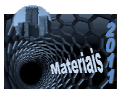

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# SODA AND ALUMINUM RECOVERY FROM SPENT ETCHING BATHS BY AQUEOUS PRECIPITATION

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The aluminum anodizing industry is an important industrial sector that produces great amounts of polluted effluents, which after treatment generate sludge. This brings environmental and economical concerns to the enterprises.

Best way to deal with the problem, according to the “prevention strategy” set by the European Directive on Integrated Pollution Prevention and Control, is to implement preventive techniques and technologies to optimize the use of resources and minimize losses, and in turn wastes.

Among the operations of an anodizing line, the etching/satinizing stage is responsible for the production of a huge quantity of wastewater neutralization sludge and for the bad use of caustic soda. “Caustic etch recovery” technology is claimed to drastically reduce the generation of neutralization sludge and the purchasing of fresh caustic soda by regenerating the exhausted etching/satinizing solution, through an aqueous precipitation reaction.

This paper presents the capability of the technology to effectively regenerate the exhausted caustic solution, and investigated the parameters with major effect on the process yield, in order to optimize it. It was demonstrated that the technology effectively recovers the solution, increases its soda content and diminishes the dissolved aluminum content by precipitating it as gibbsite. Moreover the conditions that optimize the process are simple and inexpensive. After the treatment the solution has the properties to be recycled in the etching/satinizing operation.

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**Keywords**: Aluminum anodizing; Etching baths; NaOH recovery; Alumina precipitation.