Standardized Testing Methods:
• AATCC TM16-1998, AATCC TM16-2004, AATCC TM169
• FLTM BI 160-01
• GME 60292GMW 14162, GMW 3414
• ISO 105-B02, ISO 105-B04, ISO 105-B06, ISO 105-B10, ISO 12040, ISO 3917, ISO 4892-1, ISO 4892-2, ISO 10977, ISO 11431, ISO 11979-5, ISO 4049, ISO 7491
• JASO M346
• MIL-STD 810F, MIL-STD 810G
• PV 1303, PV 3929
• SAE J2412, SAE J2527
• VDA 621-429, VDA 621-430, VDA 75202
• VW PV 3930

Fraunhofer LBF’s plastics research division, which evolved out of the German Plastics Institute [Deutsches Kunststoff-Institut DKI], supports its customers along the entire added value chain. We specialize in the management of complete development processes and advise our customers at all stages of development. As an established competence center for additivation-, formulation-, and hybrid issues, we offer comprehensive know-how in the fields of polymer analysis and characterization of properties changes during processing and use, as well as the development of time-resolved processes.
WEATHERING AND AGING OF PLASTICS

DEVELOPMENT AND TESTING OF LIGHT STABILIZER ADDITIVES

A purposeful, and optimized adjustment of plastics to the requirements for outdoor applications or with artificial light sources, is only possible with through the consistent use of light stabilizers. Specific development of the formulation and of innovative light stabilizers for plastics are therefore necessary. The effect of UV-radiation depends on the underlying molecular structure of the polymer and prior damage due to thermal or hygric processing, for example. An accelerated simulation of temperature, light and humidity in the laboratory is required to determine the interactions of light exposure and light stabilizers shortly.

We offer simulated weathering tests, climate tests, or thermal aging tests. Surely innovative!

ACCELERATED WEATHERING TEST INSTRUMENTS

For simulated weathering tests, instruments with xenon light of the model Ci4000 and SUNTEST XLS+ from 1ZW1429V0499750956, as well as an instrument for quick testing with a mercury vapor lamp (Bandol Wheel, Erichsen) are available. We offer standardized tests as well as testing with weathering cycles according to customer specifications. Since long testing times cause high costs and delay the product development, the desire of the industry for shorter testing procedures exists for a long time. This can be achieved through the use of tailored weathering cycles and highly sensitive early detection methods, which we develop for you, or put at your disposal.

Weathering Instruments:
- Weather-Ometer Ci4000
- Suntest XLS+ (with Suncool option)
- Bandol Wheel

POLYMER AGING

In polymer aging, an interplay of many different physical and chemical processes takes place. These processes must be known, determined, understood, and implemented in models for reliable service life time predictions. The plastics division at Fraunhofer LBF has suitable measurement and testing techniques for monitoring of polymer aging and the respective knowledge. For example, ultrasound measurement techniques and low-field NMR sensors were integrated in weathering instruments, which allow the in situ monitoring of material changes and the optimization of weathering cycles. A non-destructive examination of weathered coatings is conducted by ultrasound microscopy, for example. Imaging techniques and scattering methods, dynamic-mechanical analysis or differential scanning calorimetry for determination of structure and properties complement these special methods. Determination of molar mass and optical spectroscopy are used to monitor chemical changes.