

Slip-resistant and structured floor coverings

in kitchens, catering or food processing as well as other wet-loaded areas in the food industry

Proper and thorough cleaning is undoubtedly an essential part of the ongoing maintenance of commercial and industrial surfaces in food processing plants, commercial kitchens, the beverage industry, butcheries, slaughterhouses, the dairy industry etc. This is the only way to make sure that the floor remains safe and uncontaminated throughout its lifetime. It is very important to have an overall clean and hygienic environment in these areas. Effective cleaning thus plays a crucial role in ensuring that a non-slip floor covering performs as expected.

The slip resistance of a coating in areas with a medium to high risk of slippage secures the connection between the foot and the floor, even if it is dirty. If the floor is kept clean, the grit on the surface is large and numerous enough to protrude through the dirt and to reduce the slip hazard as a consequence. However, if the floor is not cleaned properly, a dangerous layer of e.g. dirt, grease, surfactants or other contaminants can form, which in turn increases the skid risk.

In addition to being anti-slip, floor coatings must not impair the quality of the processed food, should meet the highest hygiene standards and withstand a variety of loads. One advantage of jointless and non-porous coverings is that they do not provide any breeding ground for germs and bacteria. To meet the sanitation requirements, very effective cleaning agents and disinfectants are used in practice. A high chemical resistance should thus ensure that the floorings do not stain as a result. Floor surfaces exposed to thermal loads require an extremely heat-resistant coating; so does the use of steam cleaners, even if such equipment is not always optimal. Constant wetness and hot water exposure in washing areas of breweries, wineries and fruit presses put extreme stress on the floor. To ensure occupational safety in these permanently wet conditions, the coverings must be equipped with a slip-resistance grade of at least R11 to R13. In the case of large, extensive as well as punctual mechanical loads, the floors need to be impact and wear-resistant in addition to having an attractive appearance. Jointless coatings also reduce noise caused by transport carts, trolleys and conveyor vehicles, etc.

Cleaning is often clearly specified, e.g. by an HACCP hygiene management system. According to Regulation (EC) No. 852/2004, the manufacturer who produces, processes or places food on the market is obliged to introduce a hygiene management system in accordance with the HACCP principles (Hazard Analysis and Critical Control Point), which is a management tool to ensure food safety.

DIN 10516:2020-10 is intended to ensure that hygienic conditions are met and that food handling is facilitated. In order to comply with the obligation to clean and disinfect, it serves as a guideline for action. It is basically aimed at all areas of the food industry. However, the measures to be taken should be entirely adapted to the respective conditions on site and the type of products or processes.

Preventive measures

If possible, floor coverings should only be installed after all other trades. Otherwise, the coating must be protected from damage while construction work is still in progress. Soiling from cement, plaster, etc. is difficult to remove due to the structured surface. If the floor is to be covered for a longer period of time, make sure that no liquids get between it and the cover.

Cleanliness and hygiene are a must

Industrial hygiene starts with cleaned floors and entry areas that help to keep them clean. In any food industry company, access points must be safe and hygienic. This includes planning cleaning measures for the workplaces, but also for the work equipment. From the social rooms to the production facilities over to the storage and transport of food: each stage of food processing has its own distinct hygiene regulations. Custom-fit technical equipment helps to maintain operational cleanliness across all stations of a food production plant.

Clean floors are an important factor for industrial hygiene. Dirty shoes or their sole edges can carry soiling, bacteria and germs into the food area. Therefore, entrances should be equipped with various clean run zones, e.g. sole cleaning devices. These can remove dirt with rotating brushes. At the same time, they disinfect the soles and edges of the footwear.

In addition to prophylactic sole cleaning, floor drainage systems ensure that surfaces in food production or kitchens are easy to clean and safe to walk on. They are designed to prevent large amounts of water from remaining on the floor, and thus reduce germ foci. For safe cleaning and flexible adaptation to the floor covering, they should be made of stainless steel and also comply with local hygiene requirements.

Cleaning and disinfection

For hygienic cleanliness, we would like to give you the following recommendations on cleaning and sanitation. Which measure should take place when and how is usually written in the property's cleaning and disinfection plan.

Floors, facilities, equipment and machines are cleaned with the help of detergents to remove dirt or germs. Cleaning is usually part of the daily work in a company and at the same time a prerequisite for good food hygiene.

A differentiation is made between:

- **Maintenance cleaning** (= maintaining operational processes, end-of-day or intermediate cleaning).
- **Basic cleaning** (= thorough special cleaning) and
- **Disinfection** (= killing germs to break infection chains).

