

The use of the new generation of organic coagulants, reduces between a 30 and 70% the sludge production

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The increment of the environmental sensitisation on the part of the industry has made that at the present time practically the entirety of the industry of surface treatment, already has or is installing a waste treatment. In the great majority of these facilities, a physical-chemical process exists, consistent in a homogenisation, pH adjustment and later sedimentation. This process is especially useful for the operation simplicity and the obtained results.

The used chemical products are acid or alkalis for the pH adjustment, a coagulant and a flocculant. With this process it is achieved the settling or flotation of the solid parts and the clarification of the watery phase. Between a 30 and 90% of the weight of the sludge can be formed by the own coagulants and the hydrated water that include.

Recently the classification of the industrial sludge in Spain has been revised. These have become in most of cases classified as special residuals or class III meaning an increase on the disposal costs. Also, in many cases, the process of obtaining of the ISO 14000 require a detailed study of all the generated residuals and plans of improvement for the decrease of the same ones. It is for it that the use of new organic coagulants is having a very important development, since the obtained benefits overcome, in many

cases, the costs of use of the same ones.

Application in the auxiliary industry of the automobile.



Next we describe a part of the wastewater treatment of an important aluminium component producer. This process is similar and very common in the sector of the automobile and the auxiliary industry, as well as everything in that industry that requires surface treatments.

Process description: The production of the aluminium components originates a wastewater with a high content in fluorine, sulphates, phosphates, and metals. It presents the inconvenience of being irregular in flow and concentration, for what wide homogenisation tanks and neutralisation are required.

Required treatment: For the elimination of the fluorine, phosphate and metals, it is necessary the dosage of calcium lime. With the addition of lime in excess, it is possible to precipitate this species. Once we have reached an enough pH, the soluble concentration of fluoride and calcium phosphate is worthless. And this he/she is everything in form of small precipitate or colloids. It is at this time that it is indispensable the addition of a coagulant that allows to form the micro-flocs. Finally a flocculant is added that allows the formation and settling of macro-flocs.

Old Treatment with inorganic coagulant: The treatment that occupies us, for design reasons, was carried out in batch form. The main problem for the plant was the fluoride level. The process is carried out in a tank with agitation, where it is introduced, lime, ferric chloride and a flocculant. The high necessity of lime, indispensable to precipitate the fluorides, and the high consumption of coagulant to accelerate the precipitation process 1000 g/m³, caused a very high generation of sludge. An average of 5 Kg of sludge for m³ of treated water.

Henkel organic treatment: The continuous increase in the administration costs, decided to proceed to rehearse different coagulant. The organic coagulant works at 125 g/m³, that which reduces already of entrance in 875 g/m³ the dosage, for what the introduction of the organic coagulant doesn't suppose any cost increment. The quality of obtained water is the

same one and they even improve lightly the fluoride values, decreasing the quantity of sludge to 3 Kg for m³.

The use of the new organic coagulants allowed the reduction of 40% of the total of generated sludge.



Application in automotive industry

Next we describe a part of the treatment of an important automobile constructor. The main source of residual waters in car producers is the surface protection treatment line.

Process description: The polluting currents of a maker of automobiles can generally be divided in 3 or 4:

- Surface pre-cleaning
- Phosphate corrosion protection treatment
- Pasivation waters with chromium
- KTL waters

They made a pre-treatment with each one and after they join all the waters in a homogenisation tank and proceeds to the conventional physical-chemical treatment.

In this case, lime is also dosed for the precipitation of the calcium phosphate and the metals, then the inorganic

coagulant ferric chloride is introduced and later on the flocculant.

Treatment with inorganic coagulant: In this case the process is in continuous, and the main problem was the phosphates level. The dosage of ferric chloride was 500 g/m³.

Henkel organic treatment: In this case the obstacle was the filter press used to dry the sludge. The limited capacity of it caused in many occasions an excessive level of sludge in the decantador with

the rising flights of solids in the clarified water. The organic coagulant works at 50 g/m³, that which already reduces of entrance in 450 g/m³ the dosage.

The introduction of the Henkel Organic coagulant allowed reducing the number of cleanings of the filter press to a fourth part or what is equivalent a reduction of sludge of 75%. In that case the savings for our customer also allow them to discard a new investment for a new press filter.