

METTLER TOLEDO APPLICATION NOTE

Caustic Control In Textile Mercerization

BACKGROUND

Mercerization is a process by which textiles (usually cotton) are treated with caustic (NaOH) which actually rearranges the cellulose molecules in the fiber. The effect of mercerization is increased fiber strength, gloss, and affinity for dyestuffs.

For effective mercerization, the fabric weight and compactness and the strength of the caustic (NaOH) both determine the feed rate of the fabric, which typically varies from 80 to 120 yards (73-119m) per minute.

THE PROCESS

The fabric first enters the caustic bath (16-27% NaOH, typically 20-23% NaOH). It is then fed around a series of rollers (timing cans) which keep it flat and smooth and control the time of caustic exposure. The fabric is then sprayed with water to begin removal of caustic, followed by a washer that applies chemicals to neutralize the remaining caustic. The final steps are thorough rinsing with water and drying. (Figure 1)

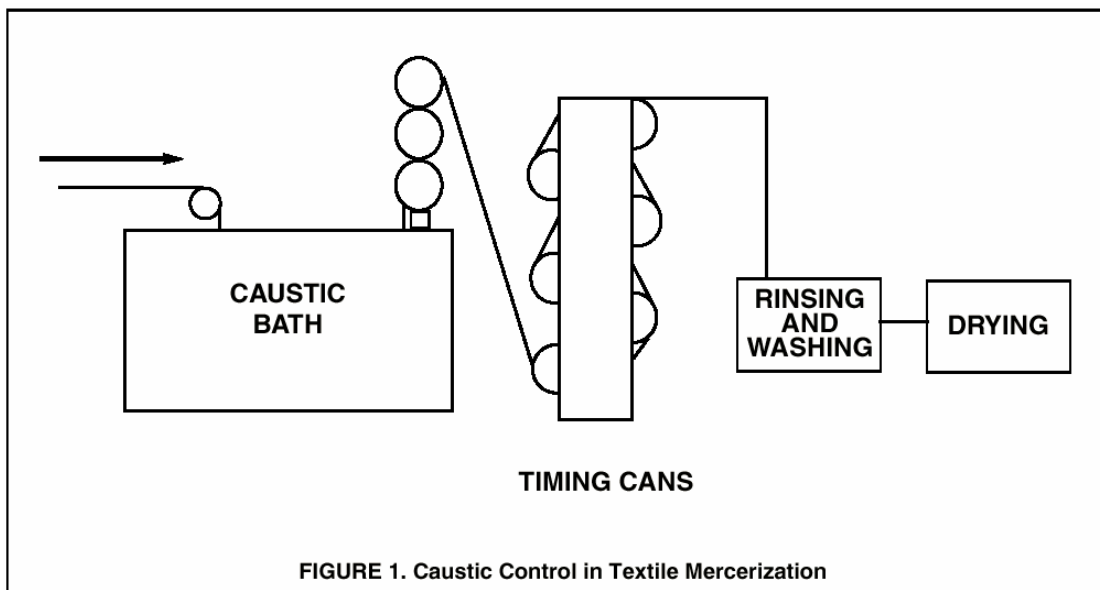
Control of the caustic concentration in the bath is important for the uniform and consistent quality of the mercerized textile. Caustic control ensures that the fabric will have the predetermined caustic exposure, based on weight and feed rate. It also helps ensure the effectiveness of the rinse and wash steps by avoiding overexposure to caustic, which could make the washing step more costly in terms of the neutralizing chemicals used.

INSTRUMENTATION

Toroidal conductivity is an ideal method for measuring caustic concentration, due to its resistance to chemical attack by caustic and its resistance to fouling by solid materials which can be present in the bath.

Mettler-Toledo offers a variety of InPro[®] 7200 Toroidal Type conductivity sensors to meet all application requirements.

The InPro 7200 sensors can be used with the Model CondI 7100 Toroidal Conductivity Analyzer.



PRODUCTS

Model Condi 7100 Toroidal Conductivity Analyzer

- Measures conductivity, resistivity and % concentration
- Detachable front panel and plug-in terminals for ease of installation
- All functions accessible through the keypad for increased ease of use
- Continuous sensor and transmitter diagnostics to monitor performance
- FM certification for Class I, Div 1 & 2 Environments
- 3 year warranty

InPro[®] 7200 Toroidal Conductivity Sensors

- Recommended for high accuracy measurement in high conductivity processes
- Choice of materials of construction for increased chemical compatibility
- High temperature range option suitable for CIP and Boiler Blowdown applications
- FM approved for electrical safety