HOW TO BEAT MOULD

Graham James OBE, director at the Flexcrete Technologies outlines why it is key to actively combat the growth of bacteria, mould and yeasts in the brewery ecosystem.

THE COMMON AND CONSISTENT pattern of problems is readily apparent. The challenge of maintaining hygienic conditions is brought about by the very nature of brewing processes, often exacerbated by the age of brewery buildings. Whilst there are many ultra-modern purpose-built facilities around the globe, there are also numerous craft and traditional breweries that have grown organically over many decades, or even centuries. This inevitably results in a multiplicity of maintenance issues demanding careful attention if today's hygiene standards are to be met.

Taking a step back, when considering mould growth in general, as you might find in a bathroom, for example, the natural assumption is that it is present because of warmth and dampness. Certainly these are contributory factors, but a food source is also required for the colony to be viable. It is not widely appreciated that a normal polymeric paint provides a rich source of nutrient for microbes. Without special additives chemically bound onto the polymer backbone to provide in-built protection for the film, a regular paint provides a nutritious host environment.

In a brewery, the conducive nature of the atmosphere is further enhanced with the free availability of yeast, an essential ingredient in many brewing processes. Most forms of yeast, a single cell fungus, will re-produce asexually through mitosis, the most common form of which is known as 'budding'. In essence, this allows the rapid formation of large colonies as the fungi asymmetrically divide for as long as the environment remains hospitable.

In older buildings, facility managers face the added complication of numerous crevices and other areas where mould spores can lodge and begin to propagate. The importance of providing a smooth and uninterrupted substrate is not to be underestimated when considering an upgrade in overall hygiene standards. Specialist manufacturers will provide

complementary re-profiling compounds to give a complete system approach. When it comes to specialist surface coatings, it is vital to seek out innovations in technology. By utilising the latest available chemistry, formulators can ensure that the coating film itself is inherently protected from attack by moulds and fungi. This is achieved by surface contact at the molecular level by interfering with the enzymatic reproduction process. In an atmosphere laden with spores constantly circulating, if the right technology is specified, surface contact with coated walls and ceilings is all that is necessary to neutralise spores and prevent them from being able to colonise.

Even a high quality hygiene coating should not be treated as a substitute for regular cleaning to prevent the build-up on nutrient films on the surface. In this respect, it is important that the coating should act as a true membrane to prevent water penetration from washing cycles whilst also allowing substrate moisture to escape to atmosphere without causing rupture. As the ability to maintain the integrity of the film is critical, an elastomeric capacity is another key requirement to bridge minor hairline cracks and accommodate thermal movement.

There are high performance hygiene coatings available which are designed for use in the most demanding service conditions. One example is Biodex HB, a highly elastomeric, high build, waterborne hygiene coating which is inherently tough but remains permanently flexible. Biodex HB is ideal for use in breweries as it can withstand sustained exposure to extremely cold conditions without cracking or embrittling, whilst also being able to withstand high humidity and hot temperatures from steam cleaning.

One recent project we carried out was at the Budweiser Budvar Brewery. A hygienic coating was required for application to the internal walls and ceilings in three areas of the brewery, comprising both new construction and refurbishment. The coating needed to be able to withstand extreme conditions such as high humidity and permanent washing down, as well as being able to combat mould growth from the presence of migrant yeasts and sugar particles present in the atmosphere during the brewing process.

It was also important that the chosen coating was water-based to ensure that no hazardous solvents or heavy odour were released during the application.

Biodex Wash, a powerful hygienic surface treatment, was first used to kill active micro-organisms before Bond-Prime was applied in areas where it was necessary to seal the surface.

Biodex HB, a waterborne, anti-microbial coating, was subsequently applied to the internal walls and ceilings due to its ability to actively combat the growth of bacteria, mould and yeasts. Formulated using state-of-the-art silver ion technology combined with the latest generation biocide technology, it incorporates active in-film anti-microbial protection, allowing for the ultra-slow controlled release of active ingredients into the coating film throughout its long life span.

Its waterborne nature was a important consideration for this application, as the coating is low odour, non-tainting and non-hazardous with ultra low volatile organic content (VOC), so there was no threat of contamination from solvents or strong odour. Rapidly and easily applied by brush, roller or airless spray, Biodex HB was able to flow around pipework and other protrusions, providing a seamless finish with no joints or irregularities in which bacteria could otherwise thrive.