Regular disinfection is not required in every company of the food industry. However, in facilities where perishable food is processed, it may be necessary to remove any remaining bacteria. Since disinfectants usually only have a limited cleaning effect, floors must be thoroughly cleaned before disinfection.

In addition to manual floor and surface cleaning in food processing plants or kitchens, mechanical methods such as spraying, foaming, application of gels and CIP (Cleaning in Place) are also used.

Spraying of floor surfaces is often done with high-pressure (approx. 25 to 120 bar) or low-pressure (< 25 bar) equipment, taking into account the resistance of machines and installed electrical components to such measures.

Increased pressure and improper handling can cause damage to material and floor as well as favour aerosol dispersion: dirt particles or microorganisms might be sprayed over long distances and thus also pose a hygienic hazard. These risks can be reduced by making some adjustments, e.g. to the type of nozzle, the water volume flow or the spraying distance and angle.

Important note:

Spraying floors with high-pressure cleaners without sufficient distance and at high pressure has a blasting effect and can damage the covering. Cleaning drains with water under high pressure must be avoided.

On floors, especially those with non-slip properties, cleaning can also be carried out with rotating brushes.

Practical experience in companies has shown that the more slip-resistant the flooring, the greater the cleaning effort. Smaller areas can perhaps still be cleaned with scrubber and brush, or a microfibre scrubbing mop, but for larger floors with stubborn soiling or heavily textured and rough surfaces, cleaning machines have proven their worth and are recommended.

There is a wide variety of different machinery on the market for every purpose. They range from machines with contrasting brushes or discs (scrubbing machines, scrubber-driers), roller and sweeping-scrubbing machines to low and high-pressure cleaners. Their use can already be economical on smaller areas. Automatic scrubber-driers should be equipped with soft brushes. Machine pads such as super pads may not be used for cleaning very rough floor coverings. Machines with roller scrubbing heads have a high contact pressure due to the small surface of the brushes, which makes it easy to achieve the desired cleaning result on textured floors. Scrubber-driers have a suction system that collects the dirty water. This way, the floor is immediately dry and can be walked on again.

With an innovative low-pressure foam cleaning system, hygiene-sensitive surfaces can be efficiently cleaned and disinfected at the same time. So, one single machine can handle all cleaning tasks. Additional elements such as nozzles for rinsing, foaming and brushing allow further adjustments to the required type of cleaning and thus ensure comprehensive hygiene. Further advantages are the short watering times, the individually adjustable water pressure, the favourable thermal energy utilisation in the rinsing water as well as the avoidance of recontamination due to the absence of aerosols.

An example of mechanical floor cleaning

Surfaces in large kitchens, canteens or other catering facilities are a special challenge. To prevent work accidents, the slip resistance for these areas must be set between grade R11 and R13. Such structured floor coverings have a defined displacement space so that water does not pose a slip hazard. However, grease and food residues that accumulate during the working day can also settle on the floor.

Carrying out cleaning:

1. Remove loose dirt from the floor with a coarse broom or scrubbing brush.
2. Lather the floor with a suitable cleaning agent.
3. Proceed with mechanical cleaning, e.g. using an automatic scrubber. Areas that are inaccessible to the machine, such as edges or corners, must be cleaned manually with a soft brush or mop.
4. Dry the surface by thoroughly vacuuming up the cleaning liquor.
5. Clean the floor drains superficially and free them from rough dirt.
6. Soap the drains and grids, remove them and rinse them by hand.
7. Also clean the drain pans manually by scrubbing. Then rinse them with clear water.
8. Empty the filter basket and clean it.
9. If necessary, disinfect the floor surfaces once a week or according to the cleaning and disinfection schedule.

Important note:

- *The disinfection efficacy can be reduced by biofilms, insufficient cleaning and by dirt (protein error) or detergent residues (soap error) as well as as water remaining on the surface after cleaning (dilution effect).*
- *Avoid puddle formation. These are a slip hazard and possible culture medium for germs.*
- *Always make sure that the floor surface dries well. Ventilate the rooms as much as possible.*
- *Pre-rinsing, main cleaning and post-rinsing should be done with drinking water according to the Drinking Water Ordinance.*
- *Disinfectants (e.g. combinations of hydrogen peroxide and peracetic acid) are sometimes classified as aggressive chemicals and can attack floor coverings if not used properly. The type of products used, their concentrations and exposure time should always be coordinated and adhered to.*

Mildly alkaline to alkaline foam or liquid cleaners are often a good choice for cleaning floors and walls in food processing facilities, as they completely remove oil, grease and protein soiling.

