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TREATMENT OF EARTHY MINERALS.

No Drawing.

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To all whom it may concern:

Be it known that I, WILLIAM FELDENHEIMER, a subject of the King of England, residing at London, England, have invented certain new and useful Improvements in the Treatment of Earthy Minerals, of which the following is a specification.

This invention relates to the treatment of clays and like earthy minerals for their purification and the improvement of their colour.

In the specification of British Letters Patent, No. 181,132, to Stubbs, there is described a process for bleaching earthy minerals which consists in effecting the reduction of sulphurous acid, by the action thereon of a metal such as platinum, iron or zinc, in the presence of the finely-divided mineral to be bleached.

The use of an acid such as sulphurous acid is associated with drawbacks for commercial working. The acid is inconvenient to handle, and is liable to attack the plant, and is also readily oxidized with production of the still more corrosive sulphuric acid. The action of the metal upon the acid tends to be particularly localized by reason of the use of a gas, and in a bulk operation it is difficult to ensure that the mineral is uniformly treated.

According to the present invention, the process for the treatment of minerals, such as clay, for the improvement of their colour is characterized by bringing into contact with the mineral admixed with water an acid salt of sulphurous acid, such as sodium bisulphite or sodium metabisulphite, in conjunction with a metal which reduces sulphurous acid, such as zinc, and which does not form oxidized coloured salts.

A difficulty in the bleaching of clay is that the clay after having been treated with bleaching agents becomes recoloured upon drying, and if a metal, such as iron, which yields coloured oxidized salts be employed in the reaction the object of the bleaching process may be partly or wholly defeated.

It is of advantage at times, in order to accelerate the reaction, to add a trace of a mineral acid to the reaction mixture, preferably an acid which yields the less readily oxidized salts of iron, for example, hydrochloric acid.

In carrying the invention into effect, care should be observed to maintain efficient agi-

tation of the mineral suspension throughout the operation in order to ensure as complete and uniform an action as possible upon the mineral.

I have found that zinc and sodium metabisulphite will bleach certain clays which are not bleached by zinc and sulphurous acid. For example, a highly discoloured clay from Dry Branch, Georgia, was made into a 20 per cent suspension in water in a test tube to which was added 1 per cent of sodium metabisulphite (relatively to the clay) together with a small quantity of zinc filings. The clay commenced to bleach almost immediately. On replacing the sodium metabisulphite by more than ten times the quantity of sulphurous acid solution in the presence of zinc filings, no appreciable bleaching of the clay was observed after four days.

I claim:—

1. The process for improving the colour of earthy minerals which comprises bringing into contact with an aqueous suspension of the sub-divided mineral an acid salt of sulphurous acid in the presence of a metal which reduces sulphurous acid and does not form coloured oxidized salts.

2. The process for improving the colour of earthy minerals which comprises bringing into contact with an aqueous suspension of the sub-divided mineral an acid salt of sulphurous acid in the presence of zinc.

3. The process for improving the colour of earthy minerals which comprises bringing into contact with an aqueous suspension of the sub-divided mineral an acid alkali metal salt of sulphurous acid together with a metal which reduces sulphurous acid and does not form coloured oxidized salts.

4. The process for improving the colour of earthy minerals which comprises bringing into contact with an aqueous suspension of the sub-divided mineral an acid alkali metal salt of sulphurous acid in the presence of zinc.

5. The process for improving the colour of earthy minerals which comprises bringing into contact with an aqueous suspension of the sub-divided mineral a sodium bisulphite in the presence of zinc.

6. The process for improving the colour of earthy minerals which comprises bringing into contact with an aqueous suspension of the sub-divided mineral containing a trace of free mineral acid an acid salt of

sulphurous acid in presence of a metal which reduces sulphurous acid and does not form coloured oxidized salts.

7. The process for improving the colour of clay which comprises bringing into contact with the clay in suspension in water an acid salt of sulphurous acid in presence of a metal which reduces sulphurous acid and does not form coloured oxidized salts.

8. The process for improving the colour of clay which comprises bringing into contact with the clay in suspension in water containing a trace of free mineral acid an acid salt of sulphurous acid in presence of a metal which reduces sulphurous acid and does not form coloured oxidized salts.

9. The process for improving the colour of clay which comprises bringing into contact with the clay in suspension in water an acid salt of sulphurous acid in the presence of zinc.

10. The process for improving the colour of clay which comprises bringing into contact with the clay in suspension in water containing a trace of free mineral acid an acid salt of sulphurous acid in the presence of zinc.

11. The process for improving the colour of clay which comprises bringing into contact with the clay in suspension with water an acid sodium salt of sulphurous acid in the presence of a metal which reduces sul-

phurous acid and does not form coloured oxidized salts.

12. The process for improving the colour of clay which comprises bringing into contact with the clay in suspension in water an acid sodium salt of sulphurous acid in the presence of zinc.

13. The process for improving the colour of clay which comprises bringing into contact with the clay in suspension in water containing a trace of free mineral acid an acid sodium salt of sulphurous acid in the presence of zinc.

14. The process for improving the colour of clay which comprises bringing into contact with the clay in suspension in water sodium metabisulphite in the presence of a metal which reduces sulphurous acid and does not form coloured oxidized salts.

15. The process for improving the colour of clay which comprises bringing into contact with the clay in suspension in water sodium metabisulphite in the presence of zinc.

16. The process for improving the colour of clay which comprises bringing into contact with the clay in suspension in water containing a trace of free mineral acid sodium metabisulphite in the presence of zinc.

In testimony whereof I affix my signature.

WILLIAM FELDENHEIMER