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# Method For Separating Lignin Water From Black Liquor

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**Abstract:** Therefore, recently, both in Uzbekistan and abroad, extensive research has been carried out and new physical and chemical methods of water treatment have been developed, among which reverse osmosis and ultrafiltration occupy a special place. They are characterized by compact installations.

**Key words:** Carried, physical,chemical, methods, water treatment.

## INTRODUCTION

Pour 0.5 liters of black liquor into a 1-liter glass and add a 30% Na2SO4 solution to pH 1, then heat on the stove for 30 minutes with continuous stirring. The precipitate that forms is filtered through a glass filter and washed with warm water. The washed sediment is dried in an oven at a temperature of 80° and then organic impurities are removed in a Soxhlet apparatus by extraction with diethyl ether. After extraction, the precipitate is placed in a 1-liter conical flask, 15 ml of a 72% H2SO4 solution is added and shaken for 2.5 hours. Then add 200 ml of distilled water and reflux for 1 hour. The lignin is then allowed to settle, filtered, and washed with water until the pH is neutral. After washing, the isolated lignin is dried in an oven at a temperature of 105°.

### Method for determining Na-ion

The Na-ion concentration was determined by the flame photometric method on a PAZ h-1 photometer.

Before each analysis, a foreign photometer was used to build
calibration curves for standard solutions according to the method described in (70)
The membrane permeability was calculated using the known formula

$G=\frac{Q}{F \cdot \tau}$;

where – Q is the volume of filtrate, l; F - working surface of the membrane, m2; τ - sampling time, hour.

Selectivity for Na-ions, dye and surfactant was calculated using the general formula

$$\varphi = \frac{x_1 - x_2}{x_1} \cdot 100 = \left(1 - \frac{x^2}{x^2}\right) \cdot 100; \%$$

where x1 and x2 are the concentrations of the initial solution and filtrate, respectively.
The volume of the Filtrate was measured with a graduated cylinder, and the time was recorded with a stopwatch.
Experiments were carried out at different concentrations of NaCL Na2 SO4 dyes and surfactants; operating pressure 0.1 - 5 MPa, pH range 6-10; the temperature was regulated using a U-10 thermostat.
Characteristics of substances used in the study of reverse osmosis and ultra-filtration wastewater treatment processes using DM from textile enterprises

When studying the processes of membrane treatment of wastewater from textile enterprises, the substances most often used in dyeing processes were selected - dyes, surfactants and auxiliaries. Direct pure blue dye is used for dyeing cotton and viscose fibers. Molecular weight - 900.4, belongs to the class of disazo dyes.
Active bright red dye 5CX - used for dyeing cellulose and protein fibers. Molecular weight - 57.2, belongs to the class of triazine dyes.

VAT dye bright green SD - used in vat dyeing of cotton and viscose fiber. Molecular weight 516, belongs to the class of anthrone dyes. Stearox-6 (polyethylene glycol monosteorate) is a nonionic surfactant, forms stable emulsions in water, contains 90% of the main substance, molecular weight is 516. Dispersant NF (disodium methylene bienaphthalene sulfonate) is an anionic surfactant, highly soluble in water, contains 32% of the main substance , molecular weight - 442. Mataupon (condensation product of oleic acid chloride and sodium salt of methyl taurine) is an anionic surfactant, highly soluble in water, molecular weight - 425.
Fixer DCU (acetic acid salt of the condensation product of dicyandiamide and formaldehyde), used to increase the strength of wet paint treatments with direct dyes. Na-CMC (sodium salt of carboxylmethylcellulose) is soluble in water, contains at least 40% of the main substance, and is used as an actidesorbent. The chemical formulas of the substances listed above are given
Description of the pilot plant, conditions
carrying out tests and their results. Tests of a pilot-industrial ultra-filtration unit were carried out at the Leningrad weaving and dyeing factory named after Zhelyabov. A schematic diagram of the installation is shown in  The drainage from the dyeing baths is supplied to working tanks No. 1 and No. 2, the volume of which is 500 liters each. To neutralize the wastewater, concentrated acetic acid is supplied from the reagent tank. To form and maintain DM, Na-CMC is separately introduced. The purified wastewater is pumped using a pump (NS-1) brand K 8/18-U2 into the initial container, which is equipped with pipes for overflowing and removing wash water into the sewer. From the initial tank, using a pump (NS-2) brand K 45/55, the runoff is sent to an ultra-filtration

apparatus (UF). To measure flow, the system includes rate meters.Valves A and B of the Kosva type are installed to regulate pressure and maintain constant flow. The pressure in the system is controlled by the readings of pressure gauges MN-1, MN-2 and MN-3, which are installed on the supply and discharge lines. The flow rate is determined according to the readings of rotameters PT-1, RT-2, RT-3 grade 2.6 ZHUZ with local indicators of type RM.

**Conclusion:** The installation operated during the testing period in circulation mode. The filtrate was collected from each section into a special collection and returned to the original container, where the concentrate was also supplied to maintain a constant concentration of the working solution. Samples for analysis were taken from each section of the apparatus, from the filtrate collection, as well as from the concentrate return line. The main element of the pilot plant is a multi-section, frameless apparatus of the "filter-press" type, serially produced by the Lipetsk Rubber and Plastic Products Plant.

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