

Corrigendum

Journal of Power Sources, 47 (1994) 149–158

Investigations of the negative plate of lead/acid cells 2. Verification with 2 V cells

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Unfortunately, we found an error in the results of the study on the temperature-dependent behaviour of the hydrogen-evolution reaction (HER) at Cu (99.999%) in 5.2 M sulfuric acid in the absence and presence of 200 ppm anisaldehyde used as inhibitor for the HER.

Reexamination of the temperature results given in Fig. 9, which revealed an incorrect Arrhenius behaviour, made us repeat the temperature-dependency experiment.

In the new experiment, we used an Hg/Hg₂SO₄, 5.2 M sulfuric acid reference electrode kept at room temperature. The copper electrode (surface area: 1.3 cm²) was etched just before the experiment was performed. Two measurements were made using 5.2 M sulfuric acid without (blank) and with 200 ppm of anisaldehyde (inhibitor). The corresponding Arrhenius plots are given in the new Fig. 9. At 30 °C we found that the HER at Cu with inhibitor was lowered by a factor of 60 (inhibitor action). Furthermore, we found that both Arrhenius curves resulted in the same activation energy, which is as expected since the same process (HER) is concerned. In the case when anisaldehyde was present, we observed a deviation from Arrhenius behaviour at higher temperatures (above 50 °C), caused by increasing desorption.

The conclusions with respect to the beneficial use of anisaldehyde in deteriorated lead/acid cells, as given before, remain valid.

(see overleaf for Fig. 9 (new))

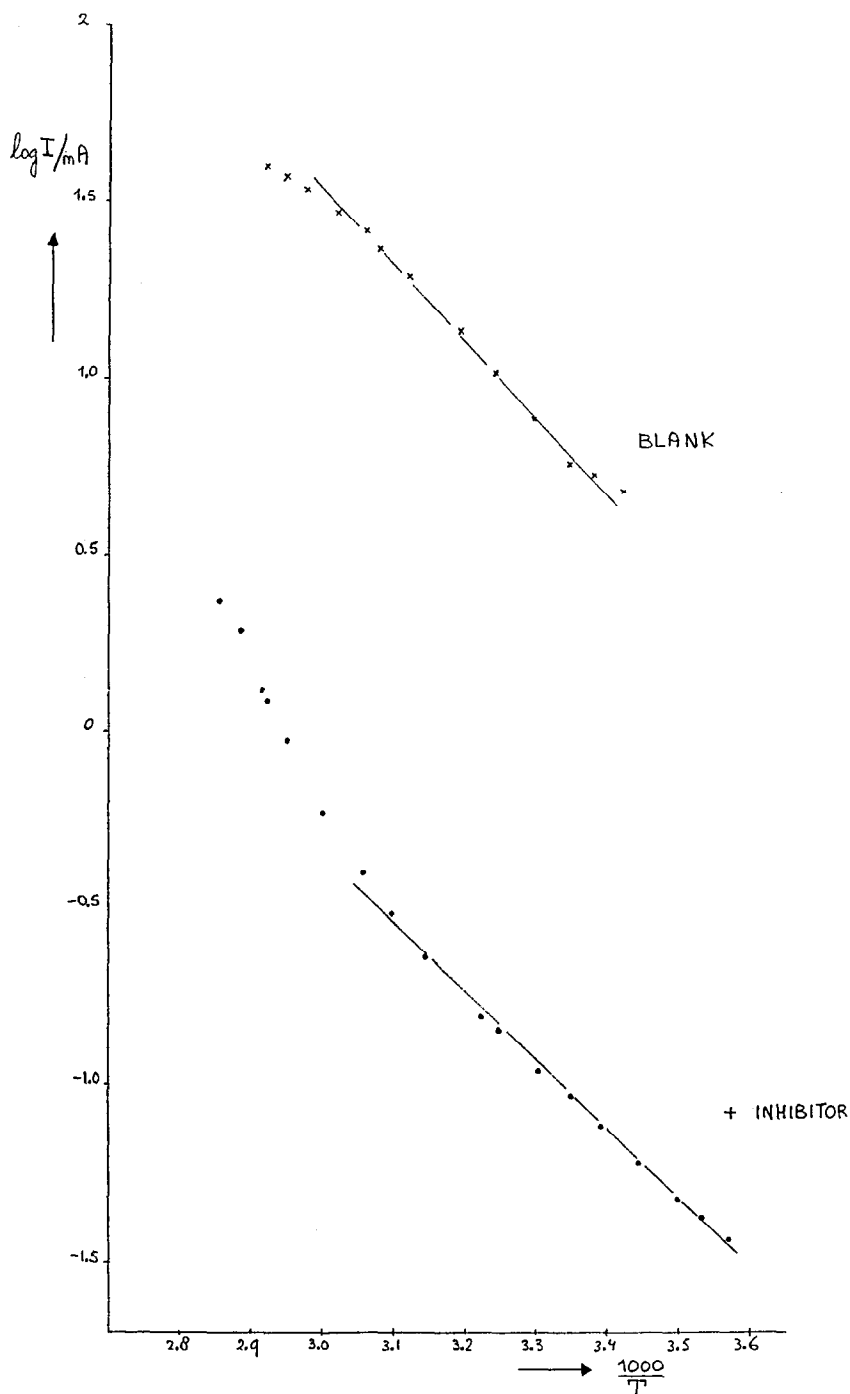


Fig. 9 (new). Arrhenius plot for the HER at Cu in 5.2 M sulfuric acid in the absence (blank) and presence of 200 ppm of anisaldehyde (inhibitor). The potential was -800 mV vs. $\text{Hg}/\text{Hg}_2\text{SO}_4$, 5.2 M sulfuric acid reference electrode kept at room temperature.