

KEY CONSIDERATIONS FOR BREWERY FLOORING

Tips for Flooring Specification in the Brewhouse

Getting the brewery design right is vital to creating a facility that will safely and consistently produce large quantities of high quality beer.

If the equipment or building materials are not up to the task then the facility won't be able to properly function and the beer that comes off the conveyor belt may be impaired because of it.

An important part of any brewery is the floor underfoot, as it has to maintain a clean and safe surface despite the

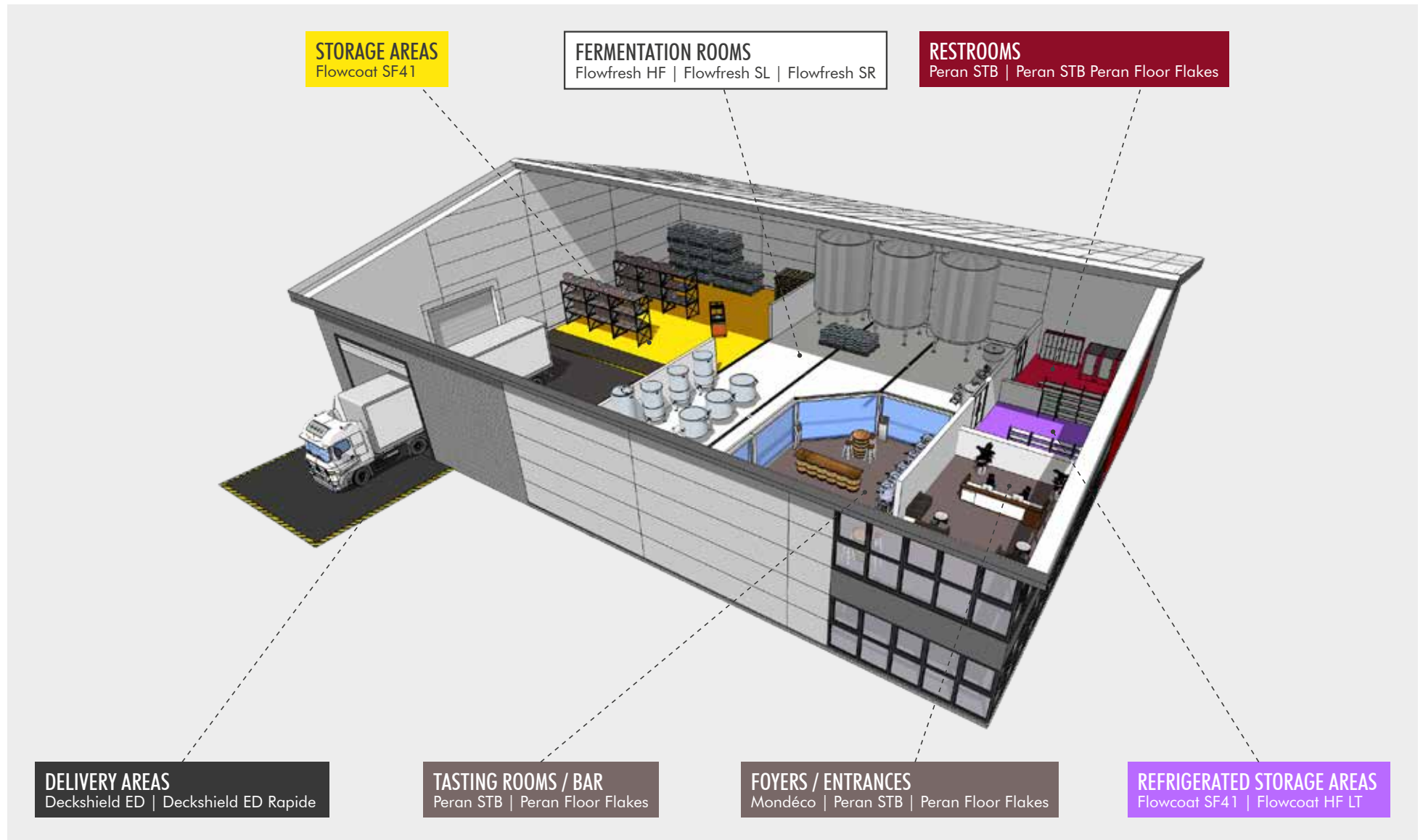
corrosive ingredients, heavy equipment, frequent cleaning, impacts and wear that it will inevitably be exposed to.

If the floor is not able to survive this abuse then it will crack and fail, slowing down operations as staff have to navigate potential trip hazards and making the brewery vulnerable to

contaminant build up that could spoil the beer.

This guide has been designed to offer practical advice on floor failure avoidance as well as to provide surface recommendations and the reasons to choose Flowcrete floors for clients working in the beverage industry.

