



Sikafloor® FOOD & BEVERAGE FLOORING SURFACE SELECTION GUIDE

BUILDING TRUST



FLOOR AND INTERIOR DESIGN FOR FOOD & BEVERAGE FACILITIES

Whether it's a winery, packing facility, bakery or bottling operation, each food and beverage processing plant has rigorous requirements for flooring, walls and ceilings. Adding to the complexity: freezers, production lines and raw-material processing and storage areas have additional and highly individual requirements of their own. More complicated still is the realization that a multitude of surface options are available, particularly for flooring, which can make choosing the right system challenging at best.

What should you think about in evaluating surfaces for your facility? The following checklist can help guide you through the decision making process.



MATCHING UP TO INTENDED USE

Consider a slaughterhouse. It's not uncommon for heavy hooks to fall to the floor, or for heavy equipment to get knocked over. Clearly, this is not the place for a flooring system with low impact resistance. Similarly, floors with low chemical resistance not only wear down faster, but can also create "traps" where bacteria and viruses can hide. In storage areas - freezers and harborage, for example - flooring must possess adequate mechanical resistance and substrate adhesion to handle the constant wear and abrasion from frequent forklift journeys and other traffic.

Further stresses can be caused by temperature shock, either accidental - such as hot grease falling to the floor during potato chip production - or intentional, such as washdowns. Washdowns use liquids that can often reach the temperature of steam. Here the flooring system in place must be able to withstand frequent, rapid and often extremely wide temperature swings.

The take away: when evaluating floor and wall systems, do your research to ensure that they will stand up to the demands of their intended space.



PERSONAL SAFETY

In 2013, the National Safety Council reported that 20% of work-related injuries resulted from slips or falls, accounting for 12 - 15% of all workers' compensation expenses and costing employers an average of \$40,000 per incident. Slip and fall injuries tend to occur most often in areas where meat, fruit, vegetable, fats and other residues are present. While it may be impossible to keep these residues from falling to the floor in the first place, your company can choose flooring that has an optimal combination of texture and washability to keep your employees safe and your facility incident-free.



FOOD SAFETY AND HYGIENE

Food safety and hygiene have become increasingly top-of-mind with consumers, industry, regulators and other stakeholders. Most recently, the Food Safety Modernization Act (FSMA) has raised the bar on food safety across all segments of the industry from raw material suppliers and producers to distributors and retailers.

And for good reason, because the hazards are real:

- ➔ More than 200 diseases are known to be caused or carried by food.
- ➔ The World Health Organization (WHO) reports that, every year, deaths attributable to food-borne diseases run into the hundreds of thousands.
- ➔ A 2010 global study reported an estimated 582,000,000 cases of food illness involving 22 different diseases and causing approximately 351,000 deaths.

As consumer preferences change, technology has for the most part kept up. For example, in response to the demand for more nutritious and better tasting food, industry has responded with a number of milder processing and preservation methods. New processes and machines have increased nutritional and sensory properties while making sure that what reaches your plate is safe to eat.

But innovation must also occur underfoot and all around. The facility itself has to be designed and constructed in ways that prevent any possibility of food contamination.

Choosing the right flooring, walls, and other surfaces can make this happen. Seamless flooring that is easy to clean and sanitize works actively to remove any viruses and bacteria that might be present and denies harbor to other pests thinking of moving in.

THE LIFE EXPECTANCY OF ANY SURFACE FINISH IS RELATED TO WEAR. TO ENSURE THAT A SURFACE CONTINUES TO LOOK GOOD AND PERFORM WELL OVER ITS EXPECTED SERVICE LIFE, CHOOSE A PRODUCT DESIGNED AND FORMULATED TO WITHSTAND THE INTENDED USE OF THE SPACE.



DURABILITY

A durable floor is one that resists deterioration and loss of performance. Durable floors feature quality materials, good design and sound workmanship throughout. The whole floor structure and each of its components (sub-base, load carrying slab, and upper protective layer) are interdependent and work together to provide the required levels of performance and durability. If the ground and sub-base fails, for example, the concrete slab may crack under heavy loads. Similarly, if the coating has limited resistance against chemicals, it may not be able to protect the slab underneath against deterioration.

The life expectancy of any surface finish is related to a combination of mechanical, chemical and thermal stresses. These must all be taken into account when designing and installing flooring that is neither under-built nor overbuilt, but ideal for the application at hand.



FUNCTIONALITY AND DETAILS

Durability, ease of cleaning, slip-resistance, and chemical resistance are critical functional aspects of industrial flooring, yet of equal importance is floor detailing (grills, ramps, slopes, etc.) and other attached structures.

Take floor drainage systems. Regardless of the cleaning method chosen, high quality and well-positioned drains are needed to remove chemicals and water from floor surfaces, and as such are an integral part of every cleaning and sanitation process. Consider sloping and falls, which should also be configured to minimize impacts on ergonomics, economics, hydraulics and hygiene.

Floor falls should be as simple as possible, and watertight coves joining floor edges to walls are important to facilitate cleaning. Additionally, floor joints, which typically represent the weakest parts of a floor, should be positioned away from activity areas.



MAINTENANCE

Many companies employ the HACCP (Hazard Analysis Critical Control Point) approach across all major areas of production. HACCP is a management system in which food safety is addressed through physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product. Cleaning and sanitation are key parts of HACCP. The principles are common to all food processing facilities, but the method and frequency of cleaning and sanitation will differ from one manufacturer to another depending on the type of food that is produced and handled.

