

EarthSafe overview.

EarthSafe is the latest generation of the piston can barrier package. Piston cans have been in use for over thirty years and as with most packaging formats, it has gone through multiple versions with improvements made to the piston and grommet during its history. The EarthSafe Dispensing System developed by Chris Scheindel is the latest version of the piston can, but is differentiated with the incorporation of significant patent improvements. The improvements were made to the grommet, the piston, plus the addition of a new design dispensing valve.

The EarthSafe name was chosen Ultramotive since this new generation package was designed for the replacement of hydrocarbon gases as the propellant with environmentally friendly gasses such as Nitrogen and compressed air. It was initially developed for shave gels because of impending VOC reduction legislation, with the three enhanced components yielding superior dispensing characteristics to a time proven system. We have found that the package works equally well with a variety of other viscous and semi-viscous products. In addition, it offers a lower cost "total" package to other alternatives in the market such a bag-on valve systems place that do not have the performance history that the piston package benefits from.

The Universal grommet should be looked at as the next generation of Nicholson grommet. Nicholson grommets have been in use for over a decade with billions of units used in the North and South America, and in Europe. It has been used for shave gels by many major shave gel marketers. Although the Universal Grommet resembles the rubber Nicholson grommet in appearance and is inserted into the can in a similar fashion, the patented improvements to the design and use of DuPont Hytrel allow for faster filling, no pressure loss, and improved tamper evidence. It should be noted that the Nicholson grommet is

designed for hydrocarbon and will not work efficiently with Nitrogen or compressed air.

The Delbar piston has actually been used by Ultramotive for over 20 years. The version used with the EarthSafe valve has a modified flat top profile which eliminated the “well” needed for tilt valves. This reduces the amount of residual product in the can after full dispensing is complete. This design also incorporates a multi-layer barrier piston using EVAL as the internal barrier layer, and the self seating rings around the circumference are designed to eliminate tilting of the piston and allow piston movement over any imperfection in the can wall. Ultramotive has a long history with the piston design being used on products such as:

- RTV Silicone
- Household Calking Sealants
- Lubricating grease

The third component of the package is the Ultimate Valve. The design allows for the elimination of the traditional springs and small parts seen in many valve systems today and is literally a two-part valve. The Ultimate Valve was developed specifically for the shave gel market. As the valve is truly the new component of the EarthSafe package, there are currently no commercial products using this new valve in the market at this time. The Ultimate Valve is consumer friendly and will dispense product to suit the consumer even when pressure in can is low. We have packed samples of shave gel that are over two years in age which perform as well today as when they were initially packed. We also have several other viscous and semi-viscous food products under test at this time and are presently working with two major food companies using the SC-42 Delbar Piston as it is food approved.

EarthSafe Advantages & Features

- Performance
 - **EarthSafe** uses compressed gas as the propellant.
 - “ZERO” VOC emissions directly from the propellant.
 - **EarthSafe** is a proven system.
 - Piston can technology has been in use for 30 years.
 - BOV has a history of functionality and quality issues.
 - **EarthSafe** eliminates the chance of a ripped or detached bag.
 - **EarthSafe** offers less residual product in the container after dispensing than a BOV system. i.e. happy consumer/repeat customer!
 - **EarthSafe** offers faster filling speed than BOV on comparable size fillers with comparable size containers.
 - The **EarthSafe** package is totally recyclable.
 - The **EarthSafe** package eliminates the potential for fire and explosion by eliminating flammable propellants.
 - Patented Ultimate Valve:
 - Maintains constant flow rate at both high and low pressures from start to finish.
 - Specifically designed for use with compressed gas propellants. Traditional aerosol valves are not designed to work at low pressures or with compressed gases.
 - **EarthSafe** will discharge completely at low pressure, <10psi

- Only 2 parts, plus valve cup.
 - Elimination of the springs and many small parts on standard aerosol valves.
 - Less chance for the valve to malfunction.
- Patented Barrier Piston
 - Minimal residual product in empty container.
 - The design of the piston and valve geometry significantly reduces the product trapped in the piston well. Immeasurable.
 - **The EarthSafe** Self-sealing piston eliminates “*Blow-By or bypass*” of product under the piston. Prevents a disgruntled consumer who recognizes that there is product remaining in the can, but the product will not discharge.
 - The **EarthSafe** Self-sealing piston eliminates “*Blow-By or bypass*” of propellant around and above the piston to mix with product and cause sputtering.
 - The **EarthSafe** Barrier Piston eliminates the migration of primary and secondary gasses (propellant) through the piston, extending product shelf life.
- Patented Universal grommet
 - Compared to existing Nicholson, Umbrella, and rope grommets in the market, the **EarthSafe** Universal Grommet:
 - Is Tamper evident

- **Cost**

- Compared to the alternative barrier aerosol package system,
Bag-on-Valve (BOV), the EarthSafe package is significantly less expensive.
- The compressed gas Propellants are roughly 1/3 the cost of hydrocarbon propellants.
- No need to over fill or over gas the package to guarantee the consumers gets with he pays for.