

# GLOSSARY

## OF FLEXIBLE PACKAGING MACHINE TERMS

- 1. Application Data** is all the pertinent and specific information about the product, package, and machine output. Product information can include understanding the viscosity of the liquid if it contains particulates, product temperature when filling, the required fill volume per package, and the target package width, and length.
- 2. Barrier Films** are films constructed to prevent, to a specified degree, the penetration of water, oils, water vapor, or certain gases, as desired for longer shelf life and product protection when handled and stored according to directions. The length of time and degree of protection depends on several factors including selected types of barriers, thickness, and process.
- 3. Blown Films** are typically composed of multiple types of synthetic resins e.g., Polyethylene, created whereby the resins are melted, and extruded through a circular die creating a cylindrical tube where internal air pressure is used to 'blow' the tube vertically upwards. Blowing upwards stretches the molten resins, reducing the thickness and achieving a uniform layer before quenching.
- 4. Cast Films** are created by extruding molten resin through a slot die onto an internally cooled chill roll.
- 5. Centipoise (CP)** is a unit of measure of viscosity; 100 centipoise = 1 poise. E.g.: water has a viscosity of 1 CP while Honey's range is 2,000 to 3,000 CP and Ketchup ranges between 50,000 to 70,000 CP. The rule at Winpak is that "if the product is pumpable, we can fill & pack it."
- 6. Change-Over** is an activity where the Operator will remove and replace specific components on the machine, and change the settings in the HMI, to enable the filling of a different package type or width, or type of sealing format desired. Changeover is an important indicator of up-time.

- 7. Clean-in-Place (CIP)** is a cleaning method used in food processing to sanitize equipment and materials without having to disassemble the machine.
- 8. Continuous Motion Machines** are machines that transport the film continuously without stopping, offering a higher output of the finished product per minute.
- 9. Controls Systems** manages the machine's mechanical and electronic operational functions.
- 10. Core Size** refers to the inside diameter of the core that the film is wrapped around.
- 11. Cutting Knives** in VFFS machines, in the first stage, the knives cut the film vertically to create the widths of the package, then horizontally, after each package has been filled and sealed.
- 12. Cut-Off** also referred to sometimes as the Repeat, Print Length, or Index. The Cut-Off or Index typically means the full length of the finished package, measured from where it is cut from the bottom to the top. The Repeat, or Print Length refers to the printed areas, where inks have been applied. This area may be shorter than the Cut-Off or Index if the package designer leaves the seal areas unprinted.
- 13. Cycles per Minute (CPM)** refers to how many times the machine completes one cycle, e.g., making a package from start to finish in one minute. The number of cycles that can be repeatedly achieved within one minute is one of the key performance metrics of a machine.
- 14. Dancer Arms** are a set of arms that the film is threaded around in a specific direction, which maintains the required tension on the film. 'Dancer' refers to their back-and-forth movement on torsion springs.

- 15. Drop Test** is a test for measuring the structural integrity of the packaging material and seal strength. Packages are dropped 'free fall' style, from a specified height onto a particular surface.
- 16. Downtime** is the amount of time a machine, or the line, is not in production due to planned or unplanned stoppages during a shift or set time. Uptime is the opposite metric.
- 17. Eye Mark Register** is a printed rectangular mark that instructs the machine where to cut the film. The mark is located along the edge of the film web, at predetermined intervals, and is identified by optic sensors.
- 18. Film Web/Film Width** refers to the width of the film, from outside edge to outside edge.
- 19. Forming Shoulder** is a triangular-looking component on a VFFS machine that when the film is directed over the triangle (shoulder) where the edges of the film are moved towards the center, forming the film into a tubular shape. The product filling tube is angled into the middle of the tube opening before vertical sealing.
- 20. Heat Sealing** is a sealing method that bonds two or more surfaces by fusing thermoplastic or thermosetting film coatings with precisely controlled temperature, pressure, and dwell time.
- 21. Heat Sealing Bars** are metal bars that emanate heat and apply specific pressure over a specified period to bond packaging material layers and create seals.
- 22. Hermetic Seal** is a seal that is airtight or impervious to gases or fluids under normal conditions of handling and storage.
- 23. Human Machine Interface (HMI)** is a touch screen interface for operators to control and monitor the packaging machine.

