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Sidebar: U.S. bulk packaging demand to rise to \$7 billion in 2009

Reusable tote doubles as a tank for baking agents

Amarna Company saves 'dough' by shipping baking release agents in 330-gal, corrugated intermediate bulk containers. The move also slices handling and filling time and 20 percent in shipping costs.

Lauren R. Hartman, Senior Editor

When John Starr bought the **Amarna Company** in 1998, his goal was to revolutionize release-agent technology for the baking industry. Release agents help keep baked and dehydrated products from sticking to baking surfaces. Typically, they're based on mineral oil, canola oil or soy oil, which tend to form a hard buildup that carbonizes on baking surfaces and require mechanical removal. A chemical engineer, Starr took a fresh look at the Amarna product, which has actually been around since 1979 and cooked up a longer-life, shelf-stable formula.



His patented process allows lecithin and mono- and diglyceride compounds that aren't usually compatible with water to be incorporated as the active ingredients in a water-based mix. The formulation, called Amarnakote, incorporates an antibacterial substance that inhibits the formation of yeasts and molds. The powerful cleaner also has the ability to remove organic buildup in baking and dehydration applications, allowing customers to reduce cleanup and sanitation time.

After the tote and cassette are in place on a pallet and the product is blended and pumped from a nearby tank, a hose is connected to the filling valve in the top of the collapsed liner.

Operating out of a new, highly automated manufacturing facility in Delta, CO, Amarna now receives most of its raw chemicals to produce the release agents in 330-gal, reusable corrugated bulk containers or intermediate bulk containers (IBCs) **from Weyerhaeuser's SpaceKraft business** (www.SpaceKraftUSA.com). Starr says the containers considerably reduce handling time on Amarna's end. The filled containers are stacked two or three high in the company's warehouse.



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Then, the operator starts the pump for a 330-gal fill. As the liner fills from the bottom up the operator has time to go to work on other tasks.

"At our request, we have the chemicals shipped in SpaceKraft 330-gallon totes," he says. "They allow our suppliers to ship the equivalent of five 55-gallon drums in a single pallet space."

Measuring approximately 46x46x41 in., the IBCs save Amarna time, space, handling and shipping charges, Starr acknowledges. They each are made with an outer corrugated shell, an inner food-grade film liner supplied by Scholle (www.scholle.com) comprising two plies of polyethylene and one ply of nylon for added strength. The liner is part of a

corrugated cassette inserted into the shell. A corrugated B-flute, self-locking top cap is also included.

SpaceKraft produces the outer corrugated shell using a patented process in which eight plies of 69# liner board and 36# A-flute corrugated medium are continuously wound into a seamless, smooth container that eliminates the manufacturer's joint and provides a seamless container with superior stacking strength. An added benefit of the eight plies is a stronger container that inhibits bulging.



An operator sets up the 330-gal container's outer shell on a pallet. The totes hold product mixed in two stages.

Amarnakote is mixed in two stages. Two local companies supply most of the chemicals Amarna uses to produce the release agents, furnishing them in the 330-gal IBCs. In the first of the mixing stages, an operator forklifts a lined IBC filled with ingredients to the mixing line to a spot next to a 1,300-gal stainless-steel tank. The operator then connects a stainless-steel dispensing line to the tote's 2-in. dispensing valve located at the bottom and starts a pump that dispenses the liquid chemical product into the mixing tank.

L.A. Hearne also uses corrugated IBCs to ship dried beans instead of using 100-lb bags, cutting labor and material use and increasing handling efficiency. Read about it at www.packagingdigest.com/info/hearne

When the bulk tote is empty, the pump shuts off and the operator disconnects the dispensing line, returning the empty container components to the warehouse. Here, the inner film liner is removed for disposal and the operator collapses the corrugated outer shell for storage.

Many of the container components can be reused later to package final product. The operator simply retrieves the corrugated tote from storage, sets it up on a pallet and drops a new, sanitary liner cassette into the box to be refilled.

