

# WATER REUSE

## Water Is Critical To Brewing

Water is a growing concern in the brewing industry. Water is not only a critical ingredient, but it is also a scarce resource. With continuing pressure to reduce water use per barrel of production, the reuse of water is increasingly common.

## Where Does Reuse Water Come From?

Reuse water sources differ along the production process. In the utilities area, water conservation strategies may include reclamation of carbon dioxide scrubber water, reduction of boiler blowdown to increase cycles of concentration, and reuse of steam or brew kettle condensate. In the packaging area, reuse water can come from rinsing empty bottles or cans, washing the final products, or reclaiming water from the last stages of the CIP (Cleaning in Place) of process equipment. Water can also be recycled during brewing by reducing CIP rinse water and reusing carbon filter backwash or rinse water used in utilities or packaging.

## *SPECIFIC CHALLENGES OF REUSE WATER*

### **Effects On Finished Product Quality**

Reuse water can increase the staining and spotting of aluminum cans in the pasteurizing process. The stains, which are typically caused by deposition of magnesium silicate salts in the interstitial pores of the can, usually occur on the uncoated dome of the can where the protective overcoat varnishes does not reach. As can be seen in Figure 1, the stain appears as a yellow-brown discoloration and may turn a darker black color if enough magnesium salts are present. Can spotting, which appears as white or brown spots on the can dome, is caused by deposition of calcium salts, iron or organic contaminants in pasteurizer water (Figure 2).



Figure 1: The can on the left demonstrates the appearance of magnesium silicate on the unprotected surface of the can, compared to a reference can with no staining.



Figure 2: The can on the left shows the deposition of calcium salts and other organic contaminants, which create the appearance of spots.



## **ADDITIONAL CHALLENGES OF REUSE WATER**

### ***Fluctuating Water Quality***

Reuse water can be particularly challenging because abrupt changes or contamination to the water can limit the effectiveness of the treatment. Reuse streams, unlike traditional makeup water, have increased levels of organic matter and contaminants which can fluctuate rapidly. Employing reuse water requires consistent monitoring to ensure the treatment is working properly.

### ***Challenges For Critical Systems***

Reuse water can contaminate the condensate of a boiler, which can cause foaming and deposition of polymerized organics on boiler tube surfaces. This scenario can increase fuel consumption and in some situations may negate the benefit of using reclaim water in the first place. Cooling systems can suffer loss of efficiency, biological growth issues, or deposition on condenser tubes. Reuse water can also foul pasteurizer heat exchangers, increase frequency or reduce mat top conveyor life— all of which can have severe impacts on production efficiency.

## **CHEMTREAT CAN HELP CONQUER THESE CHALLENGES**

The fluctuating quality of reuse water is the primary challenge of water conservation efforts in a brewery. Brewers need flexible and robust water treatment programs to preserve the quality of finished products and to protect the pasteurizer from premature failure.

ChemTreat's experienced field personnel can help breweries address the challenge of balancing water reuse with efficiently producing a quality finished product. We have industry-specific engineers who can help you solve your water conservation goals. In addition, ChemTreat offers specific products to address the challenge of treating reuse water in boiler and cooling systems, pasteurizers and reclaim water systems.

Contact a local ChemTreat engineer to find out more. Visit us at [www.chemtreat.com](http://www.chemtreat.com).

