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A NOVEL METHOD FOR EASY COAGULATION OF SKIM LATEX AND RECOVERY OF HIGH QUALITY SKIM RUBBER

The present finding relates to a method of recovering skim rubber from skim latex. More particularly, the finding relates to a method of deproteinisation and coagulation of skim latex to a consolidated mass to recover the skim rubber.

INTRODUCTION

In India the latex concentrate (Cenex) manufacturing industry produces annually around 1.6 lakh tones of Cenex and 1.2 - 1.4 lakh tones of skim latex as by-product. Due to the small particle size and the presence of large amount of adsorbed non– rubber constituents, the highly diluted skim latex is extremely difficult to coagulate. Some of the earlier methods to recover good quality skim rubber involve enzymatic deproteinisation of the skim latex which is not economical, not easy and often time consuming. Current method of skim latex processing involves addition of appropriate quantity of sulphuric acid, storing the flocculated latex (partially coagulated) in sacks for 2-3 weeks followed by mechanical working to attain a consolidated mass. This method is time consuming, environmentally polluting, labor intensive and cause health hazard to the workers. The skim rubber thus obtained has generally a bad odour, with significantly inferior raw rubber and vulcanisate properties compared to technically specified rubber or sheet rubber grades.

There exists a need to recover high quality skim rubber from skim latex by an easier, environment friendly and less time consuming process.

OBJECTIVE

The objective is to recover skim rubber of lower protein content and higher quality from skim latex in a much shorter span of time using a simplified process, in comparison to the current conventional process.

SUMMARY

The present finding relates to a process of recovering skim rubber from skim latex by a simultaneous deproteinisation and creaming process. The process involves the treatment of the skim latex with appropriate chemicals for a period of 15-20 h followed by coagulation of the creamed fraction. The quick and completed coagulation of the creamed skim latex to a consolidated mass is done by 10-12% sulphuric acid.

MAIN OBSERVATIONS

The skim latex treated with the appropriate chemicals undergoes creaming to a required level after about 20 hours. The creamed fraction coagulates easily into a consolidated mass on addition of acids. Skim rubber prepared by the new method has comparatively lower nitrogen content, good initial plasticity (Po) and plasticity retention index (PRI), along with higher ash content. The PRI values and other raw

rubber properties of conventionally prepared skim rubber show wide variation from sample to sample. Carbon black filled vulcanized samples prepared from the skim rubber obtained using the proposed method shows superior tensile properties, lower hardness, modulus, heat build-up and compression set when compared with skim rubber obtained by the conventional method. The ageing properties of the skim rubber obtained using the new method is also significantly superior to that obtained using the conventional method.

The drawback of the method is that the cost of processing may be on the higher side, but the advantages are several.

CONCLUSION

Skim latex undergoes creaming on addition of suitable quantities of chemicals. The creamed latex coagulates easily to a consolidated mass on addition of acids. The skim rubber obtained by this technique has lower protein content, less metal contaminants and low proportion of fatty acids leading to enhanced quality parameters. The mechanical properties, cure characteristics and ageing behavior of the rubber obtained by this new method are better than that prepared by the conventional method.