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PROCESS FOR ELECTROLYTICALLY PRODUCING BRIGHT DEPOSITS OF ZINC ON OTHER METALS, FOR EXAMPLE ON IRON

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The known process for electrolytically producing bright deposits of zinc on other metals, for example on iron, are based upon the use of alkaline baths, for example. These are connected with the disadvantage that poisonous materials, especially cyanides, are used for this purpose, which makes the application of such baths extremely dangerous for the attendant. It is also known to use acid baths which, however, hitherto were connected with difficulties inasmuch as it was practically not achieved to produce with these acid baths a high gloss zinc plating. Thus, for example, a sugar solution, syrup, and onion-juice were proposed as additions to acid baths for producing gloss.

It has now been found that a mirror-like brilliancy of the zinc deposits may be obtained by adding to acid baths sulphurous acid or its salts. The addition of aliphatic or aromatic aldehydes is also of advantage. Particularly fine deposits are obtained if additive compounds of sulphurous acid or its salts with aldehydes are added to the baths. The compounds are added singly, or several are added at the same time. It is remarkable that the addition of very small quantities (about 1 to 2 ‰) is sufficient to produce a high gloss zinc plating.

Examples

	Grams
(1) Zinc sulphate	250
Aluminium sulphate	20
Boric acid	20
Cadmium sulphate	1
Sodium sulphite	2

to 1 litre of the bath.

	Grams
(2) Zinc sulphate	300
Ammonium alum	15
Ammonium chloride	15
Cadmium sulphate	0.5
Benzaldehyde	1
Potassium metabisulphite	1.5

to 1 litre of the bath.

	Grams
(3) Zinc sulphate	300
Potash alum	15
Boric acid	20
Cadmium sulphate	1
Salicylaldehyde potassium bisulphite	2

to 1 litre of the bath.

	Grams
(4) Zinc sulphate	250
Aluminium sulphate	15
Aluminium chloride	15
Cadmium sulphate	1
Benzaldehyde	0.5
Sulphurous acid 5%	0.5

to 1 litre of the bath.

These baths will serve to deposit high gloss zinc platings of any desired thickness with current densities of, for example 400 amps. per square metre. The acidity of the bath should preferably not exceed ph=4. In the examples given above, the acid reaction is substantially caused by hydrolysis of the component parts. As the acid contents of the bath gradually decreases during the electrolysis owing to the chemical decomposition of the anodes, the bath requires acidifying from time to time or continuously. This is suitably done with aqueous sulphurous acid which regulates the acidity.

The advantages of the process according to the invention consisting in the high current density and the 100% electrolytic efficiency of the bath is completely utilized. Therefore, subsequent dipping of the high gloss zinc plating in diluted nitric acid or in an acidic solution of hydrogen peroxide, etc., is not required.

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