

Technical Bulletin



Glossary of Converting Terminology

Aluminum Foil Laminations - A combination of aluminum foil with a paper backing used as a barrier and often combined by means of an adhesive or extruded polyethylene.

ASTM - American Society for Testing and Materials

Base Roll - Uncoated or plain paper in roll form, before converting.

Base Paper - Rolls of uncoated paper.

Blocking - When the layers of a roll are stuck together so that the roll does not unwind easily, causing surface damage when split apart.

Board - Papers of 220 gsm and above are often referred to as board.

Bond - The adhering together of two or more materials.

Breaks - A term used to denote tears in a roll of paper which occur while the paper machine is running. Such breaks are generally spliced and marked by a protruding flag. A single break is called a broke.

Bridging - Bond of poly to paper of less than desired level in which the poly stretches across the tear line when a web is torn slowly.

Broke - Paper trimmings, paper damaged due to breaks on a paper machine or not manufactured to the required quality specification. Broke is usually fed back into the paper manufacturing process.

Burst Strength - Resistance of paper to rupture under pressure, as indicated in pounds per square inch on a Mullen or "pop" tester.

Butt Rolls - Partial end section of a roll that can be used again.

Calender - A series of rollers; the film or sheet is passed between a pair of rollers, the final pair determining the thickness of the material.

Calender Blackening - A term descriptive of darkening of the intended shade of paper by excessive calendering or by calendering wet paper.

Carton Board - A paper product made from one or more layers of fibrous cellulose material.

Cellulose - The main fibrous material in paper.

Chip Board - An inexpensive, thick one-ply cardboard, typically made from recycled paper stock.

Chill Roll - A water-cooled metal roll used to cast hot poly against paper to form the surface quality of the sheet; also used with a rubber roll to form a nip to physically bring paper and poly together for bond.

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Cockles - A rippling effect given to the surface of a sheet of paper which has not been properly dried, sometimes caused by moisture pick-up.

Composite Cans - Cans made from paperboard (cardboard). A variety of barrier materials and fittings enable composite cans to be used for packaging food, powdered beverages, wine, spirits and perfume.

Core - The center cardboard tube used that paper is wound onto.

Core Plug - A circular disc put in the ends of the core to add stability - may be metal, wood, or plastic.

Corrugated Box Plant - An operation that has both corrugating capability and converting equipment. Most corrugated boxes throughout the world are produced in integrated box plants.

Corrugated Fiberboard - This material refers to the composite structure formed by gluing one or more sheets of fluted, corrugated material to one or more flat facings of linerboard.

Corrugator - A machine that makes corrugated board from fluting and liners.

Cracked Edges - A crack, tear, or nick at the edge of the sheet.

Crushed Core - Any degree of out-of-roundness of the core that prevents a shaft from being inserted into it.

Curl - Undesirable distortion or waviness occurring to the paper due to the presence of excess moisture or humidity. The measure in inches of how much a sample lifts or rolls up away from a flat surface.

Deckle - The width of the paper or board being run on a Corrugator.

Delamination - The separation of the components of a laminated material.

Density - The weight per unit of volume.

Diagonal Curl (D) - The curl occurs on a line that is diagonal to the side and the end of the web.

Die Cutting - The process of cutting a corrugated sheet into a shape which will convert to the required box size when assembled. A rotary die cutter uses a cylindrical die and is generally capable of higher speed than a flatbed die cutter, as the sheet flow basically continues. A flatbed die cutter uses a flat die and the corrugated sheet momentarily stops to enable the required cutting. This method provides both high accuracy and intricate shapes not available from the rotary process.

Die Streak - Defect in a poly coated surface that runs in the machine direction caused by a flaw in or dirt on the die jaws.

Double-Facer - A double-facer, or double backer, is the part of a corrugator which bonds single-face board to another liner to produce a double-faced corrugated sheet.

Double-Wall Carton - This is a corrugated fiberboard carton made of three sheets of linerboard interleaved with two sheets of fluted corrugated material.

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Edge Protection - A packaging material used to wrap the edges of a roll to help protect them from damage during shipping and roll handling.

End Curl (MD) - Axis of curl is in the cross machine direction causing the machine direction ends of the paper to curl up or down.

Fibreboard - Alternative name for papers used in corrugated board.

Films - A thin plastic used in packaging (less than 10 mils (.010") thick compared to the thicker sheets).

Finish - The relative texture of the surface. The condition of surface on both coated and non-coated webs (e.g., matte, gloss, MF, MG).

Fisheye - Defect in poly surface caused by unmelted resin pellet

Flag - A small piece of paper or board inserted in a roll of paper so that it extends beyond the end to indicate the location of a splice.

Flexible Packaging - Packaging that utilizes materials such as paper, foil, film, etc.

