

# Lube packaging for sustainability and cleanliness

*John Robinson, CLS, O.M.A., Sales Manager – Lubricants, USA, Fluid-Bag*

In the petroleum industry, packaging has been rather conventional since the advent of the wooden 42 gal. Coopers Barrel of Western Pennsylvania in the mid-19th century. Like so many things, today we demand the packaging do a lot more than just transport our products to our customers. The prevailing thought for decades was cost effectiveness, at the expense all too often of our environment by discarded drums and the heel that remained. We now look for our packaging to not only be sustainable and environmentally compliant, but to deliver the full content with minimal residue and ease of dispensing. We look to reduce physical handling to eliminate possible employee injury and packaging that does not take up valuable warehouse and production space. Further our packaging must not only be compatible with the products we fill but should contribute no contaminants to ensure lubricant integrity.

Since the 1980's Fluid-Bag's goal was to produce smart intermediate bulk packaging that eliminated the deficiencies of rigid packaging, the inefficiencies in logistics and handling, and minimised the impact on our environment. The result was one way, flexible non rigid intermediate bulk containers (IBC) capable of being assembled on a pallet which holds about as much as 5 standard drums, delivers 99% of its' contents and meets sustainability goals.

## **Less waste of lubricants**

Without a doubt the trend in lubrication is toward more specialised products that fill some very specific needs. The use of synthetics and semi-synthetic lubes, specialty additives, targeted viscosities, increased base stock value, additive pricing and development expense, have all driven up the cost of the finished products in recent years. For any of us that have ever rolled a drum across the floor, we know that it is not unusual to have a heel of 15 to 25lbs or more in the bottom of the drum. It is bad enough that valuable product is wasted but now we bear the added cost to dispose of

the product and its packaging. The metal tote though better in some respects still has a heel that needs to be dealt with, empties must be stored, often outdoors in the dirt and elements before they are returned, and then managing the logistics and handling with the hope it comes back clean and uncontaminated.

The various packaging aspects of the concept work together to deliver the desired features. When the container is set up for filling at the factory handling is easy and straightforward. An air evacuated container, filled from the bottom, need not be exposed to the environment. The sealed container after filling would not require opening. In fact, as the product is discharged, the resulting vacuum would help to further deliver product and squeeze the inner bag.

For discharging viscous products like grease and heavy lubes, a roller system can be employed, akin to a laundry wringer, to press the clinging product down toward the bottom spout. With the roller system 99% product recovery is the norm. The package is then spent, the poly plastic inner and outer bags can be recycled.

The bottom cap is removed, and a typical drum pump is inserted horizontally rather than vertically. Fittings are tightened, the roller system connected and the pump operates un-manned delivering lubricant until the next change out is required.

## **Clean packaging – clean lubricants**

This closed delivery system has several advantages. Fluid-Bags are fabricated and assembled in a clean room production area, where the level of air particles is controlled in accordance with ISO 14644-1 standard, class 8. Assembled from food grade materials, the bags are not only useful for the lubricants industry, but also meet the rigid Food Guidelines allowing for a wide array of food

stuffs, pharma as well as food grade lubricants. The ability to control cleanliness has big implications for the blender and the customer. With the ability to provide packaging that has not been exposed to an industrial environment particle counts regarding lube quality (ASTM D-4407) can be controlled at the point of manufacture. As noted by the work of NORIA and others, an improvement in two or more ISO cleanliness levels can extend bearing, servo, and pump life by 2 to 3 times. With proper monitoring expensive filtration systems and associated holding tanks and reservoirs may possibly be eliminated. Clean grease as made by the manufacturer can be delivered directly to the bearing or lube point. With the closed package the Fluid-Bag can sit in the worst of industrial environments, like mines and steel mills and still deliver uncontaminated product. Since the Fluid-Bag is shipped, stored and discharged as a closed container (the top is never opened) the container does not breathe due to temperature changes which prevents moisture being pulled in. For products that are degraded by air, an aluminum liner can be provided to prevent air or moisture migration.

### **Hidden costs in lube handling**

All too often we do not realise the buried costs associated with product logistics, storage, and handling. Empty rigid packaging takes up large amounts of storage. Handling and shipping empty containers back for cleaning and refilling through a reuse plan consumes time and logistics to schedule their return. A box of 20 Fluid-Bags and 20 pallets take up little room compared to 100 empty drums or 20 empty totes. Fluid-Bags are used only once, and the packaging can become a part of a corporate sustainability improvement program or ISO 14000 program.

Packaging has evolved a good deal since the wooden barrel to deliver a flexible single use package that ensures product integrity, purity and cleanliness while addressing sustainability issues critical to our environment. Bulk containers that save on handling and logistics and deliver 99% of their contents that minimise cleaning and wastewater contamination. Packaging that is easy to fill, reduces manpower and eliminates waste. Manufacturers and consumers now have options that are both cost effective, functional, smart and address our environmental needs.

#### **LINKS**

[www.fluid-bag.com](http://www.fluid-bag.com)