

Composite Flooring System Keeps Plant Clean



LOCATION

Edmonton, Alberta,
Canada



OPERATION

Diary food production



PRODUCTS

[FURALAC™ Green Panel Mortar](#)
[FLEXJOINT™ Joint Sealant](#)
[PENNCOAT™ 101 Membrane](#)
Acid Resistant Brick Pavers
Asphalt Primer

Challenge: Protection of concrete processing floors from corrosive organic acids

Solution: Installation of acid-resistant brick pavers with FURALAC Green Panel Mortar as a bedding adhesive atop PENNCOAT 101 Membrane asphalt and FLEXJOINT Joint Sealant used in between brick side joints

The trend-setting new multi-million dollar plant of Palm Dairies, Ltd., Edmonton, Alberta, Canada, is loaded with industry innovations. Among its innovations is a system that takes processed milk through pasteurization at an ultra-high temperature and produces a product that keeps without refrigeration for several months. Another innovation is a low temperature hardening tunnel that quick-freezes ice cream to produce a superior quality product while simultaneously saving energy.

In the midst of this innovative technology, the project manager of this ultramodern, 180,000 square foot facility did not overlook the basics—such as sound flooring technique. As any dairy worker knows, the lactic acid in soured milk can be very destructive throughout a dairy if it is allowed to get into and under the floor surface, even an acid-resistant one. The strong organic acid will result in foul plant odors and can even eat away at the base concrete.

About 32,000 square feet of critical floor surface in Palm's new dairy is protected with a multi-material, composite flooring system that will protect against lactic acid in addition to standard problems encountered in milk handling and processing. The area covered includes all 23,000 square feet of the main processing area, plus such other sections as milk receiving, case washing, cheese rooms and blender rooms.

The flooring in these sections consists of 1-3/8 inch thick smooth-faced acid-proof brick pavers bedded in furan resin cement (FURALAC Green Panel Mortar) laid atop a reinforced hot melt asphalt membrane (PENNCOAT 101 Membrane).

In the preliminary design stage, an epoxy-joint tile floor system laid over a sand cement setting bed was also considered as a possibility. The furan setting bed and joint approach was recognized as superior, but thought to be uneconomical for dairy processing applications. This thinking changed, however, when ErgonArmor's technical representative and Chem-Thane, a flooring contractor familiar with furan technology, designed and bid a system at a cost comparable to the epoxy technique.

Installation of this flooring represents recommended best practice, and could serve as a "how-to" primer on the subject. Since the contour of the finished floor is primarily determined by that of the slab, the base concrete was given a swirl trowel finish without high or low spots and sloped to all drains with a minimum gradient of 1/8-inch per foot.

The three-component membrane system started by priming the concrete with an asphalt that is compatible with the succeeding layers. Hot-melt, unfilled oxidized asphalt was then applied in several thin layers to a thickness of 1/4-inch and reinforced with a single ply of asphalt-impregnated glass.





ErgonArmor™

PROJECT PROFILE

This membrane system will sustain minor movement without tearing. And a floor laid upon it will endure minor cracking of the concrete base since the brick pavers are not bonded directly to the slab.

To set the brick, the membrane was first buttered with a 1/8-inch layer of furan resin cement. This “bed” joint compensates for the unevenness between the concrete base, the membrane and the brick. It establishes solid base on which the bricks lay and diminishes the chances of cracking the brick that heavy traffic brings on non-solid bases. The “bed” joint also fills any voids in places where sanitizers simply cannot reach.

The contractor used the superior bricklayer’s method of installing the pavers into the bed of mortar. Each brick was buttered on the

two leading edges with the same furan resin cement mix and set in place by pressing it tightly against the adjacent pavers to create secure, nominal joints of only 1/8-inch thickness or less. The bricks were then hammered to a smooth and uniform surface and excess mortar trimmed off with a trowel.

Expansion joints were located approximately every 20 feet and filled with ErgonArmor’s FLEXJOINT Joint Sealant to maintain the integrity of the soundly laid brick floor. These joints will compensate for the inevitable expansion and contraction due to temperature change and for the irreversible growth of the pavers.