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Accelerated Testing Weathering of Polymers Natural and Artificial Weathering of Basalt, North-western United States Standard Terminology Relating to Natural and Artificial Weathering Tests of Nonmetallic Materials Weathering of Rigid Polyvinylchloride Effects of Natural and Artificial Weathering on Building Sealants Weathering of Polymers Natural and Artificial Weathering of UPVC Future Prospects for Accelerated Weathering of Polymeric Materials Chemistry, Mineralogy, and Artificial Weathering of PFBC By-products China Standard: GB/T 14522-2008 Artificial weathering test method for plastics,coating and rubber materials used for machinery industrial products—Fluorescent UV lamps Evaluation of Some Artificial Weathering Cycles Influence of Solution Chemistry on the Natural and Artificial Weathering of Feldspars in the Soil Environment The Effects of Simulated Clinical Fabrication Heat Treatment and Artificial Weathering on the Structures and the Mechanical Properties of Selected Prosthetic Polymers Synthetic surfaces for outdoor sports areas - Exposure to artificial weathering The History of Terra-Cotta Glaze-Fit Testing and Artificial Weathering Methodologies and a Comparative Testing Program of Their Impact on Glaze Failure Plastics. Artificial Weathering Including Acidic Deposition Accelerated Weathering Paints and Varnishes. Artificial Weathering and Exposure to Artificial Radiation. Exposure to Filtered Xenon-arc Radiation Methods of Test for Paints Synthetic Surfaces for Outdoor Sports Areas. Exposure to Artificial Weathering Formation of Halloysite from Feldspar Summary of Accelerated Weathering and Other Durability Studies and the Correlation to Real Weather Paints and Varnishes. Exposure of Coatings to Artificial Weathering. Exposure to Fluorescent UV Lamps and Water Effect of Artificial Weathering of Seed Cotton on Weight and Fiber Quality The Weathering of the PVC Insulation of Overhead Lines Handbook of Material Weathering Cold Applied Joint Sealants. Test Methods. Determination of the Artificial Weathering by UV-Irradiation Accelerated/abbreviated Test Methods, Study 4 of Task 3 (encapsulation) of the Low-cost Silicon Solar Array Project Superhydrophobic Aluminum Surfaces: Preparation Routes, Properties and Artificial Weathering Impact Development of Testing Techniques for Aging of Plastics in Buildings Due to Natural and Artificial Weathering Plastics. Artificial Weathering Including Acidic Deposition Paints and Varnishes. Artificial Weathering Including Acidic Deposition The Effect of Artificial Weathering and Movement Accommodation Testing on Building Sealants Methods of Test for Paints Artificial Weathering and Cyclic Movement Test Results Based on the RILEM TC139-DBS Durability Test Method for Construction Sealants Ultraviolet Chambers Based on Integrating Spheres for Use in Artificial Weathering Standard Test Method for Rubber Deterioration Using Artificial Weathering Apparatus Accelerated Weathering of Textiles Handbook of Material Weathering

This book is a valuable aid to product designers in polymer selection and to laboratory personnel who evaluate polymer durability. Presented are 195 pages of durability data for 23 types of polymers and 20 types of compounded products. Includes comprehensive discussion of various weathering conditions and methods evaluation. Contents: Principles of Photophysics and Photochemistry Weathering Conditions and Their Measurement Artificial-Weathering Equipment Important Variables in Weathering Testing-Sample Preparation and Methods of Evaluation Degredation Data on Specific Types of Polymers and Compounded Products Stabilization and Stabilizers Biodegredation Nomenclature. The degree of correlation obtained

between results of natural and artificial weathering for a wide range of polymers is discussed. It is noted that the greatest successes in achieving satisfactory correlation continue to be reported for olefin polymers. However, it is concluded that, whilst artificial weathering may continue to be cautiously employed as a means of screening formulations prior to outside exposure, greater emphasis should be given to applying sensitive methods of evaluating the physical-chemical and mechanical changes occurring in materials exposed naturally outdoors. This report describes the theory of weathering and its effect on polymer properties, methods of stabilisation, and natural and accelerated weathering tests. The problems associated with particular polymers used in outdoor applications are explained. An additional indexed section containing several hundred abstracts from the Rapra Polymer Library database provides useful references for further reading. Paints, Coatings, Artificial weathering tests, Condensation, Ultraviolet radiation, Water-resistance tests, Environmental testing, Test equipment, Test specimens Sports facilities, Sports equipment, Surfaces, Artificial sports surfaces, Surfacing (exterior spaces), Outdoor sports equipment, Artificial weathering tests, Environmental testing Handbook of Material Weathering, Sixth Edition, is an essential guide to the effects of weathering on polymers and industrial products, presenting theory, stress factors, methods of weathering and testing and the effects of additives and environmental stress cracking. The book provides graphical illustrations