RESINWERKS™
FLOOR COATING SYSTEMS

WWW.RESINWERKS.COM

MANUFACTURER's GUIDE

Key areas to consider when evaluating flooring options for Breweries, Commercial Kitchens, and Food Manufacturing Facilities.

FOOD & BEVERAGE FLOORING

Design the Right System for Your Food & Beverage Processing Facility

Resinwerks:
7270 Gilpin way #100 Denver, CO 80229
(720) 484-5160, contact@resinwerks.com

Overview

Commercial Kitchens, Breweries, Bottling & Food Manufacturing facilities all have unique flooring challenges. In addition to standing up against daily wear and tear from foot traffic, food & beverage flooring must protect against persistent thermal cycling, excessive moisture & chemical attack. Food & beverage flooring must also be easily maintained while helping to prevent microbial growth.

This guide will outline some of the main considerations to account for when designing a flooring system for food & beverage applications.

Contents

Learn more at:

https://www.resinwerks.com/food-beverage

About Resinwerks

Resinwerks manufactures sustainable resinous flooring systems that are safer for our planet, the facilities who use them, and the contractors who install them.

SERVICE & SUPPORT

We understand that you have many choices when it comes to selecting a resinous coating manufacturer and have great respect for the level of trust extended to your suppliers.

Our veteran team of NACE certified coatings inspectors shares over 40-years of resinous flooring installation experience and is dedicated to helping you design, specify and install the perfect floor for your application.

Our experts assist you every-step of the way to ensure that you receive the best value, durability and performance.

PRODUCT DEVELOPMENT

Our systems utilize decades of industrial coating formulation and manufacturing experience.

We have engineered our epoxies, polyurethanes and polyaspartic coatings to be safer to work with while improving long-term durability.

Many of our products feature plant and water-based elements that perform better than traditional coatings while also reducing a project's carbon footprint.

For our clients, this means less hazardous emissions, better results and superior long-term performance.

SUSTAINABILITY

Our product line was designed from the ground up to focus on the very latest in environmentally conscious resins and additives.

The ongoing health and safety of you and your team is of the upmost importance. We have made significant advancements in effectively substituting water for harsh solvents, making them safer to use and better for our environment. The result? Over 90% of our products are voc-free and the remaining products are fully voc-compliant throughout North America.

MANUFACTURING CAPABILITIES

Resinwerks is fortunate to have some of the leading minds in the resinous flooring industry as part of our team. We are consistently innovating and bring the very latest technology and products to market.

We provide our customers with fair, manufacturer-direct pricing with no middle-man.

Resinwerks ships out of three convenient fulfillment centers located in Colorado, the Upper Midwest and Boston.

Design Considerations

The USDA has outlined general guidelines that require food & beverage processing floors to be “built of durable materials impervious to moisture and be cleaned and sanitized as necessary”. These floors should be designed to inhibit microbial growth wherever possible. In addition, state and municipal code may have additional requirements for areas such as a floor’s perimeter cove base and sloping to drains.

Based on that general criteria, there are many flooring alternatives that could satisfy USDA guidelines. However, there are several additional components that need to be evaluated.

Selecting the appropriate flooring systems for your application will account for daily wear and tear as well as exposure to periodic maintenance procedures.

cold storage facilities are common resinous flooring applications

Grease & Other Contaminants: Exposure to grease introduces a host of issues for any food & beverage environment. It is important that any flooring system have the capability to stand up against grease contamination as well as the cleaning protocols in place to remove grease on a daily basis.

Non-Slip: Food & Beverage flooring systems should be designed to withstand heavy foot traffic and provide operators with adequate slip resistance. These floors must also not be so rough as they trap contaminants and become a maintenance challenge.

Equipment: Equipment, especially in commercial kitchen settings will greatly influence what flooring system is selected. Is the equipment on casters or is it stationary? How will areas under the equipment be treated and what precautions need to be accounted for near ovens or in food preparation stations? These are all questions that must be answered at the onset of any flooring project.