Flowcrete UK offers specialist epoxy and polyurethane coating systems for all areas of breweries.



1

HIGH IMPACT RESISTANCE

The floor should have the mechanical strength to withstand continuous impacts from kegs, barrels, pallets, forklift trucks and dropped tools as well as being capable of carrying the compressive load from the site's extremely heavy equipment.



2

ANTI-SLIP PROPERTIES

Breweries are inherently slippery places, prone to wet surfaces and standing water. To minimise the risk of slips and trips in wet areas the floor needs to have an anti-slip texture that enhances traction underfoot. This can easily be done with resin finishes by broadcasting anti-slip aggregates into the coating.





Falls, slips and trips account for an average of **33%** of reported injuries.

On average across all industries, there are **5.6** serious claims for every million hours worked.

5.6 vs 8.4

In the manufacturing industry, this rises to **8.4** serious claims for every million hours worked.

Total estimated cost of work related injuries across UK to employers was

£512
million

Average compensation per claim for a fall, slip or trip is

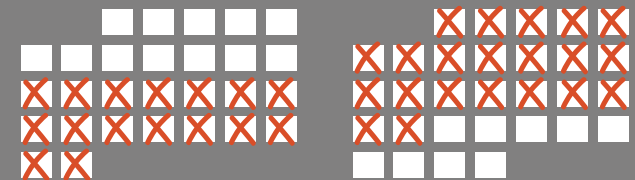
£6,000

10,000



workers in the UK suffered a serious injury as a result of a slip or trip in the workplace in 2016.

Slips and trips in the workplace result in an average sick leave of



5.2 WEEKS

3

THERMAL SHOCK RESISTANCE

Excellent resistance to rapid and extreme temperature shifts is also vital, as the floor will likely be exposed to factors such as steam cleaning and hot production by-products.



A large industrial facility, likely a brewery or food processing plant, featuring several large stainless steel storage tanks. Two workers are visible: one in a grey shirt and jeans holding a large coil of black hose, and another in yellow protective overalls. The floor is a smooth, reddish-brown industrial coating. The ceiling is high with complex piping and lighting fixtures.

WHAT IS

THERMAL SHOCK?

All flooring material expands and contracts with changes in temperatures. Only when this occurs at a rate significantly different than the concrete substrate, does it lead to delamination, cracking and other deterioration.

Thermal shock resistant flooring and coatings expand and contract at a rate very similar to the concrete slab below, helping to ensure that your seamless, hygienic industrial floor functions exactly as it should.

4

ABRASION RESISTANCE

Asides from forceful physical impacts, the floor needs to minimise abrasions and wear from a number of sources, including hose ends, foot traffic and heavily laden trolleys.



5

ANTIBACTERIAL BENEFIT

The Flowfresh range of HACCP International certified, polyurethane floors incorporates the Polygiene® antibacterial agent, which creates a finish able to inhibit the growth of bacteria between wash cycles.

