

PAINT CRATERS AND WETTING PROBLEMS

TASKS

In many applications, plastic materials are exposed to the sun's natural UV radiation, such as injection-molded parts in the automotive sector, textile fabrics for awnings or roofing as well as ropes or nets. In addition to obvious effects such as color change or yellowing, exposure to sunlight can also affect the structure and thus the mechanical properties of the material. In order to assess and control these changes, it is necessary to imitate natural UV radiation in an accelerated process and then examine the exposed samples in comparison with untreated material for optical, mechanical and structural changes.

SOLUTION

Analytik Service Obernbuurg has a Xenotest Beta exposure and weathering device (see Fig. 1) for simulating solar radiation. This enables hot exposure tests according to DIN ISO 105-B06 as well as material and component tests according to common automotive standards such as the VW/Audi standard PV 1303. All UV light and weathering conditions can be simulated, whereby the exposure time is reduced by a factor of 5 to 10 compared to natural sunlight exposure. The Xenotest Beta can expose specimens up to 300 mm x 80 mm as standard (see Fig. 2), which is particularly advantageous for tensile tests where longer clamping lengths (200-250 mm) are often required.

Industries

Man-made fibers
Textile manufacturers

Analysis goals

Sunlight aging

Materials

Fibers
Fabrics
Plastic components

Analysis method

Hot exposure test
Tensile test

ADVANTAGE

The Xenotest Beta device initially allows all the usual light fastness tests for the automotive and textile sectors, even on large samples. In combination with other analysis methods, differences between untreated and UV-irradiated material can also be determined, for example with regard to mechanical properties. Due to the time-lapse nature of xenotest exposure, important data for product development and approval can be obtained quickly



Fig. 1: Xenotest Beta - general view.

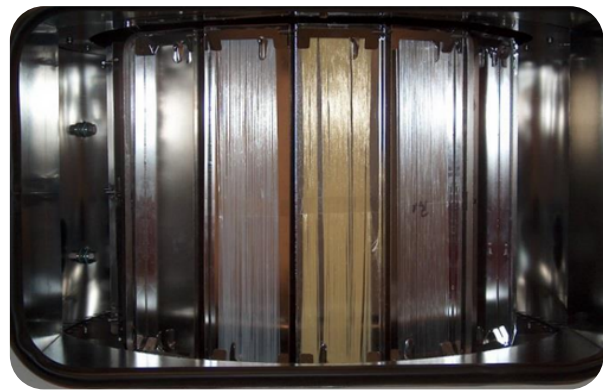


Fig. 2: Xenotest Beta - detailed view on specimen holder carousel with vertically tensioned threads

The influence of UV exposure on the mechanical properties of polyester is illustrated in Fig. 3 - Force-elongation diagrams for unexposed and between 50 and 200 h UV-exposed polyester yarn.

