

Antimicrobial Flooring Facts for the Food and Beverage Industry

Minimising the risk of contamination despite an intense working environment is a primary concern for all food and beverage production facilities and it takes a combination of the right technologies, procedures and priorities to create a space with consistently high levels of hygiene.

One effective way to reduce the likelihood of harmful contaminants building up within a site is to install flooring with bacteria killing properties that works alongside the cleaning regime to eliminate unwanted pathogens, germs and bacteria.

Food and Beverage Flooring Regulations

The base level of floor cleanliness for food and beverage production areas as set out in the Food Safety and Hygiene (England) Regulations 2013 stipulates that floors should be “made from materials that are impervious (i.e. do not allow fluid to pass through) and non absorbent”.

Traditional food and beverage flooring materials such as thermoplastic coverings, terrazzo, epoxy resins and polyurethane screeds all meet the regulation’s criteria thanks to the seamless, non-absorbent and easy-to-clean finish that they create.

However food that falls from the production line onto one of these flooring systems between clean downs can still lead to unwanted bacterial growth. If a spillage happens at the beginning of a shift then it might not be completely washed away until the next in-depth clean takes place several hours in the future, by which point unwanted bacteria growth may have already taken place.

The addition of antimicrobial agents into these types of flooring materials can therefore provide a surface that goes a step beyond the legislative requirements to



provide an enhanced defence against contamination that could otherwise spoil produce and potentially lead to expensive associated costs (such as litigation, downtime, refurbishment, brand damage etc).

Antimicrobial flooring should not be considered as a replacement for an effective cleaning regime, it should instead be viewed as a complimentary asset that facilitates a clean environment.

Combining Polyurethane and Polygiene®

Flowcrete UK has designed the Flowfresh polyurethane screed to provide an antimicrobial option that combines a robust and highly effective flooring material with a world leading biocide to enhance the hygienic credentials of a building and further ensure that dangerous pathogens and contaminants are not passed on to consumers.

To achieve this Flowcrete UK developed the Flowfresh range out of an exclusive global partnership with Polygiene® to deliver an advanced surface protection that eliminates up to 99.9% of bacteria.

The Polygiene® additive is homogenously distributed throughout the Flowfresh system, which means that, unlike synthetic antimicrobial additives or surface treatments, it remains active for the lifetime of the floor even if worn or damaged.

This is a significant advantage for food and beverage facilities where the floor is subject to heavy mechanical impacts on a daily basis, as a damaged floor provides microorganisms with the opportunity to colonise, especially within hard to clean areas sheltered from the cleaning process.

Antimicrobial Activity After 60 Wash Cycles

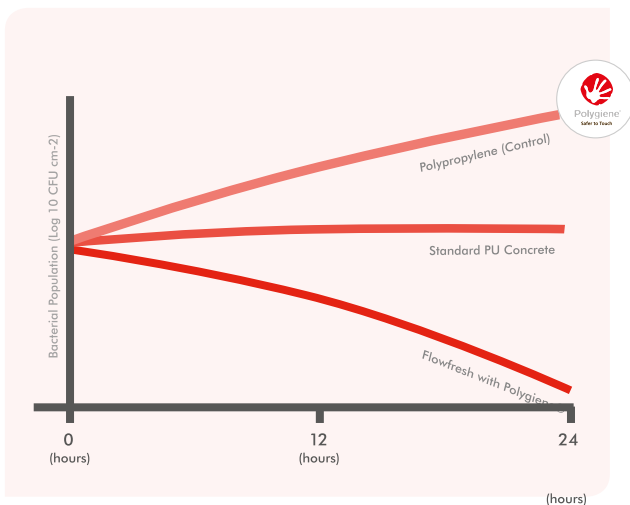


FIGURE 1: Japanese Industrial Standard JIS Z 280: 2000 measures the survival of bacterial cells on cementitious urethane with Polygiene® and compares this to urethane concrete containing no antimicrobial additive and an untreated polypropylene control.

TIP:

Flowfresh meets the Food Safety and Hygiene (England) Regulations 2013.



Should a Flowfresh floor’s surface become damaged then any germs within the gap will still be exposed to the active antibacterial agent.

How Does Polygiene® Work

Typically hygienic floor finishes and coatings will rely on harsh chemicals to kill bacteria, however Polygiene® is an all-natural solution and instead uses the power of silver ions. No other flooring solution utilises the natural germ killing properties of natural silver in this way.

The Polygiene® additive consists of a thermosetting amino compound. Locked into the resin matrix of the flooring material it will continuously emit powerful silver ions over an extended period of time that target germs on the surface of the floor, penetrating the cell membrane of the bacteria and causing irreparable damage to the pathogen. The rate at which the silver ions are released is an important aspect of the effectiveness of silver in such an application.

TIP:
The silver ion additive within Flowfresh can eliminate 99.9% of all germs.



Silver is a broad-spectrum agent, as it is bactericidal to a large number of gram-positive and gram-negative microorganisms, many aerobes and anaerobes as well as several antibiotic resistant strains. Common bacterium that have no defence to Polygiene® include E-coli, Salmonella typhi, MRSA, Listeria welshimeri and Staphylococcus aureus. It also inhibits the growth of yeast and mould on the surface of the floor.

Food and beverage manufacturers that install Flowfresh will also benefit from an effective antimicrobial and antifungal protection between wash cycles, offering clients much longer-term hygiene performance than coatings that wear away after frequent washes.

Antibacterial Effectiveness

Unlike industry standard flooring solutions, such as standard polyurethane concrete or polypropylene, Flowfresh has been scientifically proven to inhibit antimicrobial growth on the surface of the floor by up to 99.9%. Its effectiveness meets both the ISO 22196 and JIS 222801 standards for measuring a surface's antibacterial effectiveness.

The primary ISO standard test involves the inoculation of a population of microorganisms onto sets of antimicrobial coated and standard materials, which are tested in parallel. After 24 hours of incubation the recovery results are compared to ascertain if the antimicrobial material has succeeded in reducing the microbial population.

Described as the 'value of antimicrobial activity', this shows the difference in the logarithmic value of viable cell counts between the treated and untreated floor after inoculation and incubation of bacteria. A secondary test involves washing the floor samples a set number of times to simulate the fact that food production facilities will be regularly cleaned. After the washing the microbial population is again tested to identify if the biocide has been effective or not.

The graph above, based on data compiled during JIS testing, compares the ability of Flowfresh to minimise the bacterial population on the floor's surface with alternative flooring materials. This shows that over a 24-hour period the bacterial population on a Flowfresh floor with Polygiene® has been virtually eradicated, while on a standard polyurethane floor it has remained largely the same and on a polypropylene floor the amount of bacteria significantly increased.

Specification Consultation

Important variables that can impact on the effectiveness of the floor include the type, size, shape and thickness of the antimicrobial coating, which can depend significantly on a site's demands, conditions and circumstances.

To find out more about specifying an antimicrobial flooring solution that optimises a specific facility's hygienic working practises, contact Flowcrete UK to discuss a new-build or refurbishment flooring project or to arrange a site visit.

For more information on resin flooring solutions for Food & Beverage environments, please visit our website at www.flowcrete.co.uk