Minimizing Bacteria Growth

Maintaining a sanitary environment is of the upmost importance within food & beverage settings. Flooring systems should be non-porous, and not contain any voids that can help promote bacterial growth. Bacterial contamination is especially present in floors with multiple seams or floor to wall transitions that are not properly addressed. Given the warm and wet environment common to food & beverage applications, microbial growth can appear quickly and spread throughout a facility if not treated properly.

grease and contaimnant build-up can lead to tile grout failures and eventual delamination

voids or pockets in a flooring system that collect water can harbor bacteria and cause severe flooring issues

Seamless Flooring Limits Bacteria Growth

Seamless floors offer the optimal solution for food & beverage flooring as well as for other applications requiring sanitized flooring. These systems eliminate any potential pockets or crevices that can harbor moisture and promote microbial growth. For quarry tile applications, grout can often become completely saturated with bacteria, making the surrounding area difficult to clean and leading to decomposition of the grout itself. Seamless resinous flooring eliminates these grout lines, providing for better long-term sanitation and performance.

Anti-Microbial Additives

In addition, fluid applied seamless flooring materials may also be fortified with anti-microbial pigments. Common anti-microbial additives incorporate silver ion and other elements that help to inhibit the spread of bacteria on a surface. These additives have been used for years in architectural paints, medical supply and other sanitary applications to to help stop the spread of bacteria.

Thermal Shock & Flooring

Thermal shock refers to the exposure of a surface to sudden and significant changes in temperature. In a food & beverage flooring application, this is often used in the context of hot water or pressure steam cleaning a surface for disinfectant purposes. This persistent thermal cycling from hot to cold temperatures can cause cracking, peeling and delamination of the flooring system.

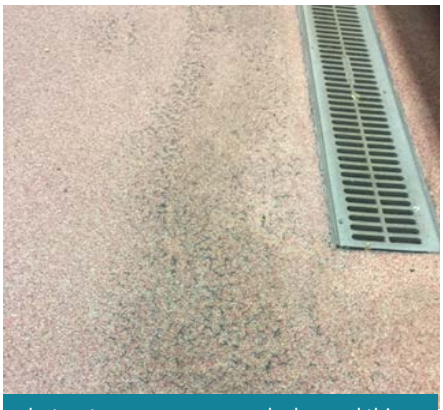
Hot Water & Steam Cleaning
While quite effective, hot water or steam cleaning exposes flooring surfaces to significant thermal shock.

This is often a regular occurrence as part of daily maintenance procedures. Excessive and consistent thermal shock will cause the substrate and protective flooring system to expand and contract at different rates, effectively pulling itself apart. Flooring systems in these settings should effectively dissipate the heat and if needed, expand and contract at similar rates to the concrete substrate.

persistant expansion and contraction resulting thermal shock can cause tile grouts to fail and seperate

Not All Floor Coatings Are Created Equal
In addition, epoxy floor coatings, if not properly designed will also easily fail. In these cases, thermal shock will cause the floor coating and underlying substrate, usually concrete, to expand and contract at different rates.

This persistent kinetic motion eventually causes the coating to pull itself apart from the concrete leading to spider cracks, contamination and eventual failure. This same type of a scenario is common with epoxy and other heavy-duty grouts within quarry tile applications.



hot water exposure severely damged this existing epoxy coating

thermal shock caused spider cracks as the coating pulled itself apart

once contaiminated the cracks began to delaminate and lead to flooring failure

Maintenance & Long-Term Performance

One of the most common ways in which flooring systems break down within commercial food & beverage environments is due to the exposure to grease, oils and the maintenance programs designed to remove them. Harsh chemicals and enzymatic cleaning agents can cause a host of issues for inadequate flooring applications.