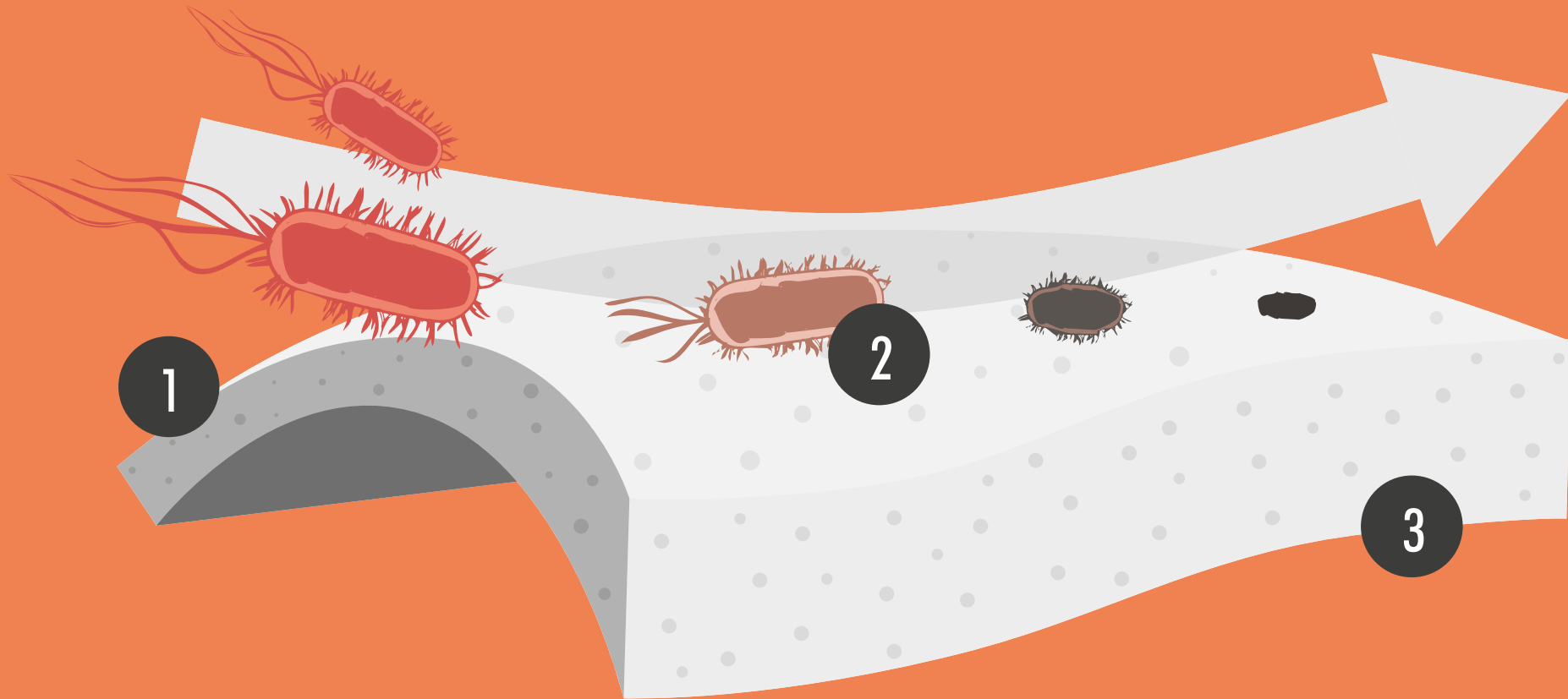
This property means that brewery operators can rest assured that the floor is as clean & hygienic as possible!

DID YOU KNOW?

Bacteria multiply by splitting into halves every twenty minutes, meaning that in just three hours one bacterium will become about 1020!



HOW DOES POLYGIENE® WORK?



