



## Comparison of effectiveness of coagulation with aluminum sulfate and pre-hydrolyzed aluminum coagulants

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### ABSTRACT

The purpose of the present study was to compare the effectiveness of coagulation process conducted using a classical nonhydrolyzed coagulant—aluminum (VI) sulfate and pre-hydrolyzed coagulants: PAX XL 19H and Flokor 1.2A. Water samples subjected to coagulation were collected from selected water treatment plant after the pre-ozonation process. Research has been conducted in the winter season. True color of water amounted to 7.0 mg Pt/L and turbidity was 7.29 NTU. The study in a laboratory scale was carried out with the usage of a six-beaker flocculator. Volumetric coagulation was performed in water samples of the volume of 1 L. In six beakers, rapid mixing (3 min at the rotational speed of 200 rpm) was followed by 30 min slow mixing (at 30 rpm). After coagulation, the samples were subject to 60 min sedimentation. The coagulant dose was optimized for minimum color, turbidity, and UV<sub>254</sub> absorbance values using conventional jar testing procedures. The optimum dose for aluminum (VI) sulfate amounted to 2.2 mg Al/L. For prehydrolyzed coagulants, the doses were much lower, i.e. 1.2 mg Al/L. Also less wear of water alkalinity was obtained than in the case of aluminum (VI) sulfate. The effectiveness of removal of turbidity for ALK, PAX XL 19H, and Flokor 1.2A was 63, 70, and 74% respectively.

*Keywords:* Drinking water; Coagulation; Aluminum (VI) sulfate; Pre-hydrolyzed coagulants

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