Grease & Oils

Grease and Oil are common within most kitchen type settings. When left unchecked, they can be extremely damaging to many types of commercial flooring systems. From a maintenance standpoint, preventing grease and oil contamination requires aggressive and consistent cleaning by kitchen & maintenance staff.

Harsh Chemicals:

Commercial kitchens and other food & beverage facilities utilize a host of harsh chemicals to help maintain sanitary environments over the long-term. It is important that any flooring system be resistant to solvents, acids and alkalis.

Enzymatic Cleaners:

Today's restaurant maintenance protocols rely on a variety of cleaning agents, some more aggressive than others. One common cleaning method includes the use of enzymatic-based "no-rinse" cleaners that are designed to consume grease, effectively cleaning the floor with minimal scrubbing.

Since the release of these enzymatic cleaners, restaurant owners and facility managers began noticing significant flooring failures and aggressive deterioration of grout in quarry tile. These failures in some cases have occurred just over the span of a few months.

The culprit is Oleic Acid. In addition to being common in all types of cooking oils, Oleic Acid is also a prevalent byproduct of enzymatic cleaners. These types of failures can be extremely expensive and time consuming to repair. If not treated in relatively short order, these failures can lead to far more serious bacterial contamination and other failures.

What is Polyurethane Concrete?

Polyurethane Concrete is a highly durable, seamless resinous flooring systems that is designed for heavy-duty applications. It combines 2-part polyurethane technology with portland cement, aggregates and other additives to create a highly functional resinous matrix. These systems are commonly used in all types of industrial applications and can be modified to varying thicknesses, textures and cure schedules to meet the needs of a particular application.

Protecting Against Thermal Shock

Polyurethane concrete offers exceptional long-term resistance to thermal shock. The chemical and physical nature of this material is not only highly durable, but also superior at dispersing sudden changes in surface temperature. Available in thicknesses ranging from 1/8" to multiple inches, polyurethane concrete will absorb thermal shock and retain its integrity through daily hot water and steam cleaning. These heavy-duty systems are suitable for the most aggressive environments and are ideal for food & beverage applications.

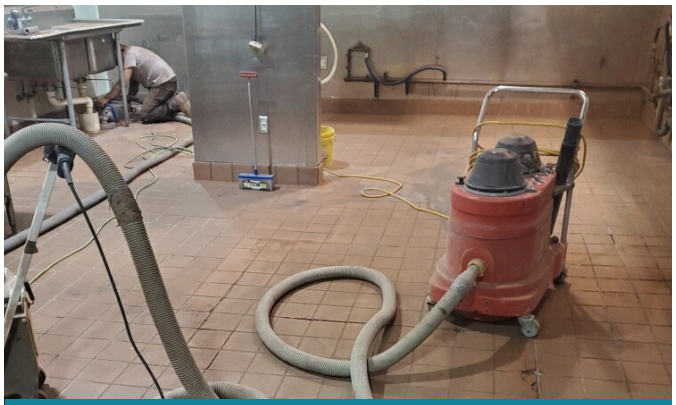
Polyurethae Concrete application over properly prepared concrete substrate.

Seamless, Chemical Resistant Finish

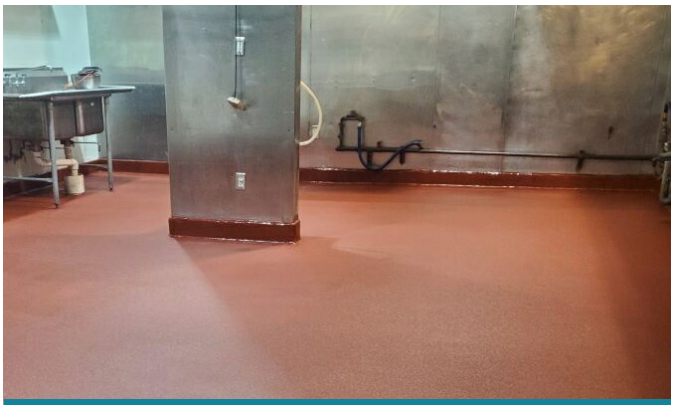
To help ensure long-term performance, it is critical that any modern food & beverage flooring system be chemical resistant and free of any voids or pockets that may promote bacterial growth. Polyurethane concrete systems provide for a completely seamless system that is resistant to attack from lactic acid, oleic acid and bacteria. It is also resistant to other caustic chemical chemicals common to food & beverage settings.

