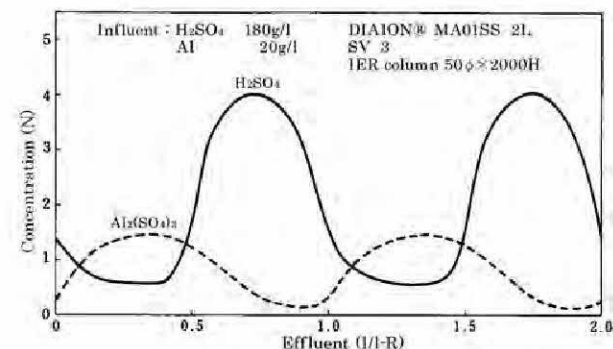


Separation of Sulfuric Acid and Sulfates (Extracted from the Diaion Manuals pages 236 to 238)

e.g. H_2SO_4 , is adsorbed by the resins but the metal salts of the acid, $\text{Al}_2(\text{SO}_4)_3$, are not absorbed when the acid and its salts solutions are treated with SBAERs in salt-form, e.g. SO_4 . Thus, the solutions of acid and its metal salts are fed into IERs and can be separated with water chromatographically; the first fraction contains metal salts and the second fraction contains acid.

Hydrochloric acid with iron chloride and sulfuric acid with iron sulfate can be separated experimentally as well as sulfuric acid with aluminium sulfate. Fig.VII-4-1 illustrates the result of separation of sulfuric acid from aluminium sulfate.



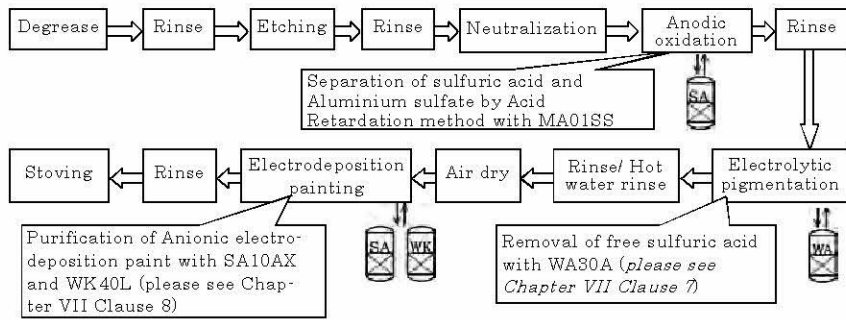
[Fig.VII-4-1] Separation of Sulfuric acid and Aluminium sulfate

This method is applied for the separation and collecting of sulfuric acid and aluminium sulfate in the spent liquors generated from cathode oxidation baths in the cathode oxidation process line of aluminium sashes factory as shown in Fig.VII-4-2.

Aluminium dissolves into the cathode oxidation bath liquor, sulfuric acid, and thus the bath liquor deteriorates gradually. The standard concentrations of H_2SO_4 and Al are 10 ~ 30 w/v% and below 20 g/L. The bath liquor is discharged when Al density reaches 18 g/L, neutralized and then discarded or reused as raw materials of aluminium sulfate, coagulant. The facility consists of the filter that eliminates fine suspended materials and the separation tower filled in with DIAION® MA01SS. 75 ~ 85% of sulfuric acid can be collected and 60 ~ 75% of aluminium is removed with this facility. This method is very advantageous to separate concentrated acid from its metal salts without special regenerants.

4. Separation of Sulfuric acid and Sulfates (Al salts, Fe salts) ⁽⁴⁹⁾

The acid retardation method is one of the traditional chromatographic separations with IERs. This method is based on the fact: Only the acid,



[Fig. VII-4-2] Application of IERs in Aluminium Sashes Factory