

**EFFECT OF PROCESSING CONDITIONS ON
GEL CONTENT AND STORAGE HARDENING OF
NATURAL RUBBER**

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ABSTRACT

Freshly tapped latex can be processed into various rubber categories using different processing methods. There are two types of crepe rubber namely, fractioned bleached (FB) and un-fractioned un-bleached (UFUB) crepe rubber. Sheet rubber can be categorized as ribbed smoked sheets (RSS) and sun dried sheets (SDS). Manner in which the natural rubber latex is coagulated, dried, processed and stored may affect to the variation of properties of raw rubber products. The nature of the processing conditions can increase the gel content of the rubber which associated with storage hardening. Rise in natural rubber viscosity while in storage affects the processability of raw rubber. Therefore, the aim of this study was to identify the effect of processing conditions on gel content and storage hardening of raw rubber and make recommendations accordingly. During this study, latex samples were collected from the same source of latex (specific clone: RRIC 121) from Dartonfield, Agalawatta. The collected latex was processed into four rubber categories namely, fractioned bleached (FB) crepe rubber, un-fractioned un-bleached (UFUB) crepe rubber, ribbed smoked sheets (RSS) and sun dried sheets (SDS). Then raw rubber properties were measured for each rubber type. The results of the study reveal that, four tested processing conditions significantly affect on gel content and storage hardening (ΔP) together with Mooney viscosity, Mooney elasticity and initial Wallace plasticity (P_0) of raw rubber. There was a significant difference between FB and UFUB crepe rubber with respect to Mooney viscosity, Mooney elasticity, initial Wallace plasticity (P_0), gel content and storage hardening (ΔP). UFUB can cause processing difficulties due to its high Mooney viscosity, Mooney elasticity and storage hardening. When consider about sheet rubber, most of the raw rubber properties of RSS and SDS were similar except storage hardening. The degree of storage hardening of RSS was higher than that of SDS, suggesting the smoke drying process can have some effect on the storage hardening of RSS. Due to the lower degree of storage hardening, FB crepe rubber and SDS can be recommended for long term storage purposes and shipment.

Key Words: Gel content, Processing conditions, Raw rubber properties, Storage hardening