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METHOD OF DETERMINING FREE-PHOSPHORIC-ACID CONTENT.

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To all whom it may concern:

Be it known that I, JAMES F. WILKINSON, a citizen of the United States, residing at Savannah, in the county of Chatham and State of Georgia, have invented certain new and useful Improvements in Methods of Determining Free-Phosphoric-Acid Content, of which the following is a specification.

This invention relates to methods of determining the free phosphoric acid content of acid phosphate, and more particularly to a method of direct determination in which precipitation of the free acid is unnecessary.

The free phosphoric acid is extracted from the acid phosphate by means of an alcoholic solution and is then titrated with an alkali-metal hydroxide such as caustic soda or caustic potash. In determining the acidity phenolphthalein is used as an indicator.

In titrating the acid a hydroxide of known strength is used in order to obtain the percentage of phosphoric acid present in the acid phosphate as free phosphoric acid.

In practice of the process, a gram of the fresh made acid phosphate is placed in a metallic flask with one hundred cubic centimeters of 95 per cent alcohol. Steel balls of about five eighths of an inch diameter are used in the flask to aid in the digestion. The flask is closed with a rubber stopper and the contents are given a whirling motion for about five minutes.

The solution is then filtered and twenty cubic centimeters titrated with caustic soda or caustic potash. The number of cubic centimeters is divided by two in order to reduce the determination to a one tenth gram basis.

In the titration caustic soda or caustic potash, of 3.11 normal strength is employed. The strength of the solution, however, may be varied, but in varying the strength the number of cubic centimeters of the alkali hydroxid is varied according to the strength; if the strength of the solution is doubled the number of cubic centimeters used is doubled to obtain the proper percentage of free phosphoric acid. Phenolphthalein is used as indicator.

By means of the present process the free phosphoric acid content of acid phosphate may be readily and quickly determined.

In the manufacture of acid phosphate there is always a certain amount of free phosphoric acid present depending upon the amount of sulphuric acid used in the manufacture. The present process may be used as a guide to proper acidulation in the process of manufacturing acid phosphate.

While I have described, in detail, the preferred practice of my process, it is to be understood that the details of the procedure, and the proportions of ingredients may be widely varied, and that known chemical equivalents may be used in place of the materials mentioned, without departing from the spirit of the invention or the scope of the subjoined claims.

Having described my invention, I claim:

1. The process of determining the free phosphoric acid content of acid phosphate which comprises extracting the acid from a known amount of acid phosphate with a known quantity of alcohol, and titrating the solution obtained with an alkali-metal hydroxid.

2. The process of determining the free phosphoric acid content of acid phosphate which comprises extracting the acid from a known amount of acid phosphate with a known quantity of alcohol, and titrating the solution obtained with caustic soda.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES F. WILKINSON.

Witnesses:
W. W. CONNELL,
J. C. PETERS.