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FLOTATION REAGENT

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6 Claims. (Cl. 209—166)

This invention relates to phosphate recovery processes.

In the recovery of phosphate values from washer tailings, it is customary to treat the debris with selectively oiling reagents. It is accepted practice in the Florida field to employ froth flotation methods by which the phosphate values are floated and collected in a phosphate bearing froth.

It is also accepted practice to selectively oil phosphate particles to form agglomerates which may be collected by various methods such as tabling, stratifying, or underwater screening.

The present invention is directed to specific reagents for selectively oiling the phosphatic constituents of phosphate bearing material. Specifically, the essential novel material employed in the practice of the present invention is the tetramethylammonium soap of a fatty acid. It is well known that tetramethylammoniumhydroxide will react with any fatty acid to form the tetramethylammonium soap of the fatty acid.

In carrying out the present invention in the recovery of phosphate rock by the various agglomeration methods such as tabling, stratification, and underwater screening, I add to a ton of feed the following reagents in the quantities indicated:

	Pounds
Tetramethylammoniumhydroxide	1.03
Fish fatty acid	1.70
Fuel oil	2.50

I have found that the foregoing formula is particularly effective in forming substantially silica free phosphate agglomerates.

If it is desired to practice flotation on the feed, I add in addition to the reagents above recited .10 pound of resin residue as a frothing agent. I have found that the combination of fuel oil, the tetramethylammonium soap of a fatty acid, and resin residue is an effective combination for concentrating phosphate rock by flotation.

It will be understood, of course, that although fish fatty acid is given in the foregoing example, any fatty acid will be effective. It will also be understood that the quantity of fatty acid employed when the soap is formed in situ will be varied, depending upon the purity of the materials used.

The reagents are preferably added to the phosphate bearing material in a mixer to which the phosphate bearing material is added in the form of a wet slush. After the reagents are thoroughly admixed with the feed, the concentration may be effected in conventional flotation cells, on conventional tables by stratification, or by underwater screening.

I claim:

1. The method of concentrating phosphate rock which comprises treating phosphate bearing material with tetramethylammoniumhydroxide, a fatty acid, and fuel oil, and thereafter concentrating the phosphatic constituents of the material.

2. The method of concentrating phosphate rock which comprises treating phosphate bearing material with the tetramethylammonium soap of a fatty acid and fuel oil and thereafter concentrating the phosphatic constituents of the material.

3. The method of concentrating phosphate rock which comprises treating phosphate bearing material with tetramethylammoniumhydroxide, fish fatty acid, and fuel oil, and thereafter concentrating the phosphatic constituents of the material.

4. The method of concentrating phosphate rock by flotation which comprises treating phosphate bearing material with tetramethylammoniumhydroxide, a fatty acid, fuel oil, and resin residue, and thereafter collecting the phosphate concentrates in a phosphate bearing froth.

5. The method of concentrating phosphate rock by flotation which comprises treating phosphate bearing material with the tetramethylammonium soap of a fatty acid, fuel oil, and resin residue, and thereafter collecting the phosphate concentrates in a phosphate bearing froth.

6. The method of concentrating phosphate rock by flotation which comprises treating phosphate bearing material with tetramethylammoniumhydroxide, fish fatty acid, fuel oil, and resin residue, and thereafter collecting the phosphate concentrates in a phosphate bearing froth.

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