Once a premix tank has been filled with the Amarnakote formulation and it has been blended, the release-agent compound can be pumped into intermediate storage vats. From there, the mixture is pumped to a second

1,300-gal, stainless-steel mixing tank where additional ingredients are added to produce one of three basic Amarnakote formulations (Amarna recently developed a release agent designed specifically for manufacturers of particle board).

Amarna maintains precise production histories on each stage of each batch on the side of the production tanks. "We're meticulous about our record-keeping," Starr points out. "Every batch of Amarnakote is tested for purity at an outside laboratory. When we ship Amarnakote to a customer, we know the entire history of its blending, including the ingredients used, who supplied them, when they were received and all other critical data."

According to Starr, the equivalent of a tanker truck of Amarnakote leaves the facility each day in totes. Filling the IBCs is quick and easy, he reports. "A single operator can set up, fill, close and label eighteen 330-gallon containers a day," he says. "That's nearly equal to a 6,000-gal tanker."

The empty IBCs are set up in the warehouse. An operator positions the outer corrugated sleeve on a corrugated pad and places them on a standard pallet. The operator then opens the liner cassette and installs a quick-disconnect fitting on a valve on the liner. The liner cassette is then inserted in the bottom of the corrugated shell, before a drain fitting is aligned with a hole in the outer shell. Next, the corrugated outer shell is squared up on the pallet and the operator forklifts the empty container to the production line.

An automatic metering discharge pump and a 2-in.-dia, stainless-steel hose dispense release agents from the final mixing tank. The operator connects the hose to the filling valve in the top of the collapsed liner, and then starts the pump for a 330-gal fill. Starr says that filling the SpaceKraft totes is quick, clean and efficient. "SpaceKraft is a simple, well-designed system. The liner opens gently as the bottom-up fill proceeds and doesn't require attention by the operator." When filling is completed, the operator disconnects the filling line, caps the liner's filling valve and forklifts the filled IBC to the warehouse.

There, the operator places a corrugated overcap onto the container sleeve and labels the container with a lot number, a batch code and a date code. Then, the operator pulls a film shroud over the container and straps it securely to the pallet.

Starr explains that in order to gain the greatest benefits using Amarnakote release agents, they must be applied with a specially developed MicroPulse spray system. While testing the new release-agent formulations, Amarna



Filling the totes is quick and easy. Top, an operator opens the cassette into the shell before installing a filling-valve fitting on the liner.



The loads are capped, shrouded and strapped and can be stacked three-high.

learned that the technology for applying Amarnakote to the baking surface was critical to its performance. Amarnakote has different characteristics than oil-based release agents, says Starr. "It's not viscous, it doesn't require atomization during application and it doesn't require high pressure to apply. The less of it applied to a baking surface, the better it performs."

To address Amarnakote's fluid dynamics, Amarna developed the MicroPulse spray system that can spray specific areas of bun pans, bread pans, waffle griddles and large ovens with a high degree of accuracy and with exceptional economy."

Installing a system at one bakery prompted an Amarna technician to hit on the idea of pumping the Amarnakote agent directly from a SpaceKraft tote to the bread line, where a new MicroPulse spray system was installed.

There wasn't much spare room for the tote to fit next to the bread line," Starr says. "But there was space just outside of the baking room, a short distance from the bread line, so the installation crew simply installed a food-grade plastic line from the tote to the spray system on the line and used a pneumatic, double-diaphragm pump to supply the release agent from the container."

Wherever possible, Amarna installs trial and permanent MicroPulse systems using a remote supply of product from the IBCs. Says Starr, it's the watery consistency of Amarnakote release agents that makes this arrangement practical.

"We're sold on the SpaceKraft containers," he sums up. "Before, we shipped products exclusively in fifty-five-gallon drums. Now, we ship more than sixty percent of our products in the bulk containers. Customers also like them."

More information is available:

SpaceKraft, a Weyerhaeuser business, 800/599-8943.

www.SpaceKraftUSA.com

Scholle Corp., 949/955-1750. www.scholle.com

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