

Beverage Manufacturers

The beverage industry uses a wide variety of processes to make and package such products as beer, milk, wine, soft drinks, and fruit juices. Water quality and purity are of primary concern, since water is usually a major component of the consumed products. Water is also used to clean and sanitize floors, processing equipment, containers, vessels, and the raw food products. Some older bottling plants use more water for cleaning than for product. With current technologies, one can design and build a facility that has a reduced requirement for water. **PROC**

Standards and Practices

Principles include the following:

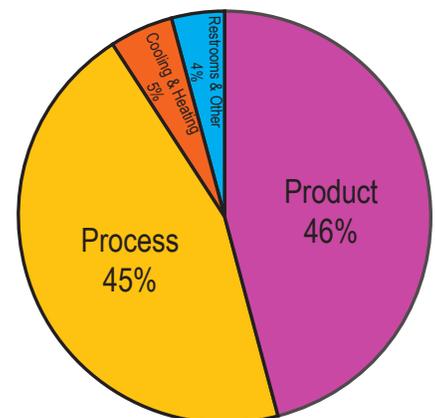
- ◆ provide adequate metering, including submetering, at all major water-using areas and for process control.
- ◆ design the facility for ease of cleaning.
- ◆ take advantage of dry methods for cleanup and transport.
- ◆ use product and by-product recovery systems.
- ◆ consider all possible opportunities for water recovery and reuse and for alternative water supplies, such as filtration and membrane processes and capturing condensate drain water from air-conditioning and refrigeration systems. **ALT 4**
- ◆ design for minimal or no water use. **PROC**

Larger equipment that cannot be disassembled easily must be cleaned and sanitized in place. Use pigging as part of the clean-in-place system for process pipes. **PROC**

Water Treatment

Water is softened and mixed with biocides and soaps before it is sprayed onto conveyors, so cans and bottles can “slip” easily on the high-speed conveyor belts and not tip over. To minimize the use of and need for water-lubricated conveyor belts, ensure that the spray nozzles are properly sized, well-aligned, and equipped with automatic shutoffs. **PROC**

Beverages range from milk and fruit juice to wine and beer. Water quality is important, since water is often a component of the consumed product, in addition to its use in the manufacturing process.



Typical water uses in beverage manufacturing



Water Reuse and Recycling

Water is used as a heat-transfer agent in a variety of applications. This water remains relatively clean and is an excellent source of water for reuse. **PROC**

Heating Systems

Steam boilers and hot-water boilers provide heat and hot water for many purposes. Closed-loop systems return water and steam condensate to the boiler for reuse, saving energy and water. Open-loop systems expend the water or steam without return to the boiler. Several water-efficiency choices are available:

- ◆ steam boilers of 200 boiler horsepower (hp) or greater, equipped with conductivity controllers to regulate top blowdown.
- ◆ for closed-loop systems, condensate-return meters on steam boilers of 200 boiler hp or greater.
- ◆ closed-loop steam systems operating at twenty cycles of concentration or greater (5 percent or less of makeup water) where chemistry of the water allows.

Closed-loop systems save water and energy.

TIP: Conspicuously mark fire-protection plumbing so no connections will be made except for fire protection. Additionally, install flow-detection meters on fire services to indicate unauthorized water flows. **REST**

