

GLOSSARY OF TECHNICAL TERMS

Air-dried pulp

Pulp is described technically as air-dried when its moisture content is in equilibrium with the ambient atmosphere. Commercially, pulp is usually described as air-dried when the moisture content of the pulp is 10%.

Annealing

Process in which metal is heated, retained at a suitable temperature, then cooled rapidly or slowly to reduce internal stress. As a result, the metal becomes softer and more workable, particularly in cold processes.

APMP/P-RC™

Alkaline Peroxide Mechanical Pulping is a refining process preceded by multi-stage impregnation with alkaline peroxide bleach liquors. The wood chips are compressed and destructured prior to addition of the bleach liquors. APMP systems can operate without a post bleach plant since bleaching takes place up front in the process. P-RC™ APMP is a technology that distributes chemicals between the impregnation steps and a small interstage bleach tower located between the primary and secondary refining stages. The prefix "P-RC" stands for Preconditioning Refiner Chemical.

BCTMP

Bleached Chemi-Thermo Mechanical Pulping. The prefix "B" indicates that a post bleach plant, most commonly alkaline peroxide, follows the CTMP pulping step.

Black liquor

Mixture of spent cooking chemicals and dissolved wood material remaining after sulphate cooking. Black liquor is recovered during pulp washing, concentrated by evaporation, and burned in the recovery boiler to regenerate the cooking chemicals and also produce energy for the mill.

Brownstock

The pulp obtained directly from the cooking process, before intercellular materials and cooking liquors have been removed.

Cellulose

The primary constituent of pulp. Chemically, cellulose is a long-chained carbohydrate consisting of repeating chains of a single simple sugar, glucose.

Chemical pulp

A generic term which describes pulp produced by chemical (as opposed to mechanical) processes. These chemical processes include kraft (sulphate) and sulphite processes.

Chemical recovery

In chemical pulping, the collection, recovery, and regeneration of cooking chemicals so that they can be utilized again in the process.

Chipping

A process in a woodroom area in which the debarked logs are converted into chips for pulping or refining processes. Chipping is typically done by horizontally or gravity-fed disc chippers.

CrescentFormer

Sheet forming section in a tissue machine, with the pulp suspension jet-out of the headbox flowing between a felt and a wire both moving at the same speed.

CTMP

Chemi-Thermo Mechanical Pulping is a pressurized refining process which is preceded by the addition of sulphite in a single impregnation stage. The refining pressure for CTMP is usually lower than for TMP since the sulphite treatment lowers the softening temperature of the wood lignin. By altering the parameters of the process (chemical concentration, temperature, etc.) it is possible to customize the pulp for particular end uses. CTMP may be bleached, in which case it is known as BCTMP.

Debarking

A process in a woodroom area in which most or all of the bark is removed from the logs before feeding the logs into the chipper, or into the grinder. Roundwood logs are typically debarked in a debarking drum.

Deinking

A process in which most of the ink, filler, and other extraneous material is removed from printed and/or unprinted recovered paper. The result is a pulp which can be used in the manufacture of new paper, including tissue, printing, writing, and office papers.

Delignification

Removal of lignin from wood fibers (cellulose and hemicellulose). This is performed primarily in the cooking process and further carried out in the washing and bleaching process. In bleaching, ECF pulp mills use chlorine compounds (chlorine dioxide) for this process, although it can be achieved with oxygen, hydrogen peroxide, or ozone (which do not create organochlorines).

Digester

A pressure vessel, typically cylindrical used to treat wood chips or other cellulosic materials with chemicals under elevated pressure and temperature, so as to produce pulp for papermaking.

DIP

Deinked Pulp. Pulp produced from deinked wastepaper, like old newsprint and old magazines. Most DIP is used in integrated paper mills, but some is sold on the market, in which case it is usually dried or wet-lapped.

Dispersing

A process stage in the treatment of recycled fibers. Several process stages are needed to remove the impurities (e.g. glue, ink) from the fibers. It is impossible, however, to eliminate all impurities. Dispersing reduces these particles to such a small size that they are no longer detrimental to paper quality.

ECF

Elemental Chlorine Free pulp. Pulp bleached without the use of any elemental chlorine. However, chlorine compounds (e.g. chlorine dioxide) may be used in the bleaching process.

