

## **Tensile properties and thermal stability of gamma irradiated epoxidized natural rubber latex with the presence of sensitizer**

### **ABSTRACT**

This study aimed to investigate the effect of gamma radiation on epoxidized natural rubber latex (ENRL) with the presence of sensitizer, with regards to its tensile properties, gel fraction and thermal stability. ENRL used are ENRL-25 and ENRL-50, with epoxidation level of 25 mole% and 50 mole% respectively. The sensitizers, i.e. butyl acrylate, 1, 6-hexanediol diacrylate and trimethylolpropane triacrylate, at the range of 0.5 to 3 phr, were added to ENRL together with potassium laurate, stirred and irradiated with gamma radiation at 12 kGy. Cast films were prepared from the irradiated ENRL and used in tensile test, gel fraction and thermogravimetry analysis. Results revealed that the presence of sensitizer during gamma irradiation of ENRL enhanced the tensile properties, gel fraction and thermal stability of ENRL. The effects of sensitizer depended on number of acrylate groups in the sensitizer and epoxidation level of the ENRL. Amount of sensitizer beyond 0.5 phr was found to adversely affect the tensile strength of gamma irradiated ENRL at 12 kGy.

**Keyword:** Epoxidized natural rubber latex; Gamma irradiation; Sensitizer