**24. Intermittent Motion Machines**

are systems that stop during a specific function to create seams, or to properly fill a product. These machines produce fewer finished packages compared to continuous motion-filling machines per minute.

**25. Ingress Protection (IP) Rating**

indicates how well a device is protected against water and dust. For example, an optic sensor rated at IP67 is “dust resistant” and can be “immersed in 1 meter of freshwater for up to 30 minutes.”

**26. Laminated Film**

is a combination of two or more films or sheets bonded using adhesives or Tie layers. Tie layers are polymer resins that bond different layers of film together during manufacturing.

**27. Lap Seal**

is a seal made with two layers of film overlapping with one another. Lap seals are typically stronger than Fin seals and require less film overall therefore providing a more efficient and sustainable package with leaner operations and economics.

**28. Lidding and Lid Stock**

are packaging materials used to form a lid and be heat-sealed onto a package, for products such as creamer cups, yogurt or fruit cups, etc.

**29. Modified Atmosphere Packaging (MAP)**

is a packaging method in which a combination of gases such as oxygen, carbon dioxide, and nitrogen is introduced into the package at the time of closure, altering the atmosphere inside packages to prolong product freshness and shelf life.

**30. Pillow Pouch**

is a package format formed on a VFFS machine when the film tube is sealed at both ends. Format is characterized by seals across the top and bottom, and a longitudinal seal, usually going down the center of one of the two sides.

- 31. Programmable Logic Controller (PLC)** is an industrial computer that controls the machine's operation, and the manufacturing process. PLCs receive information from the machine's connected sensors or input devices, then processes the data, and triggers outputs based on pre-programmed parameters.
- 32. Pull-Wheel Drive System** conveys film through the machine using friction or vacuum for stable transport.
- 33. Roll Stock Film** is any flexible packaging material that is in roll form. Web film is cut to a needed width and is wound onto a solid core tube that is required for mounting onto a VFFS machine.
- 34. Sachets** are small rectangular or square packages with three or four seals, used for a wide range of applications for liquid food, gels, lotions, concentrates, and drink mixes.
- 35. Sealant Temperature** is a defined temperature range where the film is ready for bonding or manipulation. The temperature of the sealing bars must be within this film manufacturer's specifications. A good seal depends on three conditions; the sealing temperature, the degree of pressure applied, and the dwell time. Being out of this range in any area either causes failure to initiate sealing or causes seal distortion.
- 36. Seal Bar** is the tool used to seal or bond the two packaging materials together.
- 37. Servo Drives** control specific machine motions with precision and flexibility.
- 38. Shelf Life** generally refers to consumer products and the length of time that a product will maintain the product quality acceptable to the product owner and the end users, considering from date of manufacture, time consumed for warehousing, distribution, handling, and storage in the pantry, until the package is opened. Packaging materials also have a shelf life which can be dramatically shortened if not handled and stored properly.

**39. Splicing**

is the joining of the ends of rolled film material, typically done at the machine when the machine is still operating. The ends are overlapped and taped with strong color-contrasting tape. Splicing enables non-stop operation as the film moves through the machine and packages are easily identifiable and removed.

**40. Squeegee Rollers**

are a set of servo-controlled rollers that when applied to the package, eliminate headspace inside the package and prevents seal contamination.

**41. Stick Pack**

is a narrow flexible packaging pouch commonly used to package single-serve powder beverage mixes such as fruit drinks, instant coffee and tea, and sugar and creamer products.

**42. Substrate**

refers to a film's construction, the components that make up the film, e.g., Polyester, Aluminum foil, print layer, etc.

**43. Three-Sided Sealed Pouches**

are bags that are typically created from a single web that is folded in half and then sealed at specific intervals to create individual pouches. Winpak holds a patent for technology to create a specific three-sided pouch.

**44. Vertical Form Fill Seal Machines (VFFS)**

is the terminology referring to package machinery that utilizes roll stock film, where the machine transports the film(s) and in a downward direction, forms, fills, seals, and cuts the film into the respective packages. A single-lane VFFS machine requires 1 roll of film to form a package whereas a multi-lane machine, forming smaller pouches and sachets, two rolls of film are required to form the front and back of the package.

**45. Washdown Construction**

is a design requirement for products and production environments that require rigorous cleaning procedures for higher hygienic conditions. Certain machine components require a higher IP rating construction to withstand the process.

