Improvement of the treatment of fluoride-bearing acidic wastewater by neutralization–membrane filtration process

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Abstract: A neutralization–membrane filtration process has been used to treat the fluoride-bearing acidic wastewater. The result shows that when the pH of the fluid in the neutralizing tank is ranging from 6 to 9, the concentration of the discharged fluoride ions and the metallic ions in the wastewater can not steadily meet the discharge standard of Shanghai. The tests shows that the removal rates of fluoride ions and metallic ions in the wastewater are raised when the pH reaches 10.5 or above in the neutralization tank. Before discharging the wastewater the pH should be readjusted to 7 to assure each pollutant factors to steadily meet the discharge standard.

Key words: neutralization; membrane filtration; solubility product; fluoride-containing acidic wastewater

<table>
<thead>
<tr>
<th>pH</th>
<th>F⁻</th>
<th>Ni²⁺</th>
<th>Mn²⁺</th>
<th>5.500</th>
<th>80</th>
<th>1200</th>
<th>129</th>
<th>12</th>
<th>1.5</th>
</tr>
</thead>
</table>

图1 工艺流程

1. 69 t/h, pH 1.5
2. F⁻, Ni²⁺, Mn²⁺
3. pH 6~9
4. 0.5 μm
2.1  

2.2  

2.2.1  

2.2.2  

2.3  

3.1  

3.2  

图 2 pH 对 F去除率的影响
Selection test of aerator material in UNITANK process

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Abstract: Under the condition of applying scale test of UNITANK process, rubber film aerator and campanulate corundum aerator have been investigated. The results show that comparing with the former, the latter is characterized by higher machine intensity and longer life-span, and can ensure the stable operation normally. When the quantity of aerator is equal and the air supplied is the same, the highest DO concentration in the side tank equipped with rubber film aerator is 5.4 mg/L, while that in side tank equipped with campanulate corundum aerator is 3.2 mg/L. According to the quality of inlet water and the discharge water standard, corundum aerator can meet the request of current operation.

Key words: aerator; rubber film aerator; campanulate corundum aerator