

LABEL GLUES

General considerations concerning glue and labeling

The application of paper labels to bottles and containers using wet glue is one of the most widespread and common labeling methods. While reliance on other methods and technologies is growing, it currently remains the most widely used method.

Paper labels are printed on 1-side coated paper, cast-coated paper, or metallized paper through offset, rotogravure or flexographic printing. It is then guillotined and die-cast to the final size and packaged in blocks of 500 or 1000 labels.

Once in the bottling machine, the blocks of labels feed the label dispenser. A labeling head applies the glue to the back of the label, which is then positioned on the bottle.

Glue types

The performance of the gluing process will depend on the adhesive and cohesive properties of the glue being used and the nature of the two surfaces, that is, of the glass and the paper.

The most common types of glue on the market are water-based, solvent-based, and hot-melt:

- ✦ **Water-based:** Most glues on the market are water-based. They have a generalized use due to their performance features as well as being easy to handle and clean.

They consist of combinations of adhesive components dispersed in water. After adhesion occurs between the label and the glass, the water evaporates and is eliminated. One of the surfaces must be absorptive or porous in order for bonding to occur.

Water-based glues can be synthetic (PVA polymers, acrylic polymers, etc.) or diffusions of natural polymers with a casein, starch or dextrin base.

Casein glues are widely used due to their good adherence to glass, machine friendliness, easy cleaning quality, ideal tack in humid conditions, and resistance to the humid conditions to which the bottle is subjected during consumption of the product (contact with ice, cold water, refrigerators...) They are used more than any other glue for glass bottles and paper labels.

Synthetic glues are used with plastic bottles, such as PET bottles, plastic labels, and with problematic designs.

These glues are also ideal for the labels of returnable bottles as they dissolve easily on bottle-washing lines in NaOH, thereby facilitating this process.

- ✦ **Solvent-based:** These glues are made up of combinations of synthetic polymers and resins. They are characterized by their rapid reaction time, adhesion strength,

GLUE FOR LABELS

resistance to heat and versatility with all kinds of surfaces and bottling conditions, including cold and humid environments. However, their use is limited by environmental concerns, and they are being replaced by water-based glues and hot-melt adhesives.

- ✧ **Hot-melt:** Hot-melt glues are solid thermoplastic materials which are subjected to heat until they melt and then applied to the label. They do not require drying, as they return to a solid state when they cool. This makes them especially suited for high-speed bottling lines. They are ideal for complicated applications.

Characteristics of glue

Variables and characteristics to keep in mind when choosing a glue are:

- ✧ The glue must interact with the surface of the label, humidifying it and becoming absorbed, for bonding to occur. A critical factor is the tack of the glue, or the initial bonding capacity of the glue, with the surface with which it comes in contact. This determines the quality of the label. This initial bonding must be maintained in order for the glue to set properly to surfaces and to prevent the glue from running and overflowing the edges of the label or forming glue pockets on the label. The thickness and tack of the glue are therefore two important factors to consider.
- ✧ The glue must meet the requirements of the end user of the product: suitability for food; resistance to water in the case of beer, wine and beverage bottles; easy detachment for returnable bottles; resistance to chemical agents if it is a label for an industrial container; etc.

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