

## PVT Overview

Innovation Update, LLC, research and development company of vented technologies, and Pearce Plastics, Inc., producer of small and medium size runs for product testing purposes, will supply technology services to distributors and licensed manufacturers on a confidential disclosure basis. The Pearce Venting Technology is available for both distributors and end-users alike.

Innovation Update has made a contribution in the packaging industry with its new-patented Vented Technology that is solving problems in the chemical and cosmetics personal care fields. This technology will eliminate most paneling, internal pressure and cap back-off problems, which cause distortion and leakage.

### WHY DO WE NEED IT?

- Hot Fill Paneling
- Chemical Polarization Paneling
- Atmosphere Pressure Change Paneling
- Internal Pressure Bloating

#### HOT FILL PANELING

Products with a heavy viscosity, or products with certain chemical compounds have to be filled hot (90-180F.) If the package is capped and sealed before the product is cooled, the volume of the product will shrink creating a vacuum inside the package. This causes the walls of the container to pull in causing paneling.

The Pearce Venting Technology allows air to enter into the package until the pressure is equalized, thus preventing the vacuum buildup and eventual paneling.

The Advantages: Reduces porosity and cap back off. No time consuming cooling tunnels; do not have to resort to heavier walled, more rigid containers; do not lose sales because of unsightly packages.

#### CHEMICAL POLARIZATION PANELING

Certain chemical compounds will react with the material that the container is made of. This will cause positive or negative pressure changes inside the sealed container. This can cause the walls of the container to push out or draw in.

The PVT allows gases to escape or air to be drawn in equalizing the pressure, eliminating package disfiguration.

The Advantages: More flexibility in container choices; Do not lose sales because of unsightly packages.

#### ATMOSPHERE PRESSURE CHANGE PANELING

When product is filled at one altitude and then transported to another, or is shipped via air, external pressure changes will effect the sealed package. This can cause paneling, or bloating.

The PVT allows the package to breath in or out to equalize pressure avoiding package distortion.

The Advantages: Reduced product spoilage.

#### INTERNAL PRESSURE BLOATING

Certain chemicals such as Hydrogen Peroxide will cause gasification or products. These gases will build up in a sealed container causing the package to bloat and in the worst-case blowout.

The PVT allows these gases to vent out of the container minimalizing or eliminating package distortion.

The Advantages: Reduces porosity and cap back off. Reduced product spoilage; Do not lose sales from unsightly packages; Customer safety advantages.

### Available Current Production Items

- 24/410 Venting Flip Cap
- 28/410 Venting Flip Cap
- 38/400 Venting CT Cap

- 28/410 Venting CT Cap
- 24/410 Venting CT Cap
- 28mm Venting Reducer
- 28mm Venting Sleeve
- 24mm Venting Sleeve
- 28mm Venting Wafer
- 24mm Venting Wafer
- 50-70mm Vented Washers

### Problems We Solve

Containers filled with active chemicals or that are subject to changes in pressure, temperature or altitude need vented closures to allow air to maintain equilibrium while retaining liquids safely inside. Failure to vent the container can result in collapsing, swelling or leaking. PSI manufactures a wide variety of vented closures to reduce or eliminate problems and concerns.

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Bloating

When active chemicals build-up pressure in a container, they can cause containers to bloat. Containers lose their intended shape and may start leaking. This results in an undesirable appearance and can be hazardous for those who handle the containers.

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Bottle Paneling

Paneling occurs when a container contracts or collapses during shipping or storage. This can cause label distortion, and also possible of product leaking. • • •

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Leaking

Containers without the appropriate vented liner can be susceptible to leaking. Leaking can create a hazard and an undesirable shelf appearance for potential consumers. Damage may also result to the surrounding environment, creating a potential liability for the retailer. A vented liner from PSI allows gases to escape from the container and reduces the risk of leaking.

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Corrosion

Corrosive substances require special packaging due to the gaseous properties created by their chemical composition. If packaging is not properly vented, it may leak and damage the external labeling or the surrounding environment. This can degrade the appearance of the packaging and may create a hazard for people handling the product. •