

## Useful Lifetime Prediction of Chevron Rubber Spring for Railway Vehicle

**Authors :** Chang Su Woo, Hyun Sung Park

**Abstract :** Useful lifetime evaluation of chevron rubber spring was very important in design procedure to assure the safety and reliability. It is, therefore, necessary to establish a suitable criterion for the replacement period of chevron rubber spring. In this study, we performed characteristic analysis and useful lifetime prediction of chevron rubber spring. Rubber material coefficient was obtained by curve fittings of uni-axial tension, equi bi-axial tension and pure shear test. Computer simulation was executed to predict and evaluate the load capacity and stiffness for chevron rubber spring. In order to useful lifetime prediction of rubber material, we carried out the compression set with heat aging test in an oven at the temperature ranging from 50°C to 100°C during a period 180 days. By using the Arrhenius plot, several useful lifetime prediction equations for rubber material was proposed.

**Keywords :** chevron rubber spring, material coefficient, finite element analysis, useful lifetime prediction

**Conference Title :** ICIME 2015 : International Conference on Industrial and Mechanical Engineering

**Conference Location :** Paris, France

**Conference Dates :** August 27-28, 2015