FORMALDEHYDE TREATMENT OF FIELD COAGULUM FOR QUALITY IMPROVEMENT OF TECHNICALLY SPECIFIED RUBBER

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Attempts were made to improve the quality of field coagulum based Technically Specified Rubber (TSR) by preserving the processing characteristics of the raw material used. Treatment of the fresh field coagulum with a dilute solution of formalin for a specified period could retain its Po, PRI and Mooney viscosity. The concentration of the formalin solution and the optimum time of treatment were standardized. The influence of treatment on properties of the coagulum was also assessed. The results indicated that treatment of the coagulum for a minimum period of 16 h in 0.75% formalin could retain the PRI of the processed rubber. Storage hardening could also be reduced by the above treatment. The quality of the TSR could be upgraded by adopting the treatment.

Key words: Bactericide, Formalin, Field coagulum, Technically specified rubber.

In India, the major marketable form of Natural Rubber (NR)is sheet rubber, while in other rubber producing countries Technically Specified Rubber (TSR) predominates. Only 13% of the total production in India is TSR, of which field coagulum grades predominate. The quality of field coagulum available for the processors from smallholdings is inferior due to deterioration of properties that occur in the time lag between collection and processing of field coagulum and due to the lack of a proper protocol for handling the same. This leads to poor quality and consistency for the processed rubber. Consistency in quality can be achieved only if there is appropriate control of source materials used for processing (Baker, 1991). Hence, steps should be evolved for effective handling, storage and processing of the coagulum.

The physical measures that are used to assess the quality and processability of natural rubber are original Wallace rapid plasticity (Po) and plasticity retention index (PRI). The maturation of the coagulum and its storage environment has a marked effect on these properties (Chin, 1971; Livonniere, 1991)). The PRI test provides a rapid assessment of the susceptibility of the raw natural rubber to thermo-oxidative degradation (Bateman *et al.*, 1966). Low PRI the rubber may fail to meet the requirements specified for a particular grade. For improving PRI, treatment of the processed crumbs with different chemicals was attempted (Mathew *et al.*, 1975, Rosamma *et al.*, 1996). *

One of the major reasons for the low PRI of field coagulum on storage is the bacterial decomposition of proteins and other non-rubber constituents in rubber. There-

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