Patented Oct. 10, 1933 1,929,486

UNITED STATES PATENT OFFICE

1,929,486

DYEING OXIDIZED ALUMINUM

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No Drawing. Application September 15, 1931 Serial No. 563,003

2 Claims. (Cl. 148—6)

This invention relates to the dyeing of oxidized coatings obtained by the anodic oxidation of aluminum. Its object is to provide a process for obtaining uniform dyeing of the coatings obtained when aluminum is subjected to anodic oxidation in an acid bath.

As is known in the art, aluminum may be oxidized on its surface by being made the anode in an electrolytic cell in which the electrolyte is a solution of one or more oxygen-containing acids, such, for example, as oxalic, citric, tartaric, tetrahydronaphthalene sulfonic, chromic, sulfuric, etc., or a mixture of two of these. For many purposes it is desirable that the oxidized coating be dyed. If a sufficiently absorbent coating has been obtained, this can be done, as is known in the art, by immersing the oxidized aluminum article, after washing, in a solution of a suitable dye, particularly a dye which is capable of forming a lake with aluminum oxide, such, for instance, as logwood extract.

However, aluminum oxidized by electrolysis in acid baths carries acid so tenaciously occluded in the oxidized coating that it is not removed even after many washings. The presence of acid in the oxide coating has been found to affect the dyeing so that the oxidized coating is not dyed uniformly. This may be overcome by very carefully adding ammonium hydroxide or other alkaline hydroxides to the dye bath, but it requires extreme care to keep the bath uniform as regards hydrogen ion concentration.

I have found that the dyeing action of a dye solution on an aluminum oxide coating produced by electrolysis in an acid bath can be held uniform with much less attention if an oxide or a carbonate of an alkaline earth metal, namely, an oxide or a carbonate of calcium, barium or strontium, is added to the dye bath. As these carbonates and oxides are, relatively, difficultly soluble in water, the hydrogen ion concentration of the dye bath is automatically regulated, for as the dissolved alkali is neutralized by the acid, more alkali dissolves to maintain the equilibrium between solid and dissolved alkali.

As an example of the method of carrying out my invention, when a dye bath is used in which the concentration of the dye is approximately 1%, I prefer to add about 5 grams of calcium carbonate per liter of dye bath. I may, of course, vary these proportions, and I may use other carbonates or oxides of the alkaline earth metals, in place of calcium carbonate.

What I claim as my invention, and desire to be secured by Letters Patent of the United States is:

1. In a process of dyeing the oxidized coating produced on aluminum by electrolysis in an organic acid bath, the step of controlling the uniformity of the dyeing by adding to the dye bath an excess of an alkaline earth carbonate or oxide over that required to neutralize the acid carried in the oxidized coating.

2. In a process of dyeing the oxidized coating produced on aluminum by electrolysis in an organic acid bath, the step of controlling the uniformity of the dyeing by adding to the dye bath an excess of calcium carbonate over that required to neutralize the acid carried in the oxidized coating.

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