Natural Rubber Research, 18(1) : 55-62, 2005

EFFECT OF WAREHOUSING ON PROPERTIES OF NATURAL RUBBER SHEETS

Leelamma Varghese, K.N. Madhusoodanan, M.L. Geethakumari Amma, K.T. Thomas and N.M. Mathew
Rubber Research Institute of India, Kottayam – 686 009, Kerala, India.

Submitted: 11 November 2003 Accepted: 30 June 2005

Varghese, L., Madhusoodanan, K.N., Amma, M.L.G., Thomas, K.T. and Mathew, N.M. (2005). Effect of warehousing on properties of natural rubber sheets. *Natural Rubber Research*, 18(1) : 55-62.

Bales of ribbed smoked sheets (RSS) were stored in warehouses for a period of one year and the changes in the quality parameters of rubber were compared with those stored in an ideal low humidity environment. Sheets were affected by mould within six months of storage while no mould growth was observed for the sheets stored at low humidity. Mooney viscosity, initial plasticity and gel content of the sheets increased while plasticity retention index decreased on storage. These changes were less at low humidity and low temperature. Volatile matter of the sheets increased on storage whereas acetone extractables and strength of the sheets decreased slightly. The physical and ageing properties of vulcanizates were not affected by storage of the RSS.

Key words: Natural rubber, Sheet rubber, Storage, Warehousing.

INTRODUCTION

The major marketable form of natural rubber (NR) in India is Ribbed Smoked Sheets (RSS). The rubber is often stored for varying periods prior to product manufacture. The growers and dealers store rubber anticipating a better price while the manufacturers for ensuring sufficient stock for their production. RSS is also stored during market intervention and bulk procurement by government agencies for price stabilization.

Earlier reports suggest that storage of raw NR could affect some of its properties, the most tangible change being an increase in viscosity referred to as storage hardening (Wood, 1953; Sekhar, 1960; Bristow, 1974). The physical appearance could also be affected adversely by mould growth, stickiness and deformity of the bale. There are no standard specifications for the storage of raw rubber though specifications are available for the storage of vulcanized rubbers and for rubber products (ISO, 1973; BS, 1963; DIN, 1955).

The major factors that influence the quality of natural rubber during storage are the environmental conditions and the duration of storage. An understanding of the impact of these factors on the rheological and technological aspects of sheet rubber will be beneficial in evolving guidelines for storage of raw rubber. Also, the impact of storage of raw rubber on the technological properties of the resulting vulcanizates has to be understood. In the present work, sheet rubber bales were stored in actual warehouse conditions for a period of one year and the changes in quality parameters of rubber were compared with bales stored in an ideal low humidity environment.

EXPERIMENTAL

Sheet rubber collected from dealers and from the Central Experiment Station of

Correspondence: Leelamma Varghese (E-mail: leelamma@rubberboard.org.in)