NITROSOAMINE FREE PRESERVATIVE SYSTEM FOR NATURAL RUBBER LATEX

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Abstract

Latex preservation is the physical and/or chemical stabilization of natural rubber (NR) latex against microbial growth and putrefaction, as well as the stabilization against coagulation of colloidal rubber particles. There is a good market for preserved latex concentrate, as it is an important raw material with a wide range of applications. Preservatives can effectively inhibit the bacterial growth in fresh NR latex. Hence the formation of acidic compounds resulting from bacterial activity in the latex is inhibited or even avoided, which in turn inhibits coagulation. Although several methods have already been developed for the short- term and long-term preservation of fresh NR latex; many of these methods still suffer from one or more disadvantages.

This invention relates to a method for the provision of an alternative or an improved method for the preservation of latex concentrate over a period of six months. The most commonly used preservative system of commercial importance which are the high ammonia (HA) and the low ammonia-TMTD/ZnO composite system (LA-TZ) have certain drawbacks. Since Tetramethylthiurumdisulfide (TMTD) forms carcinogenic nitrosamine, present invention is mainly focused on the elimination of TMTD from the preservative system and provision of a nitrosoamine free preservative system for latex concentrate to stabilize the latex over a period of six months. Furthermore, TMTD is an allergen and it can cause dermatitis as well. Also it causes discolorations in latex.

Since the field latex provides an optimum environment for microbial growth, in the absence of a proper preservation, the carbohydrates which the latex contains are oxidized in to volatile fatty acids due to the microbial activities. These acids then tend to destabilize the latex which results the coagulation of rubber particles. The preservative activities for treated latex concentrate with new developing system (NDS) was tested based on the measurements of volatile fatty acids (VFA) number test. Moreover the other properties of the preserved latex samples were tested by Total Solid Content (TSC) test, Mechanical Stability Time (MST) test, Dry Rubber Content (DRC) test, and Potassium hydroxide (KOH) number test.

Key Words: Natural rubber, Volatile Fatty Acids, Tetramethylthiurumdisulfide, Mechanical Stability Time, New Developing System, Total Solids Content.