



Quick Links



Drawing on decades of weathering leadership and expertise, the Atlas Consulting Group provides in-depth consulting services that assist you in developing and applying the best weathering test methods and strategies for your products. **Atlas Weathering Consulting Insights** offers interesting and valuable information on a variety of topics relevant to long-term durability testing.

You're going to use it where?

Weathering and Climate

The term "Weathering" is often used to describe the decomposition of geological structures by weather factors, but it can actually be defined much more broadly. Weathering, as a process, describes the long-term influence of the environment as a combination of all weather factors on any material.

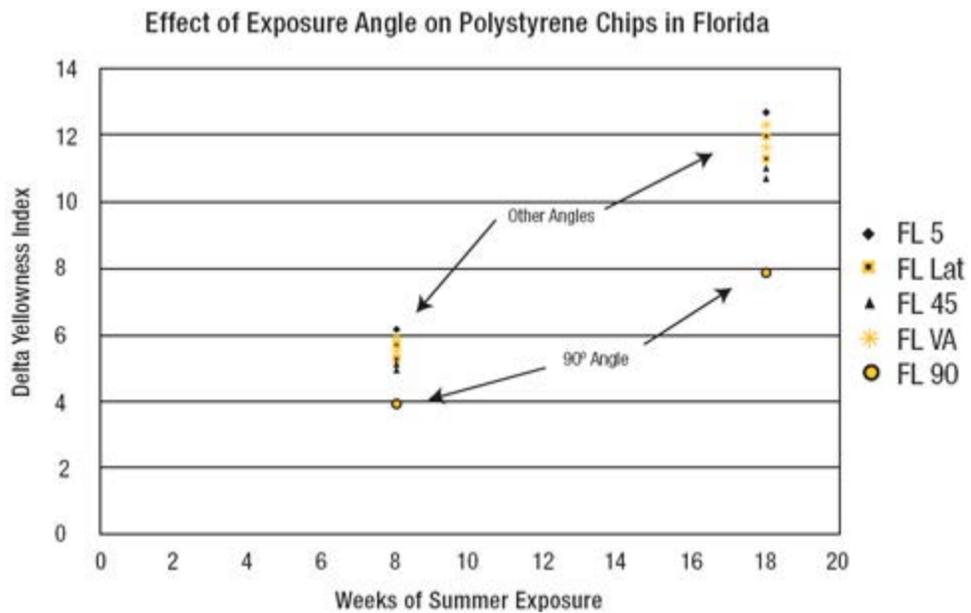
When you plan on producing a product for outdoor use, you must understand its weathering characteristics which includes knowing the climatic conditions at its end-use site. A detailed climatic analysis provides an evaluation of not only what is in store for the product, but more importantly, it also increases the significance of accelerated laboratory testing by helping to define and optimize specific test parameters. In addition, climatic analysis also allows for better correlation of laboratory and end-use conditions as opposed to simply "counting photons." Understanding the interplay of light, moisture and temperature in specific local situations is critical in determining the long-term endurance of exposed products.

Sources and Availability of Climatic Data

Although weather data are generally known and accessible for many locations around the globe (internet-based meteorological resources, for example: www.wetteronline.de & www.weather.com), in order to make a significant correlation to laboratory weathering, one must have reliable, long-term climatic data which are oftentimes sparse.

Atlas offers the world's largest network of outdoor weathering testing sites, providing not only testing services, but also [an array of climatic data at representative benchmark locations](#). These benchmark locations include some of the harshest end-use conditions, extremely hot, arid climates with high diurnal temperature differences, or hot, humid tropical/equatorial climates amongst other climates, according to the Köppen-Geiger climate classification (Peel et al., Hydrol. Earth Syst. Sci. Discuss., 4 (2007) 439ff). Although detailed climatic data are not publicly available, Atlas' monthly weather summary reports can be freely downloaded from: <http://atlas-mts.com/online-tools/weather-summary-reports/>.

Effective terrestrial solar radiation and radiant exposure on surfaces in regards to location, time, orientation and precise meteorological conditions can be computed using the proprietary software [CESORA](#) (Calculation of Effective Solar Radiation).



Understanding the Influence of the Environment

The reaction of a product to the environment not only depends upon its end-use climatic conditions, but also upon factors like the color and thermal conductivity of the product, as well as how it is oriented within the environment. The data above shows the yellowing characteristics of polystyrene in response to solar exposure at different orientations in Florida, demonstrating how significantly orientation can affect the weathering behavior of a product. Considering location and time dependent factors (i.e. temperature, radiation, humidity and orientation) is essential to understanding the weathering behavior of a product and to correlating outdoor and laboratory experiments. If the behavior of your product in a variety of environments is important, and if you have been struggling to find a way to address this issue, contact us. We can help.

For more information contact the Atlas Consulting Group at atlas.info@ametek.com (US) or atlas.info@ametek.de (Europe).

