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(54) Title: ALUMINUM PHOSPHATES, COMPOSITIONS COMPRISING ALUMINUM PHOSPHATE, AND METHODS FOR MAKING THE SAME

(57) Abstract: APs are made by binary condensation via base-to-acid or acid-to-base routes. In the base-to-acid route, an aluminum hydroxide slurry is added to phosphoric acid that reacts to produce an aluminum phosphate condensate. In the acid-to-base route, phosphoric acid is added to an aluminum hydroxide slurry that reacts to produce an aluminum phosphate condensate. In an alternative base-to-acid route, an acidic aluminum phosphate is first made by adding phosphoric acid to a first amount of aluminum hydroxide slurry, and such acidic aluminum phosphate is added to a remaining amount of aluminum hydroxide slurry to react and produce an aluminum phosphate condensate. The reactions can be controlled to form an in-situ layered aluminum phosphate. Soformed APs can be amorphous, crystalline, or a combination thereof, and have low oil absorption and surface area, making them particularly useful in such end-use applications as extender pigments in coating compositions, replacing up to 70wt% of TiO₂.

