

FACTORS AFFECTING THE ESTIMATION OF DIRT CONTENT IN RAW NATURAL RUBBER

E. E. Ehabe and J. Sainte-Beuve

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Wide variations have been observed in dirt content values from identical raw natural rubber samples in different laboratories using similar test procedures. Factors investigated in this study ranged from the physical nature and concentration of the peptiser employed to heat transfer during dissolution of raw natural rubber in the solvent. Rubbers of latex grade, as against those of cuplump, required longer heating before the formation of clear homogeneous solutions. After a critical duration of dissolution, prolonged heating led to the formation of a macrogel that remained insoluble in most nonpolar hydrocarbon solvents. This macrogel seemed to have been in part responsible for the poor repeatability of dirt values. The duration of swelling in white spirit, before heating, affected the formation of insoluble fractions, though this seemed to vary with the time of introduction of the rubber into the mixture.

Key words : Dirt content, Natural rubber, Raw rubber, Technical specification.

E. E. Ehabe (for correspondence), National Rubber Research Programme, IRAD Ekona Centre, PMB 25, Buea, Cameroon; J. Sainte-Beuve, Programme Hevea, CIRAD-CE, BP 5032, 34032 Montpellier, France.

INTRODUCTION

Several norms exist that specify tests and their limits for the technical specification of raw natural rubber though the plasticity retention index and the dirt content remain the primary parameters (ISO 2000, 1989). Unlike the other specification parameters, considerable variability in dirt levels is common for similar samples tested in different laboratories that might even be following similar analytical techniques (Nair *et al.*, 1972; Nkouonkam *et al.*, 1995). Different methods and procedures for estimating the dirt content of raw rubber have evolved over the years.

One method is based on ash content determination, which reflects the quantity of inorganic matter. This method is unreliable for estimating dirt content, since no fixed relationship exists between insoluble dirt and ash content. Furthermore, inorganic substances included in ash determination form no part of insoluble dirt (Heinisch and van der Bic, 1951a).

The washing method, involves heating a piece of rubber in hot water until the water becomes colourless and odourless. The rubber is then milled on a two-roll mill into a porous crepe, dried at moderate temperature *in vacuo*, and the dirt estimated