

ALIEN PROPERTY CUSTODIAN

PROCESS FOR REDUCING THE RAPIDITY OF THE REACTION OF ZINC DUST

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This invention relates to a process for reducing the rapidity of the reaction of zinc dust.

The fine zinc dust required in various industrial processes, which may also have to serve as reducing agent or as catalyser, must in some cases have a certain measurable rapidity of reaction to permit of avoiding that such processes terminate too rapidly. This requirement is not sufficiently met with by pure electrolytically prepared zinc dust, as it was found, that already in a few seconds the major part of this zinc dust had undergone reaction and that complete reaction of this product of high rapidity of reaction had taken place in most cases already after one minute.

A surprising fact is, that such extreme rapidity of reaction can be advantageously reduced by adding finely divided lead to the zinc dust. For the purpose of obtaining a sufficiently fine distribution of the lead in the zinc, common electrolytical separation of the lead with the zinc can be attained in a simple manner.

It has been found that the rapidity of reaction of the zinc dust is dependent on the content of finely divided lead. Comparisons were made with 4 zinc powders having 0.1, 0.15, 0.32 and 0.74% lead contents. For decomposition was selected the formation of sulphate in sulphuric acid of 15%. There were ascertained as duration period of reaction in the same sequence the following values: 7 minutes, 15 minutes, 30 minutes, 210 minutes (3½ hours). On basis of this finding of the definite relation between the lead contents of zinc dust and the rapidity of reaction it will be possible when applying the process in accordance with the invention to advantageously adjust a predetermined or desired rapidity of reaction of the zinc dust by dosing or graduating the amount of the lead contents.

When working in alkaline electrolytes, as they are used, for instance, in obtaining zinc dust

from zincate solutions, the purely chemical solubility of the lead, which in the case of intended common separation at the cathode dips into the electrolyte in the form of additional anodes, is so considerable that it will not be possible any longer, for instance by altering the electrical conditions, to dose the lead contents in the zinc dust obtained. It is therefore preferable in cases of this kind to eliminate the purely chemical dissolving effect of the alkaline electrolyte as far as at all possible. This object may be attained in accordance with the invention by using as anode material lead alloys in place of pure lead. As alloy components for the lead anodes, which do not show any or but very slight purely chemical solubility in zincate electrolytes, are coming into question, among others, tin, cadmium, silver, individually or jointly.

Example

Into a highly alkaline zincate solution were dipped rod-shaped anodes, normal zinc anodes and additional strip-shaped anodes of a lead alloy with 2% tin. The current supplied with the electrolysis by way of the zinc anodes amounted to 7 ampere with a tension of the bath of 0.9 volt. The lead anodes were loaded with currents of different intensity between 0.005 and 0.05 ampere. From this current intensity at the lead anodes resulted the above-stated differing lead contents in the zinc powder.

For the reduction of the rapidity of reaction of zinc dust may be also used arsenic, antimony, bismuth, mercury and/or silver, in place of lead. Also mixtures of one or several of the said metals with lead, if added to the zinc dust in finely divided condition, will result in the effect, according to the invention, of reducing its rapidity of reaction.

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