Flute, Corrugation - This refers to the wave shapes, or ridges, that are pressed into a sheet of material that has been softened by steam. This material is then sandwiched between flat sheets of material to form corrugated fiberboard. Flute serves as protective cushioning and helps strengthen a carton. Different widths and configurations offer distinctive performance advantages.

Functional Coatings - The lamination of polyethylene and/or plastic or foil films to paper substrates, providing a water or greaseproof barrier. Typically used in high humidity applications in both tropical and cold temperatures, for use with meat, seafood, pet food, fruit and produce.

Gel - Also known as fish eyes. An uneven coating on the paper that is shaped like a tear drop. Small gels can be microscopic. Large gels can be several inches long.

Gloss - The shiny, reflective appearance of the coated paper, when placed under a light source. Measured with a Hunter Gloss Meter. Gloss can vary from 0% (Matte finish) to 100% (Mirror-like finish).

Headers - Round or square, typically corrugated sheets that serve as a protective barrier over the ends of the rolls.

Jumbo Roll – A bulk roll of base material which is then converted into smaller sizes/quantities.

Kinetic - Resistance to motion while object is moving or the amount of drag.

Kinetic COF - The force needed to keep an object moving once it is started in motion.

Kraft - This term describes the natural, unbleached corrugated fiberboard used in making cartons

Laminated - Paper that is developed by fusing one or more layers of paper together to the desired thickness and quality. Often other substances like thin sheets of metal, plastic, etc. are fused to paper.

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Lamination - Combining multiple layers of material into a single structure.

Linerboards - Linerboards form the inner and outer facings of corrugated fibre boxes and are chosen for their structural and/or decorative properties. They can be made from white or brown, kraft or recycled fibres, or a blend of both.

Master Roll - A roll of paper after going through a converting operation but before rewinding.

MD - Machine direction.

Metallising - Applying, through a vacuum process, a thin aluminium layer onto flexible plastic film substrates used to package a variety of foods.

Metallized - A very thin coating of metal deposited on film or foil.

MF (Machine Finish) - Finish of paper when made on a paper machine that does not have a large smooth dryer roll. Paper does not have a smooth shiny side (MF).

MG (Machine Gloss) - A sheet of paper having a smooth shiny surface on one side; caused by a large surface dryer on a Yankee Machine (MG).

Moisture - The amount of water in the sheet, expressed as a percentage of the total weight of the paper. As the roll absorbs moisture, the fibers at the edges and outer layers of the roll expand.

Moisture Barrier - Prevents the movement of moisture from one area to another

Moisture Content - Refers to the amount of moisture found in a sheet of paper. Average amount ranges from 5 to 8 percent. This figure varies from sheet to sheet since paper will emit or absorb moisture according to the condition of the surrounding atmosphere. Moisture loss is realized in the form of shrinkage, which begins at the edges of the paper and moves across the grain causing the sheet to tighten and curl.

Moisture Welts - Bands, raised welts, or soft wrinkles around the roll (in the machine direction). They are not perfectly parallel to the edge, but rather wander like a snake. A moisture welt does not meet itself after going completely around the roll. Since they exist near the outer diameter of a roll, they usually disappear when a small amount of paper has been slabbed from the roll.

Mullen - Burst strength on a sheet of paper.

Offset - When a roll shifts over on itself causing a ridge in the profile of the roll

Offset Edge - The edge of the roll is not a flat surface. As the roll is wound, the edge of the paper shifts from side to side so that some of the layers of the roll are offset from others.

Outturn Sample - A sample from every master roll 12" x full web width saved for future use and marked with: date, machine, roll number, and order number.

Packaging Converter - A company that converts packaging materials into finished products.

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Pasting - Two, three or four plies of paper and paperboard are glued together to form a solid fibreboard with a thickness ranging between 0.8mm to 3mm. The boards are used for a variety of applications such as shoe boxes, screen printing, display boxes, board games, book covers and ring binders.

Pipe Liners - A delamination of foil from the base paper that is about the size of a pencil.

Primer - Layer of material used to promote better bond between poly and paper.

Print Direction - The orientation of the copy relative to the unwind direction of the roll and according to what the customer specified.

Profile - The roll surface from edge to edge.

Puckers - A rise or dip in the surface of a sheet of paper caused by uneven moisture.

Pulp - Primary raw material used to make paper. A fibrous product produced by mechanical or chemical processes, or a combination of both. The timber resources used to make wood pulp are referred to as pulpwood, and generally comes from softwood trees such as spruce, pine and fir.

Pyrometer - Instrument used to measure surface temperature.

Recyclable - The ability to be treated or processed to be made suitable for reuse

Repeat - The measured length from eye mark to eye mark on material that is printed in register.

Repeat Length - The length of a print on a finished roll.

Repel Treatment - Test used to determine level of fluorochemical in paper. This increases the oil repellency of sheet (TL-30).

