ATLAS MATERIAL TESTING SOLUTIONS / AMETEK®

Fundamentals of Weathering I and II

Seminars on the Effects of Weather on Material Durability

WEATHER – CLIMATE – WEATHERING – AGING

The negative reaction of a material to climatic influences is frequently the reason for unwanted and premature product failure.
Manufacturers, processors, and users must be able to predict the functional suitability of polymeric materials. For product development it is a must to recognize the key factors that cause degradation and – as a consequence to understand how to properly conduct such durability tests.

CONTENT

The seminars cover weather factors, their effects on polymers, as well as testing techniques to determine the durability of materials exposed to light and weather. In addition, the seminars provide most important tools for test program development, test results evaluation and correlation assessment.

Both seminars will give special attention to the testing of paints and protective coatings, automotive materials, architectural building products, molded plastics, profiles, wood, packaging, printing, and textile materials.

- Testing Standards
- Acceleration
- Correlation
- Service Life Prediction

PARTICIPANTS

The seminars will present the principles of natural and accelerated weathering and are directed to those involved with designing, specifying, evaluating, selling or purchasing products that can be affected by exposure to light or weather. This includes material engineers, product managers, R&D personnel, as well as many other specialists.

SPEAKERS

Course instructors for the seminars are Dr. Florian Feil, senior technical consultant, global manager for client education and manager of standards at Atlas MTT and Mr. Jürgen Parr, weathering specialist at Atlas MTT.

FUNDAMENTALS OF WEATHERING I

WEATHERING FACTORS
• A description of the primary and secondary factors that affect the degradation of materials
• How to measure the main parameters light and temperature
• Overview of the radiometric quantities
• Synergy of climatic elements
• The world`s climate zones

OUTDOOR WEATHERING
• Influencing factors/variables of outdoor weathering
• Introduction and analysis of the various weathering methods
• Overview of weathering stations throughout the world
• Accelerated outdoor weathering

LABORATORY WEATHERING
• Requirements to accelerated weathering equipment in the laboratory
• Specific radiation sources and their spectral distribution in comparison to solar radiation
• High-End and Low-End Weathering instruments
• Testing of components

STANDARDS
• Description of instrument based on performance-based standards
• Overview of Standardization Organizations
• Contents of important weathering standards

ACCELERATION OF WEATHERING TESTS
• Intention and goals of weathering tests
• Evaluation of test results
• Description of correlation and coefficients
• Acceleration and correlation - long-term experiences

FUNDAMENTALS OF WEATHERING II

EFFECTS OF WEATHER ON POLYMERIC MATERIALS
• The primary factors of weathering and their impact
• Energy profile of photochemical reactions
• Spectral sensitivity and activation spectrum
• When secondary factors become primary

DEGRADATION AND STABILIZATION MECHANISMS
• Photooxidation mechanisms of polymers
• Analytical techniques to study the photooxidation of polymers
• Strategies of stabilization

OPERATION AND VALIDATION OF LABORATORY WEATHERING INSTRUMENTS
• Limits of UV measurements
• Traditional and new reference materials
• Instrument performance control
• Out of specification performance
• Trouble shooting

CORRELATION AND ACCELERATION
• Procedures to determine the correlation of test results
• Correlation studies and their results
• Understanding acceleration
• Benefits and limits of accelerated testing
• Reliable accelerated testing for service life prediction

WEATHERING TESTING AND SERVICE LIFE PREDICTION
• Selecting the right standard or test method
• Development of test methods
• Testing strategies
• Extrapolation