LUBRIZOL
ENGINEERED
POLYMERS

ADVANCING MATERIALS. ELEVATING PERFORMANCE.

Super-Accelerated UV Testing and Analytics Help Meet a Critical Deadline

When choosing a TPU supplier, there are mission-critical advantages to having access to materials science expertise, advanced analytical tools and the ability to customize test methods. With properly equipped labs, experts in the chemistry of TPU can leverage the power of state-of-the-art equipment to achieve challenging objectives in unheard-of ways.

Accelerated QUV and xenon arc testing are widely accepted methodologies that supply critical data to demonstrate the effects of weathering. While these methods are accelerated simulations of real-world exposure, months of testing are still required to make meaningful predictions of years in the field. Recently, the emergence of a new capability provided an opportunity to significantly shorten test cycles when compared to the standard methodologies.

A MILESTONE DEVELOPMENT IN PREDICTIVE WEATHERING TESTING

Providing a step-change to predictive weathering testing, Lubrizol scientists armed with expertise in UV weathering and polymer chemistry harnessed their understanding of this new capability to enhance their R&D lab with an EYE Super UV Tester from Iwasaki Electric Co., Ltd. It's a formidable tool for understanding TPU's behavior with respect to the ASTM standards governing (1) the outdoor weathering of plastics, and (2) in using this apparatus to induce material property changes in plastics for simulation of weathering conditions from sunlight, heat and humidity.

Using the EYE Super UV Tester, Lubrizol materials scientists can generate iterative data that they in turn correlate to standard testing methods for granular insights – all in a fraction of the time required for traditional methods. The ability to compress years of damaging UV radiation effects into just weeks of testing time allows product developers to quickly confirm data through iterative development with high relative predictability to real life outdoor exposure.

DATA FOR QUALIFICATION TESTING IN WEEKS, NOT MONTHS

The EYE Super UV Tester played a critical role in helping to modify a TPU for qualification testing on a tight deadline. In the European Union, a widely-used additive ingredient within a TPU formulation became listed on the REACH Candidate List of Substances of Very High Concern (SVHC). It was imperative to move fast to qualify an alternative, positioning it to meet the regulatory and performance expectations of a newly formulated TPU product. In just six weeks, the EYE Super UV testing capability provided all the data needed to identify a compliant next-generation solution through development and validation.

Relying only on the traditional accelerated testing methods, this speed and confidence would not have been possible for even the most experienced R&D scientists. Collecting data and making formulation decisions using traditional accelerated test methods can take months or even years. Lubrizol's investment in this resource makes it possible to use statistical analysis to conduct a design of experiment (DoE) that encompasses numerous relevant variables while minimizing the number of experiments and resources required to isolate the data that unlocks the solution.

ACCELERATED UV TEST DURATION BY TEST METHOD*

EXPOSURE	STANDARD	TEST TIME
South Florida	ASTM D1435	1 year
QUV	ASTM G154	1200 hours
Super UV	Custom	2 days

* Correlation of exposures based on best estimation from scientific testing

Image courtesy of Iwasaki Electric Co., Ltd.

Made With ESTANE® TPU

TO LEARN MORE visit go.lubrizol.com/beneaththesurface or email ppf@lubrizol.com