Effluent

Out-flowing stream from a process or confined space. The term is most often applied in liquid discharges into receiving waters.

EPC

Engineer-Procure-Construct. A project delivery where one supplier assumes total responsibility for product and project engineering, equipment and construction procurement, and on-site construction.

Extrusion

A continuous process in which animal feed components are cooked under pressure in a combination of frictional and steam heat in order to expand the resulting product and convert it into feed granulate. This process is very common in production of pet food, fish feed, and cereals.

Fiberline

The machines and process systems involved in converting wood chips into pulp. Process steps can include cooking, washing, screening, knot separation, refining, and, if required, bleaching.

Galvanizing

Process in which a support metal, such as iron or steel, is coated with a thin layer of zinc by electrolysis or hot dipping (in molten zinc) to provide protection against corrosion.

Grade

A class or level of quality of pulp or paper which is distinguished from other pulps or paper on the basis of its use, appearance, quality, manufacturing history, raw materials, or a combination of these factors.

GSM

Grams per Square Meter, or g/m². A measure of the basis weight of paper and board, or its grammage.

GWD

Groundwood pulp. A mechanical pulping process which involves the grinding of logs against a rotating grindstone. Dilution water is necessary to produce an acceptable pulp. The grinding process can also operate at pressurized conditions, in which case it is referred to as PGW.

Hammermill

Machine used for pulverizing raw materials for various applications including animal feed and preconditioning for refining applications; the raw materials are hammered by a series of steel hammers. The pulverized material exits through a screen plate with apertures. The size of the apertures and hammers, including the number of hammers, can be changed to achieve desired results.

HC

Pulp suspension with a consistency between 18-40%.

Headbox

Located at the wet end of a paper machine, the headbox delivers a uniform jet of paper slurry (furnish or stock) having essentially the same width as the paper web to be produced. The word is derived from earlier days when the hydrostatic head within the box was sufficient to deliver a jet velocity matching the speed of the forming fabric. Today, the pressure within a modern headbox is maintained by pumps and controls.

Hemi-cellulose

One of the three main constituents of wood, along with cellulose and lignin. Hemi-cellulose are short-chain carbohydrates, built up from five different types of sugar.

Hexenuronic acid

Acid formed during chemical pulping that reacts with several bleaching chemicals, thus increasing their consumption. The elimination of hexenuronic acid reduces the need for bleaching chemicals and lowers the production costs of bleached pulp. It also helps to keep the pulp's brightness longer.

Kraft pulp

The Kraft process is the world's predominant chemical pulping process because of the strength of pulp it produces. The process involves cooking (digesting) wood chips in an alkaline solution, where the active cooking agent is a mixture of sodium hydroxide and sodium sulphide. The dissolved lignin is later removed, leaving behind the cellulose fibers. The term "kraft" is interchangeable with "sulphate" and is derived from a German word which means "strong."

Kraft pulp mill

Facility in which pulp is produced using the sulphate chemical cooking process.

Lignin

One of the three main constituents of wood, along with cellulose and hemi-cellulose. Lignin acts as the cementing agent in wood, binding the cellulose fibers together.

LWC

Coated paper with comparatively low weight, generally below 72 gsm.

Market pulp

Pulp produced from wood, and sold on the open market, as opposed to that which is produced for internal consumption by an integrated paper mill or affiliated mill.

MDF

Medium Density Fiberboard. Board made of mechanical pulp from the refiner process.

Mechanical pulp

A generic term describing pulps produced by a mechanical (as opposed to a chemical) process. Also known as "high-yield" pulp as the processes utilize a higher proportion of the wood raw material than the chemical processes. There are a large number of mechanical pulping processes including GWD, PGW, RMP, TMP, CTMP, APMP, CMP, etc. Mechanical pulps are produced using either grinders or refiners. Mechanical pulps are

used principally in the production of newsprint, magazine papers, printing papers, specialty papers, tissue, toweling, paperboard, and wallboard.

NBSK

Northern Bleached Softwood Kraft. The industry's benchmark grade of pulp for pricing and inventory data. Produced primarily in Canada and the Nordic countries. Some NBSK is also produced in northwestern USA and Russia.

NCG

Non-Condensable Gas. Odorous discharges from mill processes that in previous years were vented to the atmosphere. Today, NCGs are collected and disposed of to meet environmental regulations and to stop the nuisance role these gases play with surrounding communities.