Limescale and mineral dirt can be easily removed with acidic detergents. For this purpose, we recommend liquid or foam cleaners based on phosphoric acid, amidosulphonic acid, methanesulphonic acid or citric acid in a pH range of 0.5 to 3.

When cleaning the floor, always look out for corrosion damage caused by equipment or machines that come into direct contact with the floor and cannot be moved to the side or out of the room for cleaning.

Only use disinfectants that have been tested and found to be effective.

Disinfectant lists can be obtained from:

- DVG (German Veterinary Medical Society, "Deutsche Veterinärmedizinische Gesellschaft")
- DGHM (German Society for Hygiene and Microbiology, "Deutsche Gesellschaft für Hygiene und Mikrobiologie")
- DLG (German Agricultural Society, "Deutsche Landwirtschaftsgesellschaft")
- IHO (German Industrial Association for Hygiene and the Protection of Surfaces, "Industrieverband Hygiene und Oberflächenschutz")

To avoid the development of microbial strains that have a tolerance to certain disinfectants, these should be changed from time to time or their concentration temporarily increased if necessary. Surfaces that come into direct contact with food must be rinsed with clear water after exposure time.

Important note:

- Cleaning agents and disinfectants must not be mixed with each other! This can lead to undesirable chemical reactions with serious consequences (reduction of effectiveness, gas formation, deflagration, etc.). Combinational products (cleaning agents with both bactericidal and virucidal effects) are also available on the market.
- When using cleansers and disinfectants, the manufacturer's instructions must be strictly followed.

The cleaning of PU concrete flooring

There is no one-size-fits-all solution or perfect cleaning method. The conditions prevailing in the respective area must always be taken into account, such as the expected impact of the substrate type, the soiling, the building structure, the stress caused by installation and cleaning, as well as mechanical loads (from vehicles, load carriers, pallets, boxes) and humidity.

Floors for beverage production and bottling, for example, must be particularly resistant to permanent moisture and chemicals. In breweries, wineries, fruit presses and other beverage processing plants, PU-Concrete is used primarily for its abrasion resistance and impact strength. The thermally resistant floor, which is often exposed to constant hot water or stress from alternating water temperatures – especially in washing areas – meets the occupational health and safety requirements for continuous wetness on a high level.

Storage and fermentation cellars are usually equipped with this type of coating, as its high chemical resistance prevents stains on the floor. Residues of wine, juices or beer can be easily removed. The floor also resists chemical cleaning agents and disinfectants. PU concrete is likewise resistant to high areal or punctual mechanical load, e.g. from machines, vehicles, barrels or pallets, making it one of the most hard-wearing floor coverings.

Cleaning PU-Concrete with high-pressure cleaners is possible in principle. However, too high pressure and temperatures can still damage the surface of the covering. To ensure that the flooring can withstand the equipment settings, we recommend carrying out a test cleaning. If possible, work with low pressure and moderate temperature that are adapted to the conditions.

A few more notes:

- Make sure you know what is happening on your floor and which cleaning method is suitable.
- With the wrong cleaning measures, problems with hygiene or slipperiness as well as deterioration in the appearance and quality of the flooring can occur due to increased dirt accumulation.
- Like the floor covering itself, the castors of trolleys, load carriers or rolling shelves need to be cleaned regularly and checked for proper functioning.
- To avoid damage to the flooring, do not move heavy objects (boxes, transport containers or e.g. cooking utensils) back and forth on the floor.
- Do not use your new reactive resin flooring too soon. Often, the surface is permanently damaged already in the first few days of use, making cleaning difficult throughout the entire life of the floor covering.
- Talk to your cleaning company or the manufacturer of your cleaning products / machines about this cleaning recommendation.
- We accept no liability for the execution of the cleaning, the detergents and care products used or their mode of action, nor for the fulfilment of what is expected from them.

Suitable cleaners for cleaning non-slip, structured floor coverings in kitchens, canteens, food processing and food industry areas can be requested from KLB Kötztal Lacke + Beschichtungen GmbH.

We hope that this has provided you with sufficient information on how to clean slip-resistant and structured coverings, and wish you much pleasure with your flooring.

By handing over these cleaning and maintenance instructions, the floor installer fulfils his obligation according to DIN-VOB 18365 Flooring works. The recognised rules of craftsmanship as well as the current state of the art shall apply.



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