and numerical data to examine the weathering of major polymers and industrial products, including mechanisms of degradation, effect of thermal processes, and characteristic changes in properties. The book also discusses recycling, corrosion and weathering, and the weathering of stone. This sixth edition updates this seminal work with recent developments and the latest data. Polymers and industrial plastics products are widely used in environments where they are vulnerable to the effects of weathering. Weathering stress factors can lead to deterioration or even complete failure. Material durability is therefore vital, and products for outdoor usage or actinic exposure are designed so that the effects of artificial and natural weathering are minimized. This book is an important reference source for those involved in studying material durability, producing materials for outdoor use and actinic exposure, research chemists in the photochemistry field, chemists and material scientists designing new materials, users of manufactured products, those who control the quality of manufactured products and students who want to apply their knowledge to real materials. From the Foreword Accelerated Testing: Nature and Artificial Weathering in the Coatings Industry is aimed at all those involved or interested in creating, producing, applying, and testing modern high-quality coatings for outdoor use. Coatings are exposed to a great many severe natural stresses that cause a gradual deterioration of the properties which are responsible for the coatings' very quality. Nevertheless, buyers expect coated products to remain in an as-new condition -- which is mostly characterised by a highly attractive appearance and intact surface -- for as long as possible. This calls for coatings of high weatherability and long service life. In this book, accelerated testing, through its simulation of the destructive action of natural weathering, is the means for testing this coating quality. Test engineers shoulder much responsibility because not only must the results form the basis for reliable predictions, but they must also be obtained economically and as quickly as possible. Their results are the dominant factor in any decision to take a new coating creation into series production. Accelerated testing has become an indispensable tool in the paint and coatings chemistry as a means of avoiding nasty surprises by coatings in normal use. Other methods of predicting service life are still too unreliable, given the extent of current weathering knowledge. Modern-day, high-quality coatings are highly complex systems which contain numerous essential additives. Not surprisingly, coatings chemistry is therefore sometimes jokingly likened to alchemy. But natural weathering, in all its random manifestations of different impact, is equally complex. Words alone cannot describe how best to simulate the team-like interaction of such a complex system in the laboratory. There is more to successful simulation than applying a standardized test method, or switching on a fully controlled weathering device which has been marketed as an all-rounder. It takes know-how, experience and skill. This book will help such abilities to be acquired. This standard specifies one of the artificial weathering test methods for plastics, coatings, and rubber materials used in machinery industry

products-the fluorescent ultraviolet lamp exposure test method. This standard applies to weather resistance comparison and screening tests of plastics, coatings, rubber and other materials. Paints, Protective coatings, Varnishes, Performance, Performance testing, Environmental testing, Test equipment, Test specimens The purpose of this study was to assess the effect of artificial weathering and cyclic movement in a laboratory test based on the RILEM Technical Recommendation (RTR) "Durability Test Method for Curtain Wall Joint Sealants." Eleven sealants being used in Japan were tested, including two silicones, two silicon-modified polyethers, two polysulfides, two polyurethanes -- each as one- and two- part products -- one two-part silicon-modified polyisobutylene, one two-part urethane cure acrylic, and one one-part water-borne acrylic. The two-part polyurethane, the two-part urethane-cure acrylic, and the one-part water-borne acrylic were also evaluated with and without painting the sealant surface. Test specimens were prepared using anodized aluminum and mortar as substrate materials; primers were used for all sealant/substrate combinations as recommended by the manufacturers. All sealant specimens were conditioned according to Method A. The durability test, consisting of weathering and thermo-mechanical cycling, was carried out both with and without the influence of fatigue cycling. The durability cycles were repeated three times. Weathering was conducted in a fully automatic weathering machine using a xenon arc light source. Sealants without painting were observed to chalk and craze at an earlier stage in the durability cycles than the ones with painted surfaces, confirming the effectiveness of painting the sealant surface in protecting organic sealants from aging. A substantial difference in the behavior of sealants was observed for exposures with and without fatigue cycling, confirming the importance of fatigue cycling in the degradation of sealants. In order to obtain a