NO_x

Nitrogen Oxide. A major component of gaseous emissions from a boiler or lime kiln.

Norscan

A term describing the group of five countries which have historically been the world's principal producers of market pulp — Canada, USA, Sweden, Finland, and Norway.

Pickling

Process for chemical treatment of oxidized steel, applied to obtain a clean metallic surface. Here, the steel is dipped into a hot bath of diluted sulphuric or hydrochloric acid.

PrimeLine™

The PrimeLine™ tissue machine system is fully modularized for the production of customized tissue grades. It includes the PrimeFlow™ headbox, PrimeForm™ former, the PrimePress™ or TissueFlex™ shoe press, PrimeDry™ T-rib Yankee, EquiDry™ Yankee hood, PrimeReel™, and PrimeControl™ automation system. Each PrimeLine™ component is selected for specific quality requirements from standard tissue grades to super-soft tissue products.

Recovery boiler

In kraft pulping, a special boiler where the black liquor from the cooking process is burned, after concentrating it in an evaporation process. The residual carbon is burned and the inorganic sodium salts are melted and recovered.

Recycled fiber

Fiber derived from wastepaper which has been recycled.

Recycled paper

Paper which has been made partly or wholly from recycled fiber.

Refiner

Machine used to grind pulp between two discs. Refiners can operate at low consistency or at higher consistencies. At low consistencies the material is fed to the refiner using a pump. At higher consistency levels conveying devices are used. Other refiner types are used for breaking down wood chips into fibers.

Rolling mill

Plant in which steel strip is formed between two rolls rotating at the same speed in opposite directions.

RTS™

Retention time, Temperature, Speed refining. A TMP process produces better quality mechanical pulp at lower energy consumption. Improved fiber properties are obtained by rapid heat treatment of the fibers at higher temperatures, while optical properties are preserved due to the low retention time. The process is operated at higher refiner disc speeds, most commonly 2300 rpm.

SGW

Stone Groundwood. A mechanical pulping process in which wood logs are ground against a rotating grindstone in an atmospheric environment. SGW pulps have low strength properties but good optical properties.

Semi-chemical pulp

Pulp produced in a two-stage process which involves the partial digestion of the wood with chemicals, followed by mechanical separation of the fibers in a disc refiner. Semi-chemical pulp is used in niche applications, especially those which require fiber stiffness (e.g. packaging grades). Semi-chemical pulps have a yield between that of mechanical and chemical pulps.

Sludge

Waste created during the biological process of treating effluent from a manufacturing or municipal wastewater process.

Stock pump

Special centrifugal pump for water and fiber suspensions.

TAD

Through-Air Drying. Process for tissue drying with the paper web running over a perforated drum where hot air is blown through the web.

TCF

Totally Chlorine Free. Pulp bleached without the use of chlorine or chlorinated chemical compounds.

Tissue

A general term indicating a class of papers which include grades such as toilet, facial, napkin, towels, wipes, and special sanitary papers. Desirable characteristics in these types of tissue papers are softness, strength, and freedom from lint. Tissue papers are divided into three major categories: At-Home (or Consumer), Away-from-Home (or Commercial & Industrial), and Specialty.

TMP

Thermo-Mechanical Pulping is a refining process in which wood chips are refined in a pressurized refiner. The process can involve from one to three refining stages in the mainline, however, two stages are most common. The higher temperatures help soften the chips, which results in higher pulp strength compared to atmospherically refined pulps (RMP). TMP relies on mechanical energy rather than chemicals to convert wood into pulp. TMP pulps are most commonly used in newsprint and magazine papers.

Virgin fibers

The raw material for making paper, produced either chemically or mechanically by removing the cellulose fibers from the structure of the wood or from other materials, such as used/recycled rags, bagasse, and straw.

Wet end

Section at the beginning of a paper or pulp dewatering machine. At the wet end, the pulp enters the machine and the bulk of the water is removed by dewatering, suction, and press rolls in order to obtain a paper web that can be fed through a drying section.

Woodfree paper

Printing and writing paper that contains little or no (less than 10%) mechanical wood pulp. Woodfree paper may be coated or uncoated, and is sometimes referred to as "free sheet" or "fine paper."