

# Influence of the coagulation type on the properties of RRIM 600 clone rubber

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*Hevea brasiliensis* is the major commercial source of latex used to produce rubber. Besides, its major component polyisoprene natural rubber (NR) contains carbohydrates, proteins, lipids, heavy metals and others. During coagulation of the natural rubber latex, some of these non-rubber constituents are lost in the aqueous serum, but many of them, such as the precipitated proteins, are retained in the rubber phase. Some of the retained non-rubber constituents may influence the properties of the rubber. In this paper, the effect of the coagulation type on the properties of natural rubber, from RRIM 600 clone, was investigated by standards methods ( $P_0$  and PRI) and Fourier Transform Infrared Spectroscopy (FTIR). The NR samples were supplied by the Plantations Edouard Michelin (PEM), situated in Itiquira-MT. The latex was collected in cup lump form natural latex coagulation in the field (samples: RR03 and RR04) and coagulated with acetic acid (samples: RR01 and RR02). The PRI analyses of the samples were determined according to standard NBR 11597 [1]. The FTIR spectra were obtained at the resolution of  $4.0\text{ cm}^{-1}$  in attenuated total reflectance mode (FTIR-ATR) using zinc selenide crystal. The PRI reflects the susceptibility of the product to thermo-oxidation. Thus, as higher as the PRI, higher is the resistance of the analyzed NR to thermal oxidation. According to the Table 1, the samples RR01 and RR04 have been presented higher and lower value of PRI, respectively. The infrared spectra obtained for the samples are shown in Figure 1. The main difference among them is observed in  $1760\text{-}1670\text{ cm}^{-1}$  region. The sample RR04 showed an intense band at  $1745\text{ cm}^{-1}$ , which is assigned to the carbonyl groups [2] that can be responsible for rubber crosslinking, involving abnormal groups.

Keywords: natural rubber, coagulation, PRI (%).

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Samples	Tapping (day)	$P_0$	PRI (%)
RR01	06/06/07	35,9	92,5
	$\sigma$	$\pm 0,7$	$\pm 0,6$
RR02	06/06/07	33,6	84,3
	$\sigma$	$\pm 3,2$	$\pm 0,4$
RR03	12/06/07	30,6	55,5
	$\sigma$	$\pm 0,4$	$\pm 1,2$
RR04	12/06/07	17,0	21,4
	$\sigma$	$\pm 0,1$	$\pm 0,9$

Table 1:  $P_0$  and PRI for the samples studied.

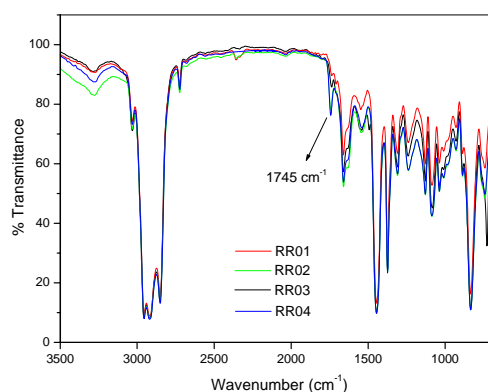


Figure 1: FTIR spectra of the rubber samples (RRIM 600 clone).

[1] NBR 11597, ABNT, I Borracha Natural (1996)

[2] Hsu, S.L. and Lu, F.J.. *Rubb. Chem. Technol.*, **60**, 647 (1987).

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