

## **How to make a slippery floor safe?**

### **By Dr. Fredrick Hueston**

There are many treatments that can be purchased and applied to a tile surface to make it slip resistant. These treatments fall into two categories: Coatings or treatments which chemically or physically alter the surface of the tile.

#### ***Coatings***

Coatings can be waxes, acrylics or other commercially available products. The coating places a thin layer of material on the surface of the tile. The tile will then be as slippery as the coating itself. Warning: not all coatings provide slip resistance. In fact some coatings will make a floor more slippery. Before specifying a coating, contact the manufacturer of the coating and ask for slip resistance test data. Many of the coating manufacturers are very familiar with slip resistance. Make sure the coating can be used on the tile surface you are using. Certain coatings will not adhere to polished stone or porcelain and require coatings specified for these surfaces.

#### ***Treatments***

There are now available special treatments that can be applied to the surface of tile to render it slip resistant. These treatments are primarily hydrofluoric acid. The acid attacks the surface of the tile and creates microscopic holes. This is what is typically called etching of the surface. This process works effectively on many surfaces but can decrease the service life of the tile. Once the surface is treated with this method maintenance will increase. Since these treatments contain a very dangerous acid, it should only be applied by trained individuals. Contact your local tile supply store for recommended contractors.

The issue of slip-resistance is of major concern in the US. Lawsuits are on the increase as con artists continue their search for the big payoff. Large hotels, banks and other big corporate building owners are their main targets but they are also targeting the small business. The corner food store and the local gas station are not exempt from these flim flam artists.

This is not to say that there are not times when a floor surface is not unsafe. Many factors contribute to the slipperiness of the floor. Water, grease, oil and debris scattered on the floor all can contribute to slipperiness. The competent architect and designer cannot control what happens to the floor after it's installed but he/she can get it started properly.

#### ***How to Minimize Slip/Fall Accidents***

Although it will be impossible to prevent all slip/fall accidents there are several precautionary procedures that building owners, cleaning companies and others can take to minimize risk. The following is some suggestions and is not intended to replace legal advice if an accident occurs:

1. Pay attention to areas where water and/or spills occur. A walk off mat should be placed inside the entrance of doors during a rain storm. When floor tile gets wet, the coefficient of friction (COF) may decrease causing a fall. Mats should be placed prior to the first drop of rain. Pay attention to areas where food is served or carried. Foods and drinks can

create an ice like condition on the floor and any spills should be picked up as soon as they occur.

2. If the floor tile is maintained by stripping and waxing, this procedure should be done at night when there is no one around to fall. Daily wet mopping should also be performed at night during off hours.

3. Always place wet floor signs in all areas you may be working in. This applies for all times of the day or night. It is also a good idea to train your floor cleaning personnel to warn people who may walk across the floor that it might be slippery.

4. Keep accurate records. It is surprising how many cleaning companies fail to keep any record of maintenance on a tile surface. Accurate record keeping says that you are responsible and that you generally care about safety. Include in your records the following information:

- \* Name brands of all products used on the floor

- \* Coefficient of friction

- \* Procedures that are performed on the floor and how often. Be specific.

- \* Who performed these procedures?

It is a good idea to keep a daily log of the maintenance procedure. Designate one individual to keep track of the log and have him perform routine inspections of the floor and record what he found during his inspections. If a legal suit is filed this information will be quite helpful in proving you are competent and hopefully not at fault.

5. Get slip/fall insurance. Every building owner should carry slip/fall insurance. Some of the products used on the floor will also carry slip/fall insurance. This insurance is designed to protect the coating manufacturer and you should not rely entirely on theirs. Get your own policy.

### ***What to do when some falls***

*O my, someone just slipped and fell, what should you do?*

1. Treat the victim with kindness and courtesy. Do not administer medical treatment unless you happen to be qualified to. If necessary call an ambulance. Also offer to call their family. Show care and concern.

2. Look at the victim's clothing and especially his/her shoes. Take notice of how worn they are and the overall condition. Once the victim leaves, record this information in your log or on a separate report. This is important; remember it takes two surfaces to slip, if the victim is wearing worn shoes part of the blame may be placed on their neglect.

3. Look carefully at the area where the victim fell. Is there water, grease, a banana peel? Record in the log any thing you find.
4. Did any one else see the fall. If so, take a statement from them. Record this in a special report and get their name, address and phone number.
5. Record the time and location of the fall. Pay special attention to the weather conditions. Was it raining or snowy?
6. Did you notice how the victim walked. Did he/she stumble or appear as if they were under the influence of alcohol or drugs. If possible record their behavior and how they walked or ran before the fall.
7. If you have a camera, take pictures of the victim and the area where they fell.
8. Fill out an accident report and do not leave out any detail. Use a separate sheet of paper if necessary.

Following the above suggestions will help considerably when involved in a slip/fall case. Your attorney will love you for it.

### ***One Final Word***

The legislation and rules concerning COF and slip/fall can and probably will change. It is a good idea to consult with an expert in slip/fall and to keep up to date with any new rule, law or recommendation that may sneak up.

### ***COF-Coefficient of Friction***

Slip resistance is measured by the ratio of forces required to move one surface over the other under a given vertical force. In other words, it takes two surfaces to determine slip resistance. The floor tile is one surface and the bottom of ones shoe is the other surface. This ratio is what we call the coefficient of friction (COF). COF can be measured in two different ways and can cause confusion amongst those unfamiliar with the science of slip resistance. When the COF is measured from a resting position it is called the “Static COF”. When it is measured when the surfaces are in relative motion it is called the “Dynamic COF”. The dynamic COF is very difficult to measure and almost all portable and laboratory meters measure only the static COF. It is important to know this difference since you will see both measurements in the literature. Most measuring devices (slip meters) will refer to the static COF. The measurements you will find in the literature and those discussed here will be the Static COF. A COF of 0.5 is considered to be a slip resistance surface. The higher the COF the less slippery the surface. It is possible to have too high a COF. In other words the surface can be to slip resistance and an individual would find it difficult to walk on.

### ***How to Measure Slip Resistance***

There are basically two types of machines that can measure static COF, Permanent laboratory models and portable field models commonly refer to as pull meters. The most popular and widely accepted laboratory slip meter is the James Machine. The James Machine uses an 80 pound weight that is applied through an arm to a leather shoe placed on a panel. The panel and the leather shoe are moved horizontally. The distance the panel moves before slipping is measured and recorded on a chart and is the coefficient of friction. The James Machine was invented in 1940 and was the machine which established the 0.5 COF as the minimum for slip resistance. This standard was accepted in 1953 by the Federal Trade Commission. Many still consider the James Machine as the only true slip tester.

There are also many portable slip meters on the market which claim to measure the static COF. The American Society for Testing and Materials (ASTM) recognizes several portable meters. When purchasing these meters make sure they comply with ASTM C-1028 which is the recognized slip test for tile flooring. For further information on slip meters contact ASTM at the following address: 1916 Race Street, Philadelphia, PA 19103-1187