Thesis Title A Study of Effect of Modified Natural Rubber on Adhesion Properties of Epoxy Resin.

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ABSTRACT

Effect of modified natural rubbers on adhesion properties of epoxy resin was studied. Two types of the rubbers, liquid natural rubber (LNR) and epoxidised liquid natural rubber (ELNR) were used. They were added to the epoxy resin and used as coating material for metal and adhesives for metal to metal and rubber to metal bonding.

The effects of molecular weight, percentage epoxidation, rubber loadings and the addition of vulcanising agents were studied. Adhesion of the coating was tested by tape adhesion test and their physical properties were studied utilising dynamic mechanical thermal analysis (DMTA). The lap shear strength was tested to measure the adhesion properties of the adhesives.

The results obtained indicated that adding modified natural rubber up to 25% to epoxy resin did not reduce the adhesion property of the epoxy coatings. It was found that LNR gave better results than ELNR. Epoxy resin, compounded with modified natural rubber, was found to

give improved metal to metal bonding, with the optimum value obtained at 20% of the rubber loading. In this case, the use of LNR also gave better results than all ELNR of similar molecular weight. The use of rubber vulcanising agents in modified natural rubber did not improve the adhesion property of epoxy adhesive as applied to metal-to-metal and rubber-to-metal bondings.