1 The silver ions are homogeneously distributed throughout the floor.

2 The silver ions migrate to the surface of the floor.

3 The silver ions inhibit the formation of bacteria on the surface by penetrating the cell membrane.

6

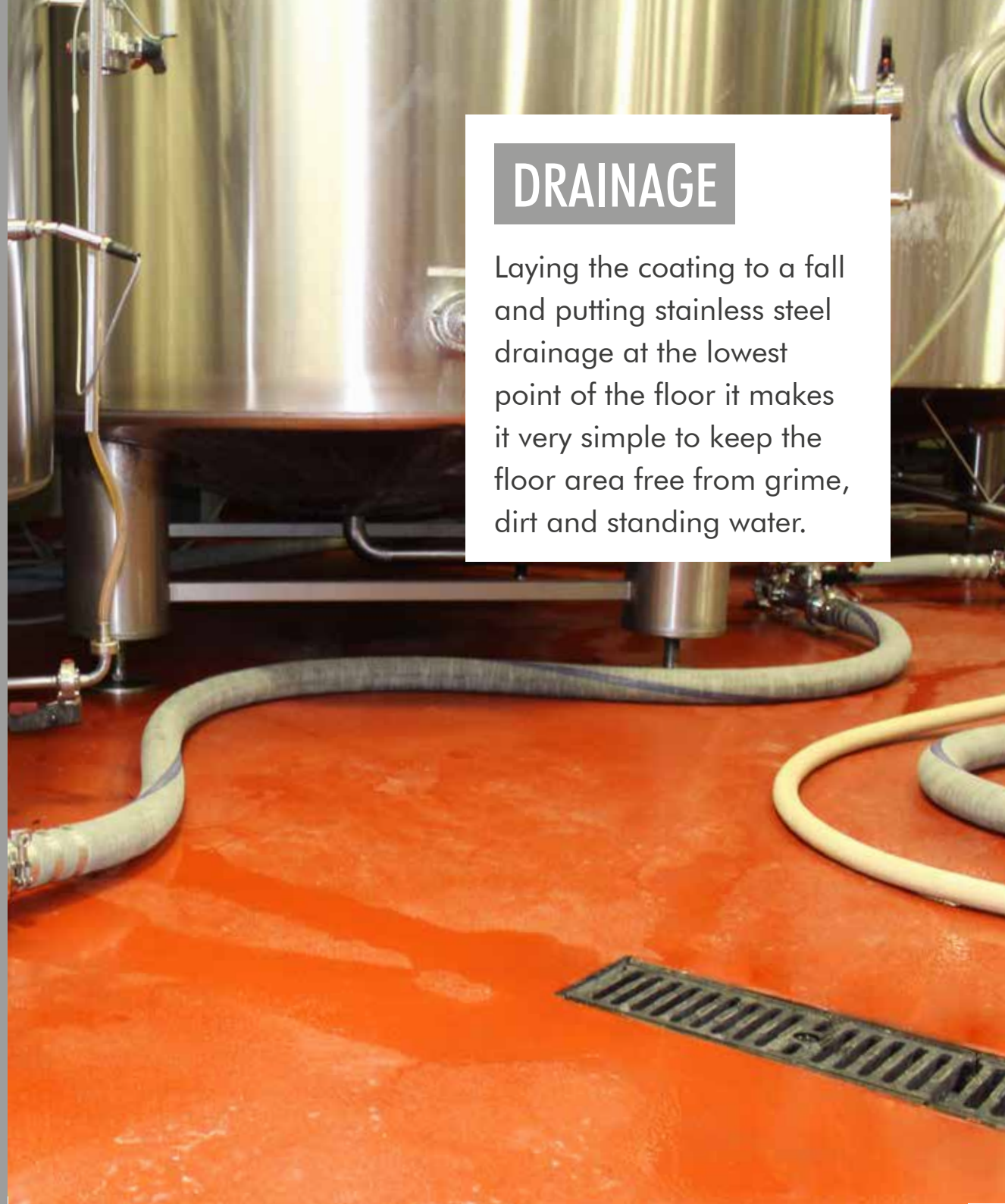
HYGIENIC PROPERTIES

Floors in breweries must be food safe to discourage the growth of harmful micro-organisms. If the floor is not easy to clean then spillages can be left unaddressed and can develop into stains that permanently damage the coating, leading to a higher chance of the finish inadvertently promoting bacteria build up. Additionally, if the surface is uneven then waste water can pond and stagnate, setting the scene for a serious contamination incident!

To avoid this scenario, the finish needs to be seamless, impervious and easy to clean.

DRAINAGE

Laying the coating to a fall and putting stainless steel drainage at the lowest point of the floor it makes it very simple to keep the floor area free from grime, dirt and standing water.



7

CHEMICAL RESISTANCE

Yeast, alcohol, malts, enzymes, brewing sugars and harsh cleaning chemicals could all erode the finish over time. The areas where any corrosive ingredients, acids and alkaline chemicals are situated need to have floors suitably tailored to withstand prolonged exposure to the substances identified as being in use in that area of the facility.

It is not just the sanitising agents and disinfectants used to clean the floor that need to be considered, as the products employed to clean the equipment can easily spill or drop onto the floor.



CHEMICAL RESISTANCE OF RESIN FLOORING

| CHEMICAL SUBSTANCE | CEMENTITIOUS POLYURETHANE | EPOXY | MMA | CHEMICAL SUBSTANCE | CEMENTITIOUS POLYURETHANE | EPOXY | MMA |
|--------------------|---------------------------|-------|-----|--------------------|---------------------------|-------|-----|
| Hydrochloric Acid | ● | □ | ● | Sugar Syrups | ● | ● | - |
| Sulphuric Acid | ● | □ | ● | Caustic Soda | ● | ● | ● |
| Citric Acid | ● | ● | □ | Blood | ● | ● | ● |
| Oleic Acid | ● | - | - | Oil Ingredients | ● | ● | ● |
| Acetic Acid | ● | - | ● | Detergents | ● | ● | ● |
| Lactic Acid | ● | □ | ● | Beer | ● | ● | ● |
| Ethanol | ● | ● | - | Wine | ● | □ | □ |
| Methanol | ● | - | - | Whiskey | ● | □ | □ |

● High Resistance □ Limited Resistance - No Resistance | Chemical Resistance of Resin Flooring Comparison Chart: Flowcrete Group Ltd, 2013.

This guide has been produced to give an overview of the resin choices available and factors to consider when specifying a resin flooring system within the hygienic design of a brewery.

Flowcrete has been successfully manufacturing and supplying flooring material to the food industry for over 30 years, securing high profile installations at breweries including Tooheys, Little Creatures, White Rabbit, Bright Brewery, Brooklyn Brewery, Live Oak Brewing Company and Budweiser to name a few.

Flowcrete's Flowfresh range has been specially formulated for this industry and can play a critical role in preventing microbiological build-up or contamination. Based on cementitious urethane chemistry, Flowfresh also incorporates Polygiene® – a silver ion based antimicrobial additive, which not only

reduces surface bacteria by up to 99.9% but continues to remain active for the lifetime of the product.

Detailed recommendations and advice are available from our network of regional technical and sales representatives.



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