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## ***Introduction***

Often, coating and paint manufacturers, such as HMG, are asked, “How many months or years of ‘normal’ exterior exposure compare to an exposure test in an Accelerated Weathering tester?”

The quick answer is that it is theoretically impossible to equate a known number of exposure hours in a QUV, cycling humidity or salt spray test machine to external exposure. There is no magic number that can be used to multiply test exposure hours to compute an outdoor exposure limit.

## **Possible reasons for outdoor exposure variations**

The most prominent problem when asked how long a surface coating will last is the inherent variability and complexity of outdoor exposure situations.

### **Examples of such variable include:**

1. Geographical location or latitude of exposure site (The farther from the equator means less UV exposure, Close proximity to the coast can increase degradation and tropical humidity introduces other factors).
2. Altitude (Higher means more UV).
3. Natural regional features, such as wind that will dry the substrate or dew formation as a result of the proximity of a body of water.
4. Variations in weather from one year to the next (Degradation can vary as much as 2:1 in successive years at the same site).
5. Seasonal variation (Winter exposure to UV can be as little as 1/7th of that during summer months).
6. Orientation of coated surface (The direction of a painted surface can cause variations in degradation)

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Some or all of the above factors make it impossible to accurately convert controlled testing data into a time period of external exposure. Controlled testing is conducted under constant conditions, but no 2 days of outdoor exposure are ever the same.

### **Reasons for using Accelerated Weathering Equipment**

Despite being unable to compare test results with 'normal' exterior use, excellent durability and performance data can be obtained by use of QUV, Cycling Humidity and Salt Spray equipment. Results obtained from such testing should be used only as *comparative* factor and not an accurate representation of external use. Information derived is generally used to show the durability of a surface coating in comparison to other products of a similar type or formulation, with a view to showing the most durable of a range of products.

Comparative data should not, however, be dismissed as irrelevant. Controlled accelerated testing can significantly decrease the time it takes to research and develop a product and can also decrease the overall cost of development of that product, a factor that can be passed onto the cost of a product to the customer.