Laminating process

Laminating is the process through which two or more flexible packaging webs are joined together using a bonding agent. The substrates making up the webs may consist of films, papers, or aluminum foils. In general terms an adhesive is applied to the less absorbent substrate web, after which the second web is pressed against it to produce a duplex, or two-layer, laminate.

Laminating machinery and laminating types

Laminating machinery can be classified according to the type of bonding agent used to produce the laminates. These types are:

- **Wet lamination:** where the bonding agent is still in a liquid state when the webs are joined together. It is commonly used to produce a paper-aluminum foil laminate that is widely used in flexible packaging
- **Dry lamination:** where the bonding agent, dissolved into a liquid (water or a solvent), is applied to one of the webs, before being evaporated in the drying oven. The adhesive coated web is laminated to the other under strong pressure and using heated rollers, which improves the bond strength of the laminate
- **Wax lamination:** where the bonding agent is a wax or hot melt and is applied in a molten state onto one of the two substrates. This process allows the production of paper-paper or paper-aluminum foil laminates that are widely used for the packaging of biscuits and bakery products
- **Solventless lamination:** where the adhesives used do not contain solvents. Solventless adhesive generally indicates a specific type of adhesive composed by two components reacting with each other and consequently not requiring drying.

The resulting laminated web is then rewound into a finished roll.

Flexible Packaging Laminating Process:

Laminating is the process in which two or more flexible packaging webs are joined together using a bonding agent. These webs are comprised of films, papers or aluminum foils.

To bond the webs, an adhesive is applied to the less absorbent substrate web, which is then pressed against the second web. This results in a two-layer laminate.

Functions of Flexible Packaging Laminates:

Flexible packaging laminates have three main functions:

- **Mechanical Properties:**
  - Improve the strength of the material by making it more resistant to tearing
  - Protect it during packaging, distribution and storage
- **Barrier Properties:**
  - Protect it from outside deteriorating agents (light, moisture, gas)
  - Prevent loss of product qualities, such as freshness and aroma (food)
- **Substrate Sealability:**
  - Closes the flexible packaging

Flexible Packaging Laminate Applications:

Flexible packaging laminates are used for products that need to be protected or have shelf lives extended.

Applications for food products include:

- Ready-to-eat such as snacks, ice creams, coffee
- Freezer-to-microwave
- Boil-in-bag pouches

Applications for non-food products include:

- Insulation
- Medical
- Cosmetics