Rewinder - Equipment which slits and rewinds paper webs into smaller rolls.

Reworked - Rewinding a set-out to remove the off quality material or to remove a physical defect from the roll.

Roped - Ropes or corrugations are a series of parallel diagonal ripples or wrinkles in the paper running around the roll (in the machine direction). The pattern of uniform diagonal markings, which is usually 1" to 4" wide, and resembles a rope.

Rubber Roll Mark - A visual image in the surface of the poly caused by something sticking to the rubber roll or a defect in the rubber or in the grinding.

Scratches - A fine hair-like indentation in the coating surface usually less than 1/8 inch wide (the length varies).

Set Out - An off quality roll that needs to be reworked. Set outs can come from any point in the manufacturing process. Typical reasons for a set out include: extruder splices, offset in a roll, wrong slit width.

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Shear - Force moving two contiguous parts to slide against each other.

Shear Strength - The strength of a material or component against the type of yield or structural failure where the material or component fails along a plane as a result of forces acting parallel to the plane.

Sheet Feeder - A corrugating plant that has no converting equipment and produces only corrugated sheet. Its customers are typically independent sheet plants. The term 'sheet feeder' can also mean the device at the front of die cutters/flexo folder gluers.

Sheet Plant - Comprises converting equipment and does not produce its own corrugated board. Typically, sheet plants are smaller operations offering their customers personalised service.

Side/Edge Curl (CD) - The curl occurs at the edge of the web.

Single Face - In the manufacture of corrugated board, one piece of fluting glued to one liner only.

Single-Facer - The section of a corrugator which forms the corrugated shape in the medium, applies adhesive to it and then bonds it to the flat linerboard. The output from a single-facer is referred to as single-face board. Most corrugators have more than one single-facer to enable different flute sizes to be used.

Single-Wall Carton - This is a corrugated fiberboard carton made by gluing a sheet of fluted corrugated material between two flat sheets of linerboard.

Sizing - Adding a specific compound (frequently rosin) that makes the sheet more resistant to penetrations by liquids.

Slab - Waste at the end of the roll that is normally cut off the core and thrown away.

Slime Holes - Holes of irregular shape. Around the hole there may also be a discolored area caused by micro-organisms that grow in the warm water at the wet end of the paper machine. If a large organism reaches the press it cannot get through the nip and a hole results.

Slime Spots - Discolored areas of irregular shape caused by micro-organisms that grow in the warm water at the wet end of the paper machine. When a small organism reaches the press station, the organism is mashed to form a slime spot.

Slitter - A sharp disk which cuts paper into pre-determined widths.

Slitting - Cutting paper by the use of a cutting wheel. Paper may be slit into smaller sheets or a web of paper may be slit into narrower rolls.

Smoothness - The flatness of a sheet of paper, which generally determines the crispness of the image printed upon it. The texture of paper or poly sometimes measured with a gauge and given a numerical value.

Splice - To connect the ends of two rolls of a raw material together with tape. The connection point of two rolls of raw material. An overlapping joint used to join the ends of webs together.

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Static - An electrical charge that is stationary (as opposed to an electrical current in which the charges cause a movement of electrons through a conductor). A coated sheet can become charged with static electricity so that one side of the sheet possesses a positive charge and the other side a negative charge. Since opposite electrical polarities attract each other, a stack of coated sheets that possess static electricity will cling to each other and therefore be more difficult to separate than uncharged sheets. A sheet can retain significant amounts of static for months.

Static COF - The force needed to start an object's movement.

Streaks - Bands of lighter than normal coating pickup that are wider than about 1/8". The length varies.

Stretch - The elongation of a sheet that occurs, before rupture, when tension is applied to the paper. The measure of stretch is the increase in length of a strip of paper after it is loaded to failure in a tensile tester, stated as a percentage of its original length. The average of a number of measurements of stretch across the web.

Strike Through - A visual defect that looks like the paper is transparent or darker, typically caused by hot wax or asphalt being absorbed by the paper rather than staying on the surface.

Substrate - Any material such as paper, film and foil to which adhesives, inks or coating are applied

TAPPI - Technical Association of the Pulp and Paper Industry

Telescoped (also Dished) - The roll edge is concave on one side and convex on the other. May exist when the roll is received by the customer or it may occur while the roll is being unwound. Also known as "dished".

Tearing Strength - The ability of a paper to resist tearing when subjected to the rigorous production demands of the conversion process.

Tensile Strength - The ability of the paper to withstand the stress and strain applied to it before breaking down and pulling apart.

Top/Felt Side Curl - The edges are turned away from you.

Unwind - The direction in which the print reads on a roll of paper. The different unwind directions are predetermined and can be found on the "Standard Unwind Roll Chart".

Wavy - The appearance of one or both edges of a web in which the sample fails to lay flat on a flat surface.