

An Evaluation Method of Accelerated Storage Life Test for Typical Mechanical and Electronic Products

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Abstract : Reliability of long-term storage products is related to the availability of the whole system, and the evaluation of storage life is of great necessity. These products are usually highly reliable and little failure information can be collected. In this paper, an analytical method based on data from accelerated storage life test is proposed to evaluate the reliability index of the long-term storage products. Firstly, singularities are eliminated by data normalization and residual analysis. Secondly, with the pre-processed data, the degradation path model is built to obtain the pseudo life values. Then by life distribution hypothesis, we can get the estimator of parameters in high stress levels and verify failure mechanisms consistency. Finally, the life distribution under the normal stress level is extrapolated via the acceleration model and evaluation of the true average life available. An application example with the camera stabilization device is provided to illustrate the methodology we proposed.

Keywords : accelerated storage life test, failure mechanisms consistency, life distribution, reliability

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