granulator-ammoniator, onto a bed of recycled product onto which ammonia is also sprayed, or instead introduced directly into the granulator-ammoniator from the pre-reactor without intermediate ammoniation.

The granulation step thus constitutes the final step of ammoniation accompanying the shaping into granules by the agitation movement of the bed, brought about by the rotation of the granulating equipment. This step also makes it possible to remove part of the humidity of the product formed, but an additional step of drying in a dedicated item of equipment is in general required. After drying, the product goes through a particle size classification, a step which also generates the circulating load recycled to the granulator, the product with compliant particle size is next cooled and treated by a coating that makes it possible to improve its physical quality with respect to the generation of dust and/or caking.

With this process for manufacturing phosphate fertilizers, all the initial cadmium of the phosphoric acid is found again in the fertilizers produced.

BRIEF DESCRIPTION OF THE INVENTION

One aim of the invention is to overcome the aforesaid drawbacks and to propose a method for manufacturing an ammonium phosphate fertilizer having low cadmium content which can be implemented at an industrial scale and which does not place a burden on the cost of said fertilizer.

In accordance with the invention, a method is proposed for manufacturing an ammonium phosphate fertilizer from a phosphoric acid aqueous solution that has less than 50% P_2O_5 concentration and is obtained by wet phosphate ore treatment, said phosphoric acid containing traces of cadmium, comprising the following steps:

(a) neutralizing said phosphoric acid solution with gaseous ammonia up to a molar ratio N/P of between 0.1 and 0.8,

(b) reacting said partially neutralized solution with a sulfide source so as to form a cadmium sulfide precipitate (9),

(c) separating said precipitate so as to obtain a refined ammoniated phosphoric acid solution,

(d) ammoniating and granulating said refined solution so as to form said fertilizer.

According to one embodiment, before the ammoniating-granulating step, a complementary ammoniation of the refined solution is implemented so as to obtain a molar ratio N/P determined to obtain a NP or NPK type fertilizer.

Advantageously, the concentration of the phosphoric acid solution is between 20 and 50% P_2O_5, preferentially between 25 and 45% P_2O_5.

CLAIMS

1. Method for manufacturing an ammonium phosphate fertilizer from a phosphoric acid aqueous solution that has less than 50% P_2O_5 concentration and is obtained by wet phosphate ore treatment, said phosphoric acid containing traces of cadmium, comprising the following steps:

(a) neutralizing said phosphoric acid solution (1) with gaseous ammonia (3) up to a molar ratio N/P of between 0.1 and 0.8,

(b) reacting said partially neutralized solution (4) with a sulfide source (6) so as to form a cadmium sulfide precipitate (9),

(c) separating said precipitate (9) so as to obtain a refined ammoniated phosphoric acid solution (10),

(d) ammoniating and granulating said refined solution (10) so as to form said fertilizer (12).

2. Method according to claim 1, characterized in that before the ammoniating-granulating step a complementary ammoniation of the refined solution (10) is implemented so as to obtain a molar ratio N/P determined to obtain a NP or NPK type fertilizer.

3. Method according to one of claims 1 or 2, characterized by the fact that the concentration of the phosphoric acid solution (1) is between 20 and 50% P_2O_5, preferentially between 25 and 45% P_2O_5.

4. Method according to one of claims 1 to 3, characterized by a molar ratio N/P during the step (b) of precipitation of cadmium sulfide of between 0.2 and 0.6, preferentially between 0.3 and 0.5.

5. Method according to one of claims 1 to 4, characterized by the fact that the sulfide source (6) is used in excess with respect to the quantity of cadmium present in the phosphoric acid solution (1).

6. Method according to claim 5, characterized in that the sulfide source (6) introduced implements between 3 and 15 kg equivalent solid NaHS per ton of P_2O_5.

7. Method according to one of claims 1 to 6, characterized by the fact that the sulfide source (6) is an aqueous NaHS solution or any other sulfide source having