

1) Family number: 8627014 (US4351809A)

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Title: Process for reducing phosphate ore

Abstract: A process for reducing phosphate ore includes beneficiating phosphate ore to reduce alumina impurities while allowing fluoride impurities to remain in the beneficiated ore, mixing beneficiated ore with solid carbonaceous material to form a porous bed of agglomerated feed and heating the porous bed in a rotary-type kiln to produce elemental phosphorus and carbon monoxide. The elemental phosphorus may be burned within the kiln to provide heat to the porous bed and an inert gas may be purged through the porous bed to drive the reaction between the phosphate ore and the solid carbonaceous material towards complete reduction of the phosphate ore by removal of carbon monoxide from the porous bed.

Classifications:

International (IPC 8-9): C01B25/027 C01B25/12

C01B25/20 (Advanced/Invention);

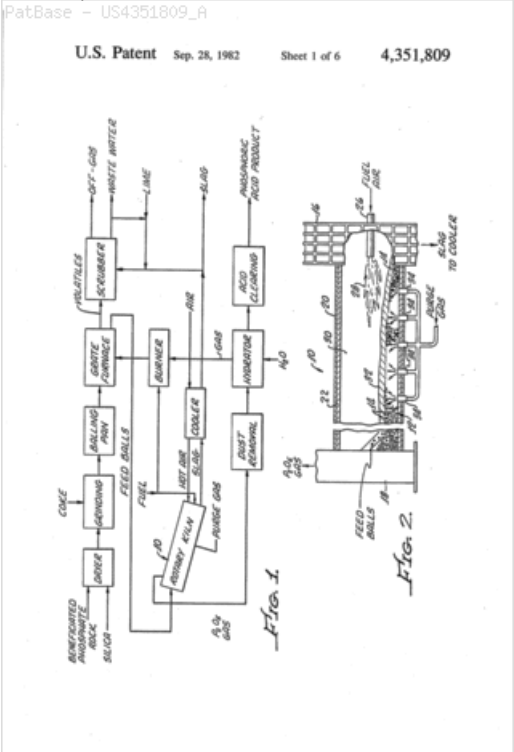
C01B25/00 (Core/Invention)

International (IPC 1-7): C01B25/01

CPC: C01B25/027 C01B25/12 C01B25/20

European: C01B25/027 C01B25/12 C01B25/20

US: 423/157.2 423/167 423/304 423/323



Family:

Publication number	Publication date	Application number	Application date
US4351809 A	19820928	US19810265305	19810520

Priority:

US19810265305 19810520

Probable Assignee: WHITE SPRINGS AGRICULTURAL CHEMICALS INC

Assignee(s): (std): OCCIDENTAL RES CORP

Assignee(s): OCCIDENTAL RESEARCH CORP ; WHITE SPRINGS AGRICULTURAL CHEMICALS INC

Inventor(s): (std): HARD ROBERT A ; MEGY JOSEPH A

2) Family number: 30089018 (US4603039A)

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Title: PROCESS FOR MAKING PHOSPHORUS PENTOXIDE AND OPTIONALLY PHOSPHORIC ACID WITH UTILIZATION OF THE REACTION HEAT

Abstract: The disclosure relates to a process for making phosphorus pentoxide by subjecting elemental yellow phosphorus to combustion with dried air inside a steel-made combustion chamber with utilization of the reaction heat for the production of energy. To this end, the disclosure provides for the combustion to be effected inside a combustion chamber of which the walls are arranged so as to form a cooling system with cavities therein; for water or a water/steam-mixture as a heat carrier abstracting the reaction heat to be circulated through the cooling system, the water or water/steam-mixture assuming an increased temperature being circulated, preferably under increased pressure; for steam formed in the cooling system to be continuously taken therefrom; for an equivalent proportion of fresh desalted water to be introduced into the cooling system; for hot gaseous phosphorus pentoxide issuing from the combustion chamber to be condensed or worked up into phosphoric acid; for the steam taken from the cooling system to be passed through a steam delivery pipe disposed in the upper portion of the combustion chamber, or through a delivery conduit for product gas containing phosphorus pentoxide; for the steam to be heated therein to a

temperature of 400 DEG to 600 DEG C. under constant pressure, and for the steam so superheated to be used.

