is never a good thing.

According to Long, if your data center uses antistatic carpet tiles, they can be cleaned using the same maintenance methods used for regular carpets—that is, regular vacuuming combined with steam cleaning or dry encapsulation cleaning. He says that whereas most carpet is vacuumed two or three times per week, steam cleaning should be done once or twice per year. Antistatic vinyl tiling, on the other hand, can be maintained with a combination of sweeping, damp mopping, buffing, and an application of antistatic wax. But, Long warns, "Antistatic wax should never be used over a raised

Key Points

- The type of flooring present in your data center will dictate your cleaning processes.
- Use HEPA-filtered vacuums to prevent particle contamination, beware of static electricity generation, and keep the floor clear of residue and other foreign substances.
- Determine and adhere to a cleaning schedule, whether you're employing in-house personnel for cleaning or hiring a third-party cleaner.

Access floor because dried wax seepage in between the tiles will unintentionally bond the removable panels in place."

As for HPLs (high-pressure laminates), Long says maintenance amounts to simple damp mopping. The only downside to HPL, he says, is its natural tendency to generate high amounts of static on people wearing standard footwear. And if you use rubber flooring, such as conductive rubber or static dissipative rubber, Long says either type can be cleaned with damp mopping. "Unlike vinyl, the surface of rubber traps very little contamination because it is nonporous," he says. "A recent study at MIT Lincoln labs showed that rubber would not generate more than a few hundred volts on people regardless of their footwear."

—Floor Maintenance & Cleaning

When you think about the subfloor void, Cogan says one thing should come to mind: deep cleaning. He says if raised access flooring with down-flow air conditioning is in use, the subfloor must be carefully cleaned using HEPA-filtered vacuums that remove contamination down to the 0.3-micron range. He says these types of vacuums are 99.97% effective in eliminating dust particles of that size or larger. "During this process, all cables, conduits, pedestal assemblies, rigid grid stringers, and floor tile edges should be vacuumed and hand-wiped," Cogan notes.

Tom Turner, a product development manager, says he advises data center managers to consider having the area under the access floor professionally cleaned annually. "At any relative humidity level, the amount of static energy generated is directly proportional to the amount of particulate in the air," he says. "The discharge of static energy, known as ESD (electrostatic discharge), is commonly implicated as the source of equipment failures." Turner says minimizing dirt build-up under the access floor reduces static energy creation and serves as one more method by which you can protect your equipment and business continuity.

Turner says many data centers have loose busbar connectors. Busbars are usually located under the access floor and are used to bond different parts of the grounding system together, and the busbar includes a bond to the access floor. He says that if this bond is loose, a connector is likely to fail if electricity is applied to it. "It is my experience that 10% of one-hole connectors attached to grounding busbars in data centers are loose," Turner says.

Don't forget the top of the data center floor, either. Cogan says to make sure that you inspect the top of any floor for sticky residue, tape, gum, or any other foreign matter by "hands and knees removal" prior to vacuuming and damp scrubbing. After they're cleaned, Cogan says floors should be rinsed with a staticide rinse. And when the floor is dry, he says, a low-speed buffer should be used to give the surface a light shine.

—Scheduling & Personnel

How often should data center floors be cleaned? Cogan says it depends on many factors, including construction within the room or surrounding rooms, human (people entering into and out of the computer room) and nonhuman (organic fibers) factors, metallic dust or shavings, paper dust, and synthetic fibers. "Typically, we recommend subfloor cleaning a minimum of once per year and surface cleaning two times per year," he says.

Data center and IT managers can learn from the professionals, Cogan says, and incorporate a maintenance plan with company personnel. "This can be done in-house but is usually not done in data centers larger than 1,000 square feet," he says. "Simple recognition of good housekeeping rules is a start, and be aware of who and what contamination goes in and is left on any sensitive equipment or in designated computer rooms."

And when is it a good time to hire a professional? "There are no special skills required to damp mop a floor," Long says. "Shutdowns are not required because damp mopping usually dries quickly. However, a janitorial professional should handle processes like steam cleaning, waxing, and buffing. These processes should probably be performed during off hours or when the data center is not fully populated." —

Three Quick Tips

1. Use floors that can be kept clean easily and require as little maintenance as possible. Buffing, waxes, polishes, floor strippers, and aggressive floor cleaning methods cause air contamination during maintenance. David Long, says from a [maintenance perspective](#), the most data center-friendly floors are HPL (high-pressure laminate) and rubber.
2. Maintenance should be evaluated before any floor is installed. When choosing a floor type, determine the relationship between specifications and application. Most antistatic flooring specifications present data from tests performed with antistatic footwear. Because special footwear is rarely, if ever, used in a data center, that kind of data isn't helpful for the data center.
3. When using professionals, make sure they provide references, have been in the business for at least five years, and are licensed in their home state. Additionally, make sure they are trained to work around computer equipment and can comply with all federal, state, and company safety regulations and have passed OSHA/HAZCOM compliance programs.