AMETEK®

Material Testing
Your PET Bottle in the Best Possible Light

Areas of Application

PET bottles are the shooting stars of the packaging industry, and the importance of polyethylene phthalate (PET) for a wide variety of applications continues to increase steadily. As PET is used more and more in the packaging industry, the possibilities of shapes and sizes have expanded.

Increasingly, PET packaging is encountered not only in the form of bottles for soft drinks, but also for applications that include containers for soaps, cosmetics, cleaners, pharmaceutical products, or commercial bulk products.

The PET bottle offers numerous advantages:

- It is practically unbreakable
- It is extraordinarily light, weighing only one-tenth as much as a glass bottle
- It can be easily recycled
- It is an environmentally friendly solution for food packages

The Effect of Solar Radiation, Light and Oxygen

In contrast to PET, there are decades of experiential values available for glass. Furthermore, glass presents few if any problems with regard to its material properties (mechanical and chemical stability, light sensitivity), also with respect to oxygen diffusion.

Simply stated, pure PET is transparent to practically the entire solar light spectrum. In other words, a PET package is not only transparent in the visible range of the spectrum, but both UV and thermal radiation pass through the plastic practically unhindered to strike the underlying contents.

UV and thermal radiation can lead to undesirable reactions such as a reduction in the minimum shelf-life of the product, alterations in the product's colour or taste, and the yellowing of labels.

Test Procedures to Determine Stability

Given the current time pressures for innovations, it is not always feasible to observe a PET product over the period of an entire year. Accelerated test procedures, therefore, are required in order to meet time to market goals while still providing for adequate product safety. Manufacturers need information about how long a new package or its contents will remain stable and how it will react to light during storage, and he needs this information as quickly as possible.

How do UV and thermal radiation effect your PET bottle and its contents?

ATLAS®
MATERIAL TESTING SOLUTIONS

www.atlas-mts.com

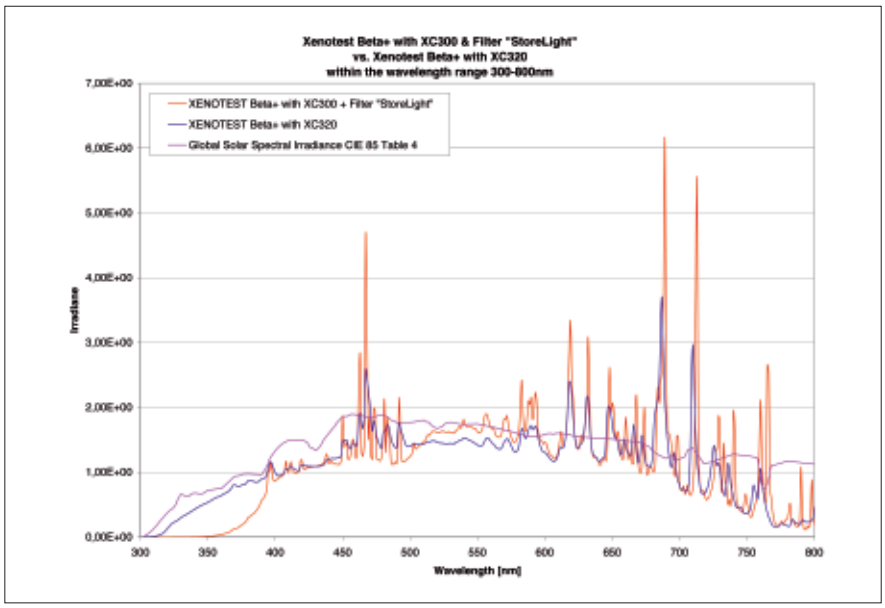
AMETEK®

Test Equipment from Atlas

Depending on the area of examination and the test goal – e.g., shelf-life, content degradation, or minimum durability – Atlas offers tailor-made test solutions with its proven lines of Xenon-arc exposure instruments **SUNTEST®, Xenotest®** and **Ci Series®.**

Special requirements – for example, the available light spectrum and temperature range – can be met on a customer-specific basis. The following Atlas instrument configurations are representative for possible test solutions in the beverage industry:

- **SUNTEST XXL+** flatbed xenon exposure system with special lamp cartridge for test methods with very low black standard temperatures
- **Xenotest Beta+** exposure instrument with adjustable carousel for varying bottle sizes, cooling unit, and special light and grey filters to mimic the spectral conditions of storage rooms
- The **Ci4000 Weather-Ometer®** with rotating rack and simultaneous, automatic control of both chamber temperature and Black Panel Temperature



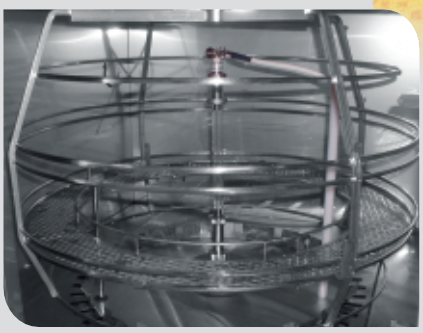
In the Xenotest Beta+, special light and grey filters mimic the conditions in the warehouse.

The Advantage for You (depending on the Material being tested)

Your requirements with regard to the temperature and light spectrum can be individually adjusted to replicate actual conditions as closely as possible. Exposure of different bottle sizes – either statically or in motion – can be achieved with the aid of specific sample holders.

The use of Xenon light for testing allows lifetime predictions. For example, the effects of 6-months of actual exposure will be apparent after only a few days in a SUNTEST instrument.*

*Source: AFG-Wirtschaft 4-2002, "Zeitmaschine" von Schmidt, Hübner und Tretzel oder LVT Lebensmittelindustrie 07/08-2002, "Getränkestabilität in PET" von Schmidt, Hübner und Tretzel.



Special sample holders for PET bottles in a Ci4000 Weather-Ometer

PET bottles in a SUNTEST XXL+ flatbed xenon exposure system

Special sample carousel in a Xenotest Beta+ to hold customary bottles

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