

Converting magnetite ore to high SG hematite  
for use as drill mud heavy medium.

675765  
Lodestone  
92 H/10

HIGH SPECIFIC GRAVITY IRON ORE

[Image]

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[Shop for a plaque [View Images]wUS3867128: PROCESS FOR PRODUCING HIGH SPECIFIC GRAVITY MATERIAL

FROM LOW GRADE IRON ORE

[Image]

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Applicant(s): none

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Class: Current: 423/632; 075/762; 507/140; Original: 075/001; 252/008.5B; 423/632;

Field of Search: 423/138, 632, 633 252/8.5 B, 472 075/1;7

Legal Status: [New] Show legal status actions

Abstract: A process is disclosed whereby low grade iron ore

having a minimum specific gravity of about 3.45 are converted to iron oxide containing material having a specific gravity of 4.2 or greater. The process includes calcining under oxidizing conditions of washed and crushed iron ore of low specific gravity followed by a quench and

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separation step whereby the high specific gravity iron oxide-containing material is recovered from lower specific gravity contaminants. The material thus prepared can be ground to a size suitable fo

r use as a weighting agent in drilling muds meeting the API specifications for such materials.

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Primary/Assistant Examiners: Vertiz; Sgd. O. R.; Hearn; Brian E.

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U.S. References: Patent ÊÊIssuedÊÊ Inventor(s) Applicant(s) ÊÊ  
ÊTitle

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ÊÊ*	some details unavailable			

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CLAIMS:

[Hide claims]: ÊÊÊÊ1. A process for preparing a non-magnetic iron oxide-containing material having a specific gravity of at least 4.2 from an iron ore having a specific gravity of about 3.6 to about 3.9 which comprises the steps of:

- \* a. calcining said iron ore under oxidizing conditions at a residence time sufficient to maintain the ore at between about 1700&deg;F. to less than about 2050&deg;F. for at least 20 minutes;
- \* b. quenching the calcined ore; and
- \* c. recovering the quenched iron oxide-containing materials; wherein,
- \* the recovered material is non-magnetic and has a specific gravity of at

ÊÊÊÊ2. The process of claim 1 wherein the iron ore has a particle size which

ÊÊÊÊ3. The process of claim 2 wherein the ore has

HIGH SPECIFIC GRAVITY IRON ORE

a particle size which will

4. The process of claim 1 wherein the calcining step is carried out in a rotary kiln equipped with at least one gas burner with its flame directed

5. The process of claim 4 wherein said kiln is equipped to provide a forced

6. A process for preparing a non-magnetic iron oxide having a specific gravity of at least 4.2 from a raw iron ore having a specific gravity of less than 3.9 which comprises the steps of:

- \* a. crushing the raw ore to a particle size not greater than 1 1/2 inches;
- \* b. washing the crushed raw ore;
- \* c. calcining said washed ore under oxidizing conditions at residence time sufficient to maintain the ore at between about 1700° F. and less than about 2050° F. for at least 20 minutes;
- \* d. quenching the calcined ore; and
- \* e. recovering the quenched iron oxide-containing material whereby the recovered material is non-magnetic and has a specific gravity of at least

7. The process of claim 6 wherein the washed ore is calcined at from about

8. The process of claim 7 wherein the washed ore is calcined for a time

9. A process for preparing a non-magnetic iron oxide material having a specific gravity of at least 4.2 from a raw iron ore having a specific gravity of at least 3.45 which comprises the steps of:

- \* a. crushing the raw ore to a particle size which will pass through a 3/8-inch screen and be retained on a 1/8-inch screen;
- \* b. washing the crushed raw ore;
- \* c. calcining the washed ore at a temperature of about 1800° F. to about 2000° F. for from about 30 to about 45 minutes in a rotary kiln equipped with a means producing an air draft and with at least one internal burner directed to avoid impingement of the flame on the iron ore during the calcining step;

HIGH SPECIFIC GRAVITY IRON ORE

- \* d. quenching the calcined material with water;
- \* e. recovering the quenched material from low specific gravity materials by a means whereby the iron oxide-containing material is separated from said low specific gravity material; and
- \* f. grinding the recovered iron oxides to a particle size such that 97

10. The process of claim 9 wherein the calcining step is performed at from

12. The process of claim 9 wherein the raw ore is a goethite ore.

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Background/Summary: Show background/summary

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Drawing Show drawing descriptions

Descriptions: [Image]

Description of Preferred Embodiments: Show description of preferred embodiments

[Image]

Foreign References: none

References: (No patents reference this one) [Image]

Other Abstract Info: CHEMABS 081(16)094436U CHEMABS 085(26)194858J

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