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**SULPHUR ALLOTROPIC
EFFECTS ON
LOW TEMPERATURE VULCANIZATION**

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ABSTRACT

Natural rubber latex technology is a wide area. Within this sulphur vulcanization is a very important step. Usually sulphur is used for conventional compounding. Sulphur is the element, which has the highest catenation property and these catenation forms were existed in four allotropic forms.(ie; rhombic, monoclinic, amorphous and plastic sulphur)

Therefore in this project an attempt has been made to study which sulphur allotropic forms are effects on the vulcanization process of natural rubber latex.

The cross-linking density of vulcanized natural rubber latex is the remarkable measure of the type of sulphur joining to the rubber chain. Several properties were measured and these properties are greatly effected by cross-linking density. They are;

Tensile stress

Tear resistance

Elongation at break %

The four different allotropic forms were used for selected compounding of latex at a particular temperature. Here 110°C was selected according to phase diagram of sulphur, which was the most stable temperature of monoclinic sulphur.

By comparing the above physical properties of many samples, clearly indicated that sulphur allotropies influence the sulphur-aided vulcanization by increasing tensile strength with monoclinic sulphur form.

Most of the allotropic sulphur forms are existed as S_8 forms, but the monoclinic form consisted both S_8 and S_6 forms. Therefore we can conclude more effective S_6 form course the formation of polysulphide cross links with large number of sulphur atoms than that of S_8 form. Which has influenced the tensile strength of the final product.

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