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LEAD ACID ACCUMULATORS

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This invention relates to lead acid accumulators and is particularly concerned with the alloys from which the grids of the accumulators are made. Various alloys have been proposed to take the place of the usual antimonial lead alloy with a view to obviating the known disadvantages of the latter. Lead-calcium and lead-tin-calcium alloys have been proposed. It is known however that in die-casting accumulator grids of open mesh type containing calcium and tin, there is a tendency for these alloys to form an oxide dross on the metal pot. This difficulty manifests itself also in the segregation of oxide inclusions in the metal of the grid during casting which naturally reduces the resistance of the metal to anodic corrosion when used for positive plate grids.

By research and experiment I have found and this forms the basis of the present invention, that a lead alloy containing calcium in the range 0.03 to 0.1%, tin in the range 1% to 2%, aluminium in the range 0.01 to 0.1%, balance lead has outstanding advantages for use in the making of die cast accumulator grids of open mesh type in that it is free from the electro-chemical disadvantages associated with grids containing antimony,

and has equally good mechanical and age hardening properties. It also has less tendency to dross formation and loss of calcium and tin than lead-tin-calcium alloys to which aluminium has not been added.

If calcium is in excess of 0.1%, precipitation of a lead calcium compound is liable to occur. Lesser amounts of calcium than 0.1% inhibit this precipitation. The presence of this precipitated compound is a factor in anodic corrosion and disintegration in the grids of lead acid electric accumulators.

The addition of aluminium in the amounts indicated has no significant effect on the mechanical properties and resistance to anodic corrosion of grids made from our improved alloy.

An example of the improved alloy is given hereunder:

	Percent
Calcium	0.08
Tin	1.5
Aluminium	0.05
Lead	98.37

What I claim is:

1. A die cast grid of a lead acid electric accumulator containing calcium in the range to inhibit precipitation of lead calcium compounds, from 0.03 to not in excess of 0.1%, tin in the range 1% to 2%, aluminium in the range 0.01 to 0.1%, balance lead.

2. A die cast grid of a lead acid electric accumulator consisting of calcium 0.08%, tin 1.5%, aluminium 0.05% and lead 98.37%.

References Cited in the file of this patent

UNITED STATES PATENTS

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