Cleaning and sanitation of floors has in fact become a sub-specialty because it must take into account an expanding constellation of variables - as well as the occasional trade-off. For example, an enhanced surface profile (a rougher finish) will improve slip-resistance but may also require more frequent and vigorous cleaning than a perfectly smooth surface. Likewise, areas subject to oil and degreasing may need detergent solutions to be applied, agitated and left in contact with the floor for a specified length of time before being rinsed and removed, which can increase downtime.

The devil is often in the details. High temperature and/or high pressure hose cleaning is another popular sanitation method, but not all floor finishes are able to tolerate extreme temperatures or pressure. If aggressive cleaning agents are used instead, they may cause damage to the floor, depending on its type. While tiles are highly chemical resistant, the grout used to connect them may not be. Synthetic resins, on the other hand, are resistant to a wide variety of chemicals, but some may suffer bleaching from prolonged exposure to certain types, such as CIP solutions.

It's critical to keep in mind that, when selecting the floor that's right for your facility, the effective maintenance of the floor must also factor significantly into your decision.



TOTAL COST ASSESSMENT

Because flooring is one of the last items to be installed in food-plant facility construction, it runs the risk of being downsized in value and scope in favor of such items as equipment, which are considered more critical.

Yet of all elements in a food processing plant, flooring is arguably the most visible and one of the most vital contributors to the success of a food operation. Skimping on installing appropriate flooring because of unexpected budgetary restraints or overruns could cost the operation dearly in the long run in terms of slow processes, downtime, accidents, etc.

When calculating the capital efficiency of a floor, wall, or ceiling, it is important to separate the initial "hard" costs, including materials and installation, from ongoing maintenance costs, which over time can easily exceed original procurement and installation costs. For while a less expensive floor may save a company at the outset, it may in fact result in significant hidden costs downstream. Like production machinery, flooring should be regarded as an equal component of the life cycle cost of operating a plant.



SUSTAINABILITY

Whether constructing or renovating, an important thing to consider is the volume of volatile organic compounds (VOCs) emitted by various floor, wall, ceiling and other finishes. Some emit more VOCs than others. Selecting flooring materials that meet or exceed low VOC emission standards helps keep your air clean, which results in safer food production and a healthier working environment for employees.

Materials should also feature low odor transfer potential and little or no smell, especially during the application process. This requirement is more important for some installations than others. Take a production plant for infant dry milk powder. In addition to using HEPA filters to purify the surrounding air, flooring will likely need to be made from certified Clean Room Suitable Materials (CSM).

The ISO 14040-2006 environmental management standard for Life Cycle Assessment (LCA) is a worthy source of further information about these and other sensitive environments.



QUALITY ASSURANCE AND CERTIFICATION

Like most products, floor and wall coatings typically come complete with a warranty. Before purchasing, be sure to go over said warranty in detail - including all the fine print. Warranties protect you against manufacturing defects, but it's your job to make sure the company you're dealing with has the ability to back up its warranty obligations.

Then dig deeper. Find out what kind of quality management system the company has in place. ISO 9001, for example, is commonly used to assure uniformity in manufacturing and adherence to a product's published specifications. Look for relevant engineering certification. Installing flooring and hygienic wall coatings is highly specialized work that requires specific knowledge and skills. Such due diligence extends to installation. Make sure your crew has been properly trained and certified to install your particular system.

Regarding the system, look for labels indicating that the product has been independently certified to internationally recognized quality standards. Make sure the supplier has all relevant test reports available and fulfills all statutory requirements. Finally, if you're interested in extending your warranty, investigate your options.



REFERENCES

References are a non-negotiable part of the decision making process. Every flooring supplier must be able to provide a list of satisfied customers. Call and / or visit them. There's no better confidence builder than getting a first-hand look at the quality construction and installation of the floor you're considering for your facility.

Sikafloor® RESINOUS FLOORING

ABOUT THE AUTHOR

LARRY GETZ

VERTICAL MARKET MANAGER - FOOD & BEVERAGE

Larry Getz is an industry recognized expert on FSMA regulations as related to hygienic floor and wall systems. Along with being Certified Food Safety Auditor he is a published author and a frequent presenter of food safety and hygiene topics at industry conferences.

For over twenty years, Larry Getz, Sika's Food and Beverage Vertical Market Manager, has advised major food and beverage industry entities, such as Nestle Foods, The Kroger Company and Kellogg's, in designing and implementing hygienic floor and wall systems in their FDA and USDA inspected facilities.

Larry also holds certifications from ICRI/NACE and is available to share his extensive project management knowledge with you on your next new installation or retrofitting project.



Sikafloor's Industry Expert Panel is on hand to provide free, expert assistance and consultation when designing floor and wall projects for the food and beverage, pharmaceutical, healthcare, life sciences, data center, educational and other specialty industries. Mr. Getz may be contacted via email at: info.flooring@us.sika.com to arrange a free consultation.



Request a copy of the food and beverage issue of Sika's FloorWard Thinking magazine at usa.sika.com/foodandbeverage

WHO WE ARE

Sika AG is a globally active specialty chemicals company. Sika supplies the building and construction industry as well as manufacturing industries (automotive, bus truck, rail, solar and wind power plants, facades). Sika is a leader in processing materials used in sealing, bonding, damping, reinforcing, and protecting loadbearing structures. Sika's product lines feature high quality concrete admixtures, specialty mortars, sealants and adhesives, damping and reinforcing materials, structural strengthening systems, industrial flooring as well as roofing and waterproofing systems.



Sika Corporation • Flooring

201 Polito Avenue
Lyndhurst NJ 07071
Tel: 800 933 7452
www.SikaFloorUSA.com

BUILDING TRUST

