MICROWAVE INDUCED METHOD OF MANUFACTURE OF CONSTANT VISCOSITY SHEET RUBBER RSS (CV)

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Nearly 80% of the Rubber Plantations in Sri Lanka is planted with the Clone PB 86 which is well known for giving dry rubber of high Mooney Viscosity. Very high Mooney Viscosity indicates higher molecular weight of the rubber and hence such rubber will have very good technological properties.

However in the rubber industry the most vital and the energy consuming steps is the reduction of high Mooney viscosity by multiple passes through an internal mixer and this process is called premastication.

Variation in hardness and viscosity of raw natural rubber with time has been well known for a long period and is largely due to the formation of gel. This is a result of the reaction of aldehyde groups in the rubber with amine type aldehyde condensing groups present in the non rubber consituents. But in the case of constant viscosity (CV) rubber special attention is paid to the rigid control of viscosity by preventing storage hardening.

Manufacture of CV rubber involves mixing of the latex used for the raw rubber manufacture as the hydroxyl amine neutral sulphate, which is capable of blocking reactive aldehyde groups in the rubber, prior to drying at 100°C.

But in the case of RSS (sheet rubber) the drying is carried out at between 55-60°C and hence it is not possible to convert sheet rubber into the CV form at this drying temperature.

Nearly 60% of the total rubber production in Sri Lanka is sheet rubber and hence in order to convert them into the CV form, an attempt was made in this project to incorporate 0.15% by wt. Hydroxyl amine neutral sulphate into the RSS sheet at the time of RSS sheet at the time of manufacture and then convert them into CV rubber by heating the smoke dried rubber sheet in a microwave oven for a short period.

It has been observed that by heating the sheet for over 45 min. at medium/low power level; not only that the rubber becomes RSS (cv), but also it sterilizes the surface of the rubber sheet thereby preventing mould formation.