Effective Drainage & Slip Resistance

To help prevent the pooling of water and the promotion of an unsafe environment, polyurethane concrete can be sloped to drains or other termination points to help ease maintenance. These applications can also be modified to include the appropriate level of texture needed for high-traffic areas.



Existing quarry tile or concrete may be ground prior to application of polyurethane concrete



Polyurethae Concrete may be applied directly over properly ground quarry tile for a new, seamless finish

Installation of Polyurethane Concrete

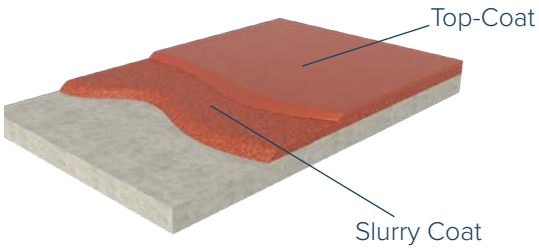
Polyurethane Concrete can be installed directly over existing concrete and structurally sound quarry tile. It should only be installed by an experienced, manufacturer–approved professional resinous flooring contractor. After profiling the existing floor and removing any loose debris, polyurethane concrete will be applied in multiple layers depending on the specification chosen for the environment. The installation may incorporate urethane or polyaspartic top-coats depending on the specification.

Engineered for Food & Beverage

Resinwerks offers a complete line of highly durable and thermal shock resistant resinous flooring systems for food & beverage applications. Our Bio-Cem™ line of polyurethane concrete incorporates plant-based raw material components for an environmentally-friendly and highly functional non-slip floor. It provides a completely seamless and impermeable surface that withstands exposure from hot pressure washing, as well as oleic acid and other bi-products generated from enzymatic cleaners. In addition, food & beverage flooring systems also incorporate anti-bacterial and anti-fungal additives to help maintain a sanitary environment. Suitable for commercial kitchens, breweries, food preparation areas, coolers, food & beverage manufacturing, and more.

Green Bio-Cem™ Polyurethane Concrete applied at a sausage making factory

Bio-Cem™ Polyurethane Concrete



BENEFITS:

- Resistant to thermal shock and thermal cycling
- Moisture tolerant - outstanding for wet settings
- Meets USDA requirements
- Excellent adhesion to concrete
- Will expand and contract with concrete substrate
- Functional Anti-Microbial Silver-Ion Pigments
- Rapid Installation with minimal odor
- Superior resistance to Lactic Acid and Oleic Acid
- Optimal performance with Enzymatic cleaners
- Slip Resistance may be customized
- Solvent-free, bio-based products

ENVIRONMENTS:

- Breweries & Distilleries
- Restaurants & Commercial Kitchens
- Bottling Plants
- Food & Beverage Manufacturing Facilities
- Grocery Store Food Preparation Areas
- Commercial Bakeries
- Industrial Freezer & Cold Storage
- Meat & Poultry processing
- Dairy processing & Packaging
- Industrial Flooring applications

Bio-Cem™ SL
self-leveling 1/8”
broadcast to 3/16”

Bio-Cem™ MF
Mono-Floor™ 3/16”
broadcast to 1/4”

Bio-Cem™ CB
3/16” thick with 3/4” radius
polyurethane
concrete cove base

Bio-Cem TC™
polyurethane concrete
topcoat matrix

CONTACT US

Let us help you design your resinous flooring system for your next food & beverage project. Please contact us today for your free consultation.

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