ABSTRACT

Time to failure due to weakness in materials (fatigue) caused by repeated variations of stress is one of the common quality phenomenon in material engineering applications. Acceptance sampling may help in quality assurance. A double acceptance sampling plan is developed for the life test which is truncated or stopped at a pre-decided fixed time based on life data sets considered by Lio, et al. (2010). Under the truncated life tests, Lio, et al. (2010) has introduced acceptance sampling plans for percentiles and assured that it is better than the traditional acceptance sampling plans for mean life. The life time variate of the articles which put on test is supposed to follow the Burr Type XII distributions percentiles with known or unknown shape parameters. Zero and One failure test, which enables to produce good results in reality, has taken into account. It is observed that the ASN decreases as the termination ratio increases but the ASN increases for same termination ratio for increased consumer confidence level. It is also noticed that the sample sizes increase with larger shape parameter β. The ASN for 10^{th} percentile lifetime is little larger than the sample size for Single acceptance sampling plan (SASP) at the same consumer confidence level, but the operating characteristics values for the DASP are higher than for SASP. The OC values increase more rapidly as the quality level increases. It is also observed that the OC values grow up sharply to 1 for higher values of shape parameter β and for longer termination ratio with smaller p^*. The minimum ratios $d_{0.1}$ for DASP for 10^{th} percentile are smaller than the ratios for SASP

We found that the proposed sampling plan needs fewer test resource to make a lot decision of acceptance as compared with using a single acceptance sampling plan. We have used examples to illustrate the proposed method and shown that the average sample sizes used for the proposed double-sampling plans are usually smaller than those used for the single acceptance sampling plans proposed by Lio, et al. (2010) through a study of numerical comparison.