

# Introduction

## Raw Materials

As only 12% of the UK land is forested (Defra, 2005), British forests cannot provide sufficient trees for UK producers and therefore the majority of woodpulp used is imported, much from Scandinavia. Softwoods and smaller quantities of hardwood are used according to the type of paper being made. Each type of wood contributes different properties to the finished paper.

A very important source of raw material for paper and board manufacture in the UK is recovered paper. Collected from all over the UK, pulped and cleaned, it accounts for over 65% of the raw material used. Paper and board is an infinitely renewable material.

Other vegetable fibres are also used as raw materials for papermaking but they are usually combined with wood fibres. Alternative fibres include esparto grass, cotton linters and rags, each of which produces special properties such as strength, flexibility, softness, texture and absorbency.

Various other raw materials, for example, dyes, bleaches and starches contribute to the properties of finished paper. Resins and fillers like china clay give the paper greater opacity.

## Environment

A continuing supply of the main fibrous material (wood) must be assured. Trees are replaced in greater numbers than are felled and as the trees grow they are thinned out to allow the strongest and healthiest to develop. The papermaker uses these thinnings and other waste wood, such as saw mill waste.

## Pulp Preparation

Once the fibres have been spread out onto the machine's 'wire', which is a flat mesh through which water can drain away, the fibres interlock to form the paper 'web'. The main function of the paper machine is then to remove water.

When the pulp is first fed onto the wire, at the start of the machine, it consists of 99% water and 1% fibre and additives. By the time the paper web reaches the end of the machine, the water content has been reduced to between 6 and 8%.

Most paper machines today are computer controlled. The computer can, within seconds, detect and adjust any variation in the paper including the quantity of pulp flowing onto the wet end, weight, moisture content, quantity of size being applied and many other properties to

ensure that the finished reel of paper is consistent throughout. Coating the paper with size helps to provide a smooth printing surface and controls the amount of ink which is absorbed by the paper.

## **Conversion**

A newly made reel of paper is 'converted' either by the paper mill or by the many industries which depend upon paper as a part of their manufacturing process or as a component of their own product. Conversion refers to the process of turning the roll of paper into a paper product, for example, a sheet of A4 paper, toilet roll or an oil filter.

At the paper mill, the reel may be fed between a series of rollers which imparts a smooth, shiny surface to the paper for printing and other special requirements such as grease resistance or a more attractive appearance. This process is known as 'calendering'. The reel may be slit into small rolls of various sizes and number, or it may be cut into sheets.

Industries use many different types of paper in many different ways. Just about every aspect of our daily lives involves the use of paper in some form or another. Often paper is hidden as a component of another product.

- Laminating papers are used as resin carriers in the manufacture of laminated surfaces which are a feature of most modern kitchens.
- Casting papers are used by the manufacturers of simulated leather cloth which is, in turn, used to make upholstery, shoes and clothes.
- Paper is used in cars, for filters and electrical circuits.
- Paper laminate electrical circuits can also be found in televisions and radios.
- Plus, of course, paper is used in more obvious and conventional ways for printing, stationery, wallpaper and packaging.

Further uses for paper and board can be found in 'Paper and its Uses' information sheet later in this booklet.