

APENDIX -III

PAPER AND PAPER-BOARD MANUFACTURED AND CLASSIFICATION

Paper Making

The manufacture of paper involves the following stages:

1. **Pulping** : It is essentially the separation of the cellulose fibres in the raw material from lignin, a phenolic substance which is the bond within the fibres. The pulping stage, being linked to the nature of raw material utilized as well as the characteristics of the end product, is the most critical, and employs a variety of mechanical or chemical processes or combinations thereof. The yield of pulp in mechanical processes varies from 85-95% as a percentage of wood utilised, and such processes are mainly used for the manufacture of newsprint. Chemical processes generally yield 50-65% of pulp as percentage of wood utilised, and are employed for the manufacture of high strength kraft or writing and printing papers.

2. **Stock Preparation** : After screening and clearing to remove unwanted matter, followed by bleaching (if it is desired to produce bleached varieties), the pulp is subjected to treatment in heaters and refiners for disintegration into individual fibres. The 'Stock' a term used to describe the dilute suspension of fibres in waters utilised to produce a sheet of paper, is prepared by blending different grades of pulp and admixture of additives, to secure the desired properties of the end product.

3. **The Paper Machine** : At the 'wet end' of the paper machine the head box controls the flow of stock, which is passed over a fine wire mesh (referred to as the 'wire') to form the sheet of 'web' of paper, while the water is simultaneously drained. The paper web is then compressed against a felt to squeeze out the remaining water, and passed through a series of steam heated drying cylinders (the 'dry end') to complete the extraction of water, followed by calendering to achieve surface finish.

4. **Finishing** : This is the term which refers to preparation of the paper reel for marketing and covers a series of operations such as slitting and rewinding of large reels into smaller ones, sheet cutting and packing.

Varieties of Paper

Paper can be classified into various varieties, which may be broadly divided into two categories viz, cultural papers (or writing and printing papers) and industrial papers. Writing papers require brightness, a smooth surface, and the ability to absorb ink without spreading. Printing papers require a high degree of opacity, in addition to being more absorbent towards printing ink, and higher strength properties so as to be used on printing machines without breaking. Newsprint is a variety of paper meant for printing of news papers, and a low cost is therefore, an important requirement, in addition to sufficient strength for running on high speed printing machines and opacity to ensure that the print does not show through.

Wrapping and packing papers do not require colour and surface finish, but strength is the primary requirement. Wrapping and packing papers are usually machine glazed (MG), so as to have a glossy surface on one side, which permits printing.

There are also some varieties of paper broadly referred to as speciality papers, which are meant to be used for specific purposes, and possess distinctive properties. Electrical insulation papers for wrapping of cables, security papers, cigarette papers, airmail paper and filter paper are examples.

Paperboard is basically a thick paper, comprising either a single thick layer, or combining thinner layers to form a multi-layer structure. Duplex board is a board consisting of two layers of different material and triplex boards consist of three different furnish layers. Straw boards are mostly composed of unbleached straw pulp, and mill board is a single layer board made essentially from waste paper.
