**Challenge**

Ultraviolet (UV) radiation from the sun and other light sources such as fluorescent lighting can penetrate even visually opaque plastic containers and degrade their contents. Degraded contents can show color fade, undergo a change in color hue, taste or odor, or lose effectiveness of their active ingredients. The result is the potential for lost revenue as dissatisfied consumers avoid repeat purchases, and a higher cost of product as shelf life is reduced, making inventory obsolescence high.

**Solution**

The use of UV filter additives can limit the amount of harmful UV radiation that penetrates the container walls and degrades the contents. UV filters work by filtering out the UV rays that are able to reach the contents. It is important to know the specifics of the storage and end use environment, polymer base and processing conditions to design the most effective UV filter package to meet the performance expectations. Versions meeting FDA regulatory requirements are available.

**Value**

The use of UV filters can extend the shelf life of container contents and reduce the chance that a customer experiences a degraded product. OEMs should see product returns decrease, and overall sales and customer satisfaction increase. Risks are reduced as product expiration labeling is more accurate. Operational costs are reduced as inventory obsolescence drops and production batch sizes are increased.

**Implementation**

OnCap™ UV filters are available in concentrated pellet, bead or liquid form. UV filter packages are available for PE, PP, PS and PET resins. Use rates vary based on the situation, with typical rates ranging from 1% to 3% for pellets or beads, and 0.25% to 1% for liquids. Accurate dosing of pellets or beads is achieved via a volumetric in-line feeder or gravimetric weigh scale blender.

The liquid form utilizes a metering pump adapted to the processing equipment.
UV filters can be combined with UV stabilizers and/or antioxidant additives into a single concentrate to provide complete protection from UV exposure for container and contents as well as providing physical, mechanical and thermal stability in production processes. They can also be combined with colorants into a single OnColor™ Smartbatch™ concentrate.

Application

UV filter formulations are available for a variety of thermoplastic processes, including injection molding, blow molding, compression molding, and sheet and film extrusion. UV filters are commonly used in applications where outdoor or indoor light exposure to package contents is a concern, including food and beverage, personal care, cosmetics, healthcare, household products, and industrial and institutional products.