Classifications:

International (IPC 8-9): C01B25/12 C01B25/20 F22B33/18

F22D1/02 (Advanced/Invention);

C01B25/00 F22B33/00 F22D1/00 (Core/Invention)

International (IPC 1-7): C01B25/00 C01B25/12 C01B25/20 C01B25/234

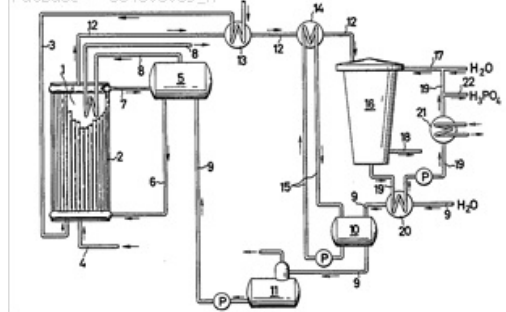
F22B1/18 F22B33/18 F22D1/02 F22G1/02

CPC: Y02P20/129 C01B25/20 C01B25/12

European: C01B25/12 C01B25/20

US: 422/188 422/200 422/202 422/618 423/304 423/317

PatBase - US4603039_A



Family:

Publication number	Publication date	Application number	Application date
AR241774 A1	19921230	AR19840296605	19840510
AT35968 E	19880815	AT19840104913T	19840502
AU198427962 A1	19841115	AU19840027962	19840511
AU561506 B2	19870507	AU19840027962	19840511
BRPI8402249 A	19841218	BR1984PI02249	19841113
CA1245422 A1	19881129	CA19840451608	19840410
CS274406 B2	19910411	CS19840003461	19840510
CS8403461 A2	19900912	CS19840003461	19840510
DD219169 A5	19850227	DD19840262956	19840511
DE3317497 A1	19841115	DE19833317497	19830513
DE3472941 D1	19880901	DE19843472941	19840502
EP0128326 A1	19841219	EP19840104913	19840502
EP0128326 B1	19880727	EP19840104913	19840502
ES531646 A0	19850416	ES19840531646	19840416
ES8504076 A1	19850416	ES19840531646	19840416
HU203851 B	19911028	HU19840001844	19840511
HU36756 A2	19851028	HU19840001844	19840511
IN160622 A	19870718	IN1984MA00268	19840417
JP59213608 A2	19841203	JP19840093115	19840511
MX162353 A	19910426	MX19840201330	19840511
PH20982 A	19870618	PH19840030668	19840511
PL247641 A1	19850312	PL19840247641	19840511
US4603039 A	19860729	US19850741482	19850605
ZA8403135 A	19841224	ZA19840003135	19840427

Priority:

DE19833317497 19830513 CA19840451608 19840410 US19840601026 19840416
DE19843472941 19840502 EP19840104913 19840502

Probable Assignee: HOECHST AG

Assignee(s): (std): HOECHST AG

Assignee(s): HOECHST AG DE ; HOECHST AKTIENGESELLSCHAFT ; HOECHST AKTIENGESELLSCHAFT DE ; HOECHST DE AG ; KLEMM WALTER ; KUXDORF BERNHARD ; THUMMLER URSUS ; LUHR PETER ; WERNER HUGO ; CLARIANT GMBH ; HOECHST 6230 FRANKFURT DE AG ; HOECHST A G

Inventor(s): (std): BERNHARD KUXDORF ; BERNHARD KUXDORF DR ; BERUNHARUTO KUKUSUDORUFU ; BUARUTAA KUREMU ; DR URSUS THOEMMLER ; FUUGO BUERUNAA ; HUGO WERNER ; KLEEM WALTER ; KLEMM WALTER ; KLEMM WALTER DIPL ING ; KLEMM WALTER ING ; KLEMM WALTER ING DE ; KUXDORF BERNHARD ; KUXDORF BERNHARD ; KUXDORF BERNHARD DIPL ING ; KUXDORF BERNHARD ING ; KUXDORF BERNHARD ING DE ; KUXFORD BERNHARD ; LUHR PETER ; LUHR PETER DIPL ING ; LUHR PETER ING ; LUHR PETER ING DE ; PEETAA RUURU ; PETER LUHR ; THOEMMLER URSUS DR ; THUEMMEL URSUS ; THUEMMLER URSUS DR ; THUMMLER URSUS ; THUMMLER URSUS DR ; THUMMLER URSUS DR DE ