

Closed-System Chemical Dispensing Enhances Safety & Reduces Overall Operating Expenses

Traditional chemical dispensing methods may leave workers and the environment exposed to harsh chemicals and dangerous fumes. Container Technology resolved this problem using Colder Products Company's new DrumQuik PRO system, a safe, easy and economic closed-dispensing solution for extracting chemicals from rigid containers such as drums, jerry cans and IBCs.

Containing Hazardous Materials

Ensuring the safety and integrity of container contents is an ongoing concern for chemical, pharmaceutical and other companies responsible for processing or handling liquid hazardous materials. When shipping liquids such as paints, lubricants and oils from location to location, it's imperative that the containers remain tightly sealed and secure.

Any leaks, seepage or vaporization can critically affect container contents and increase the potential for hazardous chemical and vapor exposure. In the case of highly sensitive manufacturing processes, the presence of even the smallest amount of contamination or foreign material can prove extremely costly.

Perhaps no one is more aware of these demands than Container Technology, Inc., a Santa Barbara, Calif.-based company (www.containertechnology.com) whose primary business is ensuring that its customers have the highest-quality containers for hazardous chemical transport and end-user dispensing. The company is a leading supplier of liquid containers, drums and extraction systems. Container Technology's high-purity liquids business division specializes in ultra-clean industry specifications for semi-conductor and pharmaceutical companies that must meet particular requirements for materials transport. A second business unit, the general use container division, handles chemicals, paints, lubricants and other materials.

The company ships product all over the world from its warehouse facilities located in the United States, China, Taiwan and Europe. Because it operates in a highly-regulated industry, Container Technology must adhere to U.S. Department of Transportation regulations when sending product via ground transport. When shipping overseas, UN requirements for Hazmat packaging must be met.

Need for a Closed-Dispensing System

Due to recent U.S. OSHA regulations, as well as European Agency for Safety and Health at Work and other organization initiatives, there is a growing global trend toward "closed-system" chemical handling in which media is transported from container to point-of-use in a closed manner. Environmental factors also are coming into play, with chemical suppliers and their customers seeing a dramatic shift toward single-use containers made of recyclable materials. The main benefits derived from adopting a

single-use approach are simplified logistics, lower overall cost, higher level of product purity and minimized chemical contact with personnel and the environment.

Historically, the predominant dispensing method in many applications has been through an open system where liquid is poured out of a container. The container is put on its side and chemical is poured into a secondary container which is then taken to the point of use in another open container. A mental image of this technique quickly reveals its potential dangers and inefficiencies.

Another dispensing method is a semi-closed system in which a dip-tube draws chemicals from vertically-oriented containers using an attached hand or electric pump. This system requires that a dip-tube be removed and re-inserted each time a new drum is used, exposing plant workers to drips, leaks and fumes during transfer and increasing the potential for contamination of the chemical.

The problem with these methods is summed up by Gary Clancy, managing director at Container Technology. "Years ago, consumers would buy a bottle of hand lotion from the drugstore and would also purchase the applicator pump, which was sold separately. Inserting and removing the applicator from bottle to bottle wasn't much of a problem – you just used your hand to remove excess lotion from the applicator. Now think about what this would mean for a chemical company that plans on using one dip-tube multiple times. The dip-tubes are not easy to clean and there may be dangerous chemicals that drip during the process."

As a result, Container Technology knew that it needed to offer a high quality, closed-system container and dip-tube for its customers. "The logical solution is to have the dip-tube in the drum," said Clancy. This would also help its customers achieve consistent quality measurements of the liquid contents at each checkpoint during shipping. Many suppliers and customers measure the chemical make-up of metallic ions and particles in parts per million. Container Technology, however, measures in parts per trillion, down to exact particle measurements of 0.2 microns.

"There is a growing demand now for having a dip-tube installed at the initial shipping facility so that when the customer receives it, they just need to fill the drum and ship it, eliminating unnecessary handling and risks of spills, or potential for contaminating the chemical," said Clancy.

Container Technology also understands that industries are leaning toward cost-sensitive, one-way and single-use container technology. Applications where pharmaceutical media, fragrances and flavorings, acids and other chemicals are drawn from a jerrycan, plastic drum or intermediate bulk container (IBC or "Tote") can benefit tremendously from these types of systems.

DrumQuik PRO Solution

Container Technology offers customers its own proprietary dip-tube to improve overall quality control and safety. While considering upgrade options for its dip-tube offering, it was approached by Colder Products Company (www.colder.com), which was developing a revolutionary closed-dispensing system called the DrumQuik PRO.

After evaluating the DrumQuik PRO system, Container Technology found that it met all of its performance, cost and safety criteria. The DrumQuik PRO system is comprised of two major components; a low-cost and recyclable drum insert assembly that integrates a bung closure and a dip-tube into a single unit. The drum insert assembly replaces one of the bung plugs commonly used to seal the container for transport from chemical packager to the end-user site.

Ideal for single-use applications, the drum insert assembly is made from FDA-approved virgin high-density polyethylene (HDPE) material, which is the same material as the plastic containers. The dip-tube design provides efficient container emptying, minimizing chemical waste and ensuring easier post-use handling, clean-up, disposal and reuse of containers. Disposal is easier, because the low-cost drum insert and dip-tube are recyclable.

The second component is a rugged, reusable quick-disconnect coupler (dispense head) that is made from FDA-approved virgin polypropylene, and is installed at the point-of-use. The coupler incorporates an automatic shut-off valve that prevents chemical media from leaking when disconnected from the drum insert. A built-in vent port allows a pressure-feed connection to speed chemical flow and prevents release of harmful vapors. The vent port also allows for a blanket gas connection limiting chemical exposure to air, preventing oxidation of sensitive liquids, such as oils and fragrances, and reducing product waste.

“In many instances, we’re the package-engineering partner for our customers,” said Clancy. “They want our advice on whether it’s better to ship their liquid in a drum or ship it separately, or whether they should mate the DrumQuik PRO to the drum as a complete package or ship it as a drum component. We’re here to provide the best solutions to their questions and customize our offerings to meet their individual needs.”

Container Technology offers the DrumQuik PRO to its customers as both a standalone component or as an integrated package where the DrumQuik PRO is pre-inserted into high-purity or general purpose drums and containers. The DrumQuik PRO can be inserted into most manufacturers’ jerry can, drum or intermediate bulk container.

Creating a New Industry Standard

“Our customers are very satisfied and impressed with the DrumQuik PRO system,” Clancy said. “In comparing the improved safety, ease-of-use and cost-efficiency of the DrumQuik PRO with other methods, the benefits are clear.”

Case in point: One of Container Technology’s customers was using a multi-use, teflon dip-tube, which required plant workers to ship the empty drum back to a warehouse, where the dip-tube was removed from the empty drum, cleaned and then inserted into another full drum before it was shipped again. An employee of the customer suggested moving to a one-way, single-use dip-tube to minimize contamination risk and eliminate the time involved with cleaning the dip-tube.

Moving to a single-use system resulted in cost savings for the company by eliminating the significant expenses of: maintaining a fleet of dedicated dip-tubes and drums; shipping empty drums back to the chemical packaging facility located thousands of miles away; and establishing a cleaning operation, as well as performing the cleaning of the dip-tube and drum and reassembly. In addition, the unique DrumQuik PRO dip-tube design resulted in less wasted chemical and reduced environmental impact.

“Today, our company and our customers want to be green,” said Clancy. “Customers demand and expect it, and both Container Technology and Colder make it a top priority. Our customers appreciate that we are working together to listen and solve their chemical storage, shipping and handling needs.”

Container Technology and Colder envision a future industry standard in which every drum contains a DrumQuik PRO dip-tube. This “single-trip” approach results in improved safety, cost-savings and environmental benefits.

“My company’s reputation and credibility depend on the products that we offer and I wouldn’t settle for anything less than a top-quality solution,” Clancy said. “The DrumQuik PRO system enables companies to focus on their core business – and put to rest concerns about safety and transport hazards.”

The days of pumping chemicals out or accidentally spilling them on the floor are over. Together, Container Technology and Colder understand that customers want to effectively manage containers’ contents and not struggle with how to get them in and out of a drum. A container that arrives at a plant with a dip-tube pre-inserted makes the transport and dispensing task a whole lot easier, not to mention safer for workers and the environment.

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