



INK AND STARCH WASTEWATER

The presence of heavy metals, such as zinc, lead, copper and chrome make discharge of the flexographic ink waste wash water to most sewer plants, a problem. Color may also be a problem in certain cases. Otherwise, discharges are most often limited by TSS (suspended solids), and BOD (oxygen demand)

Significant Savings

- Lower capital cost than chemical systems
- Ability to reuse water
- No chemicals needed
- Minimal operator attention required

Technology Benefits

Membrane Separation System Using Tubular Ultrafilters (UF)

- Simple mechanical process
- Consistent high quality water
- Ability to reuse purified water
- Low operating costs
- Unattended operation
- Minimal disposal costs

Contaminants Removed

- Pigments, Inks and Dyes
- Polymers
- Solids
- Heavy Metals
- Oils

Services Provided

- Systems Design
- Equipment and Installation
- Operator Training
- Maintenance Contract
- Build, Own, Operate and Maintain

Ultrafiltration Process

Ultrafiltration is a process in which a semi-permeable membrane separates and concentrates the suspended solids, colloids and high molecular weight materials that are present. The feed solution flows under turbulent conditions through a tubular membrane. The permeate (clear, filtered water) passes through the membrane. The permeate is then available for recycle as makeup water or for discharge to sewer.

The wastewater is circulated across at high rates with a high degree of turbulence. As a result, no filter cake builds up on the membrane. Moreover, the structure of the membrane itself will not become plugged because the retained materials cannot penetrate the membrane. Turbulence at the membrane surface membrane carries retained materials from the membrane back to the process tank as a concentrate for disposal.

Inks & Starch

Flexographic ink pigments are complexed with heavy metals, zinc, copper, lead, chromium or barium and are suspended in an aqueous solution. Ethanol, in levels of 15-25%, completes the formulation.

The inks are run on single or multi-colored presses. When colors or product lines are changed, or when the systems are shut down, the presses are cleaned and the remaining ink removed. Waste ink wash water is generated during this cleaning procedure. Although most ink manufacturers now provide formulations with very little heavy metals present, the wastewater can contains levels of heavy metals higher than those set by local sewer discharge limits. In some cases, color alone can be a reason for municipal waste treatment authorities to refuse this material.

Volume Reduction

The purified water from the UF system can be either discharged to the local municipal sewer or reused in the manufacturing process. A concentrated stream is produced, which is less than 3% of the original volume. If starch is not present the volume can be reduced to less than 1% of the original volume.

Generally, most of the wastewater is waste flexographic ink wash water. A small portion of the wastewater is a dilute starch solution, used in the corrugating process.

Where larger volumes are to be treated, a subsequent sludge dewatering stage can be installed that will generate dry sludge for disposal. In most cases, however, the volume reduction that is available using Ultrafiltration is so great that no dewatering is necessary.

