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Studies on the Temporary Preservation of Hevea Latex

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The importance of producing uniform sheet rubber, with the consequent transportation of field latex considerable distances to central factories where bulking is required on a large scale, has dictated the need to preserve latex for several hours or a few days. The usual latex preservative, ammonia, is expensive and is not very effective is small amounts.

Formalin has been found to be an adequate preservative for normal latex; 0.1% HCHO in the latex giving smoked sheet of first grade quality when coagulated the day after addition, without affecting the preparational methods nor the technical properties of the rubber to any marked extent. For longer preservation, the presence in formalin latex of salts and mild alkalis such as ammonium or sodium hydroxides, carbonates, phosphates or silicates, some of which do not preserve latex, greatly increase the latex stability. One sample of latex containing 0.1% formaldehyde and 0.1% sodium metasilicate remained in a liquid condition for about 40 days. In many cases a yellow fraction flocculated and settled out before complete coagulation.

Formaldehyde does not disperse the lutoids and therefore enables the yellow fraction to be separated in a liquid condition. The presence of salts does not prevent the separation, provided that the pH is not raised much above 7. Silicates give a large viscous yellow fraction. These facts should prove useful for the preparation of pure uniform concentrated latex containing few non-rubber substances.

Since formaldehyde is a bactericide and enzyme killer and reacts as a tanning agent with proteins, the mechanism of preservation is probably the prevention of acid formation and lipid degradation; coagulation taking place by bacterial action after the formaldehyde has reacted with the proteins. Salts may enhance the stability by (a) buffering the pH, (b) sequestering the

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divalent ions in the latex, and (c) in the case of silicates, perhaps by the formation of strong complex films with proteins at the surface of the rubber particles.

Discussion

It was reported that in many areas, especially in Java, as much as 0.2% HCHO alone did not preserve latex and it was suggested that the cause might be the high level of magnesium found in these areas.