

PACKAGING & PROCESSING REPORTER

FLOORING SYSTEMS

the overall foundation of your FMCG business

Flooring is the foundation of any production facility. This is even more true when you consider that the floor of a FMCG production facility not only carries the entire content of your facility but also contains the central cleaning system, namely the drainage system.

It is therefore vital that the floor of a food production facility is engineered and constructed in the correct manner from the start. Floors cannot be corrected post completion without extensive construction work, which could result in a production shutdown of a minimum of two months.

Floorings biggest enemy is water, an element that is used daily in FMCG factories. It is thus crucial that your floor's falls are correctly engineered to prevent standing water. In addition to correct falls, your drainage system should also be able to accommodate the water volume- and flow rate requirements for the specific areas. Standing water in FMCG facilities is not only dangerous for staff but also for food safety standards and could lead to bacterial growth such as Listeria. The cleanability of the floor and sufficient drainage will contribute to a hygienic environment.



As previously mentioned, the floor of a production facility carries the entire content of your facility. This includes:

- staff
- lifting equipment such as forklifts, pallet
- jacks, etc.
- production equipment
- stored stock

All these people and items have an impact on floors. Where people and lifting equipment affect the floors by means of cyclic loads and wear and tear, production equipment is fixed directly into the floors. The method in which production equipment is fixed into a floor can potentially cause weak points which could result in damaged and contaminated areas. Therefore there are specific design guidelines on how to fix equipment to floors to comply with hygienic standards.

FMCG facilities' floors are exposed to numerous operational environments and byproducts such as:

- hot areas (ovens)
- wet areas (sculleries)
- dry areas (warehousing)
- cold areas (freezers)
- fats
- oils
- sugars
 - cleaning chemicals

The floors of a FMCG production facility must be designed and constructed for the relevant above-mentioned environment and exposure range particular to the areas in question.

Significant damage can also be caused to concrete floors by most cleaning chemicals used in food production facilities. These corrosive cleaning chemicals include among others:

- acids
- bases
- disinfectants

Degraded and exposed concrete can easily result in food contamination in the form of microbial growth and the spread of bacteria which could, once again, lead to a potential facility



shutdown. To avoid this a commercial flooring system (coating) can be installed to protect concrete floors. It is however crucial that a fit-for-purpose coating is selected to ensure a hygienic environment, an area which Astratek Manufacturing Engineers are well educated on.

Commercial flooring systems are selected based, but to name a few, their:

- type
- thickness
- durability
- temperature range
- permeation-, antimicrobial- and non-slip properties.

In addition to the type of coating that needs to be selected, there are crucial design details that need to be considered as well, for example:

- Wall-to-floor interfaces
- Floor-to-drain interfaces
- Coating-to-concrete interfaces
- Equipment-to-floor interfaces

Optimally specifying these design details could be the difference between a hygienic floor that will last for 5 to 10 years and a contaminated floor that will have to be refurbished within one year of operations.

In many cases, commercial flooring systems will have to be installed in a brownfields facility. The process in which brownfields installations are approached is very different from greenfield installations. The key point to remember with brownfields installations is that if your concrete substrate is not prepared in the correct manner, your coating cannot be successfully installed. Concrete is very porous, and if the substrate has been contaminated with byproducts, such as fats and oils, it will prevent the coating's primer from sufficiently

bonding to it. Certain processes and products, which Astratek can assist you with, can be used to ensure that the coating's primer forms a solid bond with the concrete substrate. This is also valid for areas where drains need to be installed in a brownfields floor.

There are various types of commercial flooring systems available on the market, including Epoxy-, Polyurethane- and Cementitious systems. Each type of coating has its own benefits and drawbacks. Astratek would like to highlight again that each type of coating caters for different operational environments. Some of the aspects that need to be considered when selecting a coating are as follows: operating environment (e.g. temperature range and -cycling), type- and volume of traffic, products being manufactured and used in the facility, safety properties (e.g. non-slip, anti-static etc.), condition of the concrete substrate on which the coating will have to bond, installation parameters, cleanability & maintenance, type of finish, colour and aesthetics and finally, cost.

In 2011 there was an outbreak of Listeriosis linked to whole cantaloupes from Jensen Farms in Colorado, USA. 147 people were infected, and 33 people lost their lives (Centers for Disease Control and Prevention). The outbreak was caused by standing water on the floor due to a "hard-to-clean" packing facility. Jensen Farms was closed, and the owners were arrested on charges of introducing adulterated food into interstate commerce. This example of gross negligence highlights the importance of adequately engineered commercial flooring systems in FMCG facilities.

The difference between an engineered fit-for-purpose flooring system and a poorly designed flooring system could mean someone's life.

To contact Astratek Manufacturing Engineers for assistance and advice regarding Flooring systems you can scan the below QR code and complete the online form or e-mail us at info@astratek.co.za

Astratek Manufacturing Engineers
1st Floor, Platteklouf House,
Tygerberg Park, 163 Uys Krige
Drive,
Platteklouf, Cape Town

Tel: +27 (0)21 001 4570
www.astratek.co



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KWAZULU-NATAL: 41 Circuit Road, Westmead, Durban | +27 31 705 7733
 GAUTENG: 35 Activia Road, Activia Park, Germiston | +27 11 822 7242
 CAPE TOWN: Cnr Gunners Circle & Fisher Avenue, Epping 1, Cape Town | +27 21 535 4455
info@technicalfinishes.com