



THE PERFECT CHEMISTRY

Corrugated IBCs provide chemical producer with cost-effective alternative to the conventional steel drums

It's a long haul from Milton, Ont., about an hour's drive northwest of Toronto, to Houston, Tex., and if you don't pay attention to how you package your shipments down there, your costs can easily go through the roof in no time.

One of the world's leading suppliers of high-performance infrastructural coatings, Milton-based **Madison Chemical Industries** ships its products in many types and sizes of containers, but the 55-gallon metal drums had provided the most common means of in-transit packaging.

But not quite as common, as of late.

Ian Hall, the production manager at Madison Chemical, explains: "Steel drums are so common that I'm not sure we would have considered switching containers had a long-time customer not specifically requested that we ship their orders in Weyerhaeuser's SpaceKraft corrugated IBCs (intermediate bulk containers.)"

Based in Houston, the customer in question is a manufacturer of underground storage tanks, such as those used at gas stations and liquid fuel distribution depots. The company sprays the exterior of the tanks with the Fibrethane Plus anti-corrosion coating from Madison Chemical to protect the tanks against moisture, soil, chemicals, abrasion and stress, when buried.

"The customer had two problems with steel drums," says Hall. "Space is at a premium both at their warehouse and at their tank manufacturing facility in Houston.

"Using one 275-gallon SpaceKraft IBC we can ship as much resin on a standard pallet that would hold a four-drum skid of 220 gallons. That's 20-percent space savings on our truck and in their warehouse.

"Disposability was an even more important factor to the customer," Hall adds. "They were finding it increasingly difficult and expensive to dispose of empty 55-gallon drums.

"But with the SpaceKraft container, all the customer has to do is remove and dispose of the liner, and recycle the corrugated container."

Manufactured by the **SpaceKraft** subsidiary of forest products giant **Weyerhaeuser**, the SpaceKraft IBCs—offered in capacities of up to 330 gallons—consist of three main components: an outer corrugated sleeve or shell; an inner film liner inside a corrugated cassette; and a corrugated top cap. The outer corrugated sleeve is made by a patented process that continuously winds eight plies of linerboard and an A-flute corrugated medium into a seamless shell, without resorting to any special joints, metal staples or wood components to hold the structure together.

In order to ensure the safe storage and handling of the two moisture-sensitive, separately-shipped Fibrethane Plus resins—mixed to form a two-resin polyurethane mixture that produces a reaction during spraying to form a hard, seamless coating to bond to the surface of the storage tank—the SpaceKrafts used by Madison for this application come with special metallized bag liners, supplied by **Scholle Corporation**. The liner is comprised of two four-millimeter plies of linear low-density polyethylene (LLDPE) film, and an outer laminated structure of a half-millimeter, three-micron metallized layer sandwiched between two two-millimeter layers of LLDPE.

The switch to SpaceKraft has proven to be a win-win for everyone concerned. Not only does the customer in Houston derive considerable space savings, Madison benefits from having the used IBCs shipped back to it—stacked flat, a dozen per pallet. Stored in an area of about 24 square feet, the collapsed IBCs require far less space than most other semi-bulk containers. In the case of drums, for instance, such space savings



The packaging at Madison Chemical begins with an operator using a dispensing hose (left) to pour the preset 275 gallons of the mixture into the metallized bags inside a SpaceKraft corrugated container. After being capped up, the containers are palletized and taken by forklift to the temporary storage area (below) to await shipment to the customer.



can be as high as 80 per cent.

"Our biggest advantage," adds Hall, "is that SpaceKraft totes are not only easy to handle, but they've enabled us to considerably reduce the time it takes to fill and package the product for our customer.

"We save anywhere from 40 to 50 per cent of filling time by handling and filling one large SpaceKraft container, instead of five steel drums."

At the Madison plant, notes Hall, it takes only a minute or so to set up the SpaceKraft container. An operator positions the outer corrugated sleeve on a pallet, opens the bag cassette, and installs a quick-disconnect fitting on the inner film bag. The bag cassette is then inserted in the bottom of the corrugated sleeve, a drain fitting is aligned with the hole in the outer sleeve, and the corrugated outer sleeve is squared to the pallet. The pallet is then forklifted to the filling line and placed beneath a resin mixing tank.

Neither of the two Fibrethane Plus resins is a viscous solution, according to Hall, featuring a consistency similar to that of paint, which makes them easy to handle and easy to flow.

The operator connects a dispensing hose from the resin's mixing tank to the two-inch-diameter threaded filling valve at the top of the bag liner. A **Graco** model metering pump then dispenses resin to the tote, automatically stopping when the 275-gallon preset volume has been fully dispensed.

The operator then disconnects the hose, caps the filling valve, and the container is forklifted to the shipping department, to be labeled by resin type, and an LLDPE shroud is placed over the open container. A corrugated



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top cap is then put in place and strapped to the skid.

For temporary storage purposes, Madison staff typically stacks its filled containers two- or three-high, although they can be stacked four-high if space permits.

According to Hall, the shift to SpaceKraft IBCs has resulted in extraordinary changes for the plant's staff—all for the better. Whereas Madison used to ship 10 drums of Fibrethane Plus to its customer in Houston each month, it now ships a single tote of each resin.

"The product has a shelf-life of approximately six months," Hall says, "and we usually keep a supply of 550 or 1,100 gallons in SpaceKraft totes in our warehouse to resupply the customer when they're working overtime."

The coating is shipped by truck to the customer's Houston warehouse, then trucked to the fabricating plant when needed. There, the resins are poured directly into two warming supply tanks, which are connected by hoses to spraying heads. Thus, the resins are protected from excessive moisture from the time they're filled into the SpaceKrafts until they're mixed in the spray-heads in Houston—virtually guaranteeing the desired chemical reaction with each and every application.

"The switch from steel drums to corrugated bulk containers worked out well all the way around," Hall sums up. "Our customer is saving money on transportation with an easily disposable, recyclable container, instead of having rigid barrels piling up out behind the factory.

"And we save time in filling and packaging the product for the customer. The corrugated SpaceKraft containers have proven to have far more potential than I realized when our customer first mentioned them." □

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