

2.10 30910 NATURAL RUBBER PRODUCTION

UNIT-1 HISTORY, SOURCES AND ITS IMPORTANCE

History & development of natural rubber as an important industrial raw material. Major sources – propagation of *Hevea brasiliensis*, different clones. Extraction of Latex – methods of extraction of latex–tapping, standard of tappareability for seedling and budded trees. Tapping knives, tapping task, tapping rest. Different systems and their intensity, intensive tapping, ladder tapping, slaughter & puncture tapping. Factors affecting tapping efficiency. Rain guarding; yield stimulation- statistics of NR, future prospects of NR, replacement possibilities of NR, uniqueness of NR, cost evaluation of NR for the last decades. Blends of NR, applications of NR byproducts from NR plantation industry.

UNIT-2 PRESERVATION AND CONCENTRATION OF LATEX

Definition of Latex – composition and function of non-rubber constituents, colloidal nature of latex, micro – organisms in latex and their role in destabilization, need for preservation of latex, short and long term preservation – NH₃ as ideal preservative, secondary preservatives – LATZ type. Precoagulation and use of anticoagulants – examples. Coagulation and methods of coagulation of Latex. Preserved latex concentrate – need for concentration of Latex. Latex concentration methods – creaming, centrifuging, evaporation and electro decantation.

Creaming – principle, creaming agents and soaps used, process. Centrifuging – principle, machinery, operation on machinery, maintenance, control system, centrifuging process, efficiency of centrifuging factors affecting efficiency of centrifuging latex and its need; quality enhancement methods of centrifuged latex, double centrifuging, packing of centrifuged latex; importance of centrifuged latex as an industrial raw material and its present trends. Skim latex and skim rubber–recovery of skim rubber, its applications-other latex concentration processes

UNIT-3 PROCESSING OF NR LATEX INTO DRY MARKETABLE FORMS

Marketable forms of dry rubber – R.S.S., crepe block rubber. Processing of field latex into R.S.S., ADS, different grades, current market status, and future prospects. Production requirement- Green book. Crepe rubbers – different grades and their processing. Application of each grades, current market status and future prospects. Production requirements ISNR – different grades, manufacturing details, production requirements, quality enhancement, current status and future prospects.

UNIT-4 SPECIALITY RUBBERS

Importance of specialty rubbers in rubber industry-- features, production methods, chemical aspects, applications and current status of the following specialty rubbers – SP rubber, CV & LV rubber, OENR, tyre rubber, powdered natural rubber, Hevea plus MG, DPNR, Latex black master batch, epoxidase NR, cyclized NR, chlorinated NR, thermo plastic natural rubber – blends with polyol fin's and recent developments.

UNIT-5 RECLAIM RUBBER RECLAIM RUBBER

Definition, objectives of reclaiming, raw materials for reclaim production, reclaiming agents and their specific functions. Manufacturing of reclaim by various methods, comparison of different processes, types of reclaim rubber and their specifications, advantages of using reclaim in products, applications. Reclaiming units in India, market status, and recent developments. Effluent treatment Importance of effluent treatment – effluent generation from various raw rubber processing industries like RSS, crepe, crumb, centrifuging, creaming.

Characteristics of effluents from different sources, treatment methods – primary and secondary. Collection, equalization, primary coagulation and settling. Secondary treatments – aerobic & anaerobic ponding aerated lagoons, aeration tanks, activated sludge process and their modifications. Selection of processes for specific applications. Norms of pollution control board, disposal of treated effluents, recent developments in effluent treatments

Reference Books:

1. Hand book of Natural rubber production in India – Rubber Board
2. High polymer Latices – D.C. Balkley Vol. I
3. Latex in Industry – R.J. Noble
4. Rubber Technology and manufacture – Blow
5. Rubber Technology and manufacture – Sterveres Blow
6. Vander built rubber hand book - R.T. Vanderbilt Co. Ltd.