good correlation between accelerated weathering and actual service performance, a proper balance of degradation factors is essential. Plastics, Environmental testing, Weathering, Artificial weathering tests, Acid-resistance tests, Air pollution, Photochemical reactions, Ageing tests, Surfaces, Polymers, Geotextiles, Test specimens There are several completed studies of sealants weathering outdoors and in accelerated weathering machines. There is no perfect correlation but there are remarkable similarities in the results and a general correlation is possible. The general conclusion is that it takes no less than 1000 hours in the machine to equal one year in South Florida in the full sun. These are with static samples. It is certain that the user of lab tests and the user of sealant specifications wanting an indicator of long term performance should look with a skeptical eye at durability claims that suggest short times (less than several thousand hours) in weathering machines as adequate. Such short term tests should be regarded with great skepticism and mistrust. The reasonable conclusion is that a 5000 hour or 10,000 hour of artificial weathering exposure followed by many cycles of movement are needed to have a realistic weathering test. The other major conclusion is that durability is sealant specific and broad general claims over entirely generic classes might point to a trend but won't define specific behavior. For specific information the specific sealant of interest, in the color of interest must be studied. A variety of commercial sealant products have been studied at BRE over the past 20 years, during which changes in key properties have been measured in samples exposed to artificial laboratory ageing and weathering, and to natural weather in England and in more severe climates abroad. Most recently the results of a detailed study of cure and durability of sealant products have been reported at ASTM Symposia in 1992 and 1993. Joints, Artificial weathering tests, Sealing materials, Roads, Irradiation, Ultraviolet radiation, Pavements (roads), Road surfacing, Weathering, Environmental testing A decisive handicap in the use of plastics consists in that their characteristics may be subjected, compared with the time-dependent classical building materials, to considerably greater changes due to weathering which have defied exact specification so far. This paper describes the effect of an ultra violet radiation, heat and condensation artificial ageing procedure on the ability of a range of building sealants to survive a movement accommodation test based on the ISO 9047 test method. Sealants stored under standard laboratory conditions were also subjected to the movement accommodation test. IN PREPARATION OF THIS CHAPTER, THE CONtents of the fifteenth edition were drawn upon. The current edition will review, clarify and update the topics as addressed in the previous edition. New technology and reference materials are

acknowledged and included to update the reader with the advances in this industry. Paints and coatings are used both to protect substrates and to provide an aesthetically pleasing appearance. In an outdoor environment, both of these functions can be affected by weathering. The four major factors involved in weathering are solar radiation (sunlight), moisture, oxygen, and heat. Sunlight, especially in the short wavelength/high energy ultraviolet (UV) region, has been proven to lead to discoloration, loss of gloss, scaling, embrittlement, and chalking. Moisture, in the form of rain, dew and humidity can cause blistering, flaking, loss of adhesion and promote the growth of mildew and algae. Heat exposure may cause embrittlement, cracking, peeling, and checking. Oxygen in the atmosphere participates in the oxidation of the surface of the coating, which may eventually lead to oxidation of internal layers, causing embrittlement, softening, cracking, or crazing. The oxygen is often left out of the discussion since it is more constant than the other factors, but this degradation process is a contributing factor to the other three factors of weathering. These elements contribute individually as well as in combination to cause coating failures. Naturally occurring and man-made chemicals in the environment also contribute to coating degradation and could be considered a fifth element of weathering. However, the type and levels of chemicals can vary dramatically, even over short distances. Therefore, they cannot be considered as universal in influencing the degradation process as the four factors mentioned previously. Perhaps as a consequence of this, and also partly due to tradition, chemical resistance testing is usually considered to be separate from artificial weathering. Although the effects of chemicals cannot be ignored, they are discussed elsewhere in the manual. One of the most common chemical exposure tests that is often grouped with accelerated weathering continues to be salt fog or salt spray testing, which is discussed in the corrosion section of this manual. In summary, this chapter will consider only devices that incorporate an UV light source, temperature control or monitoring, and moisture exposure monitoring. Although the results of these final tests were numerically scattered, they still provided useful insight into the value of the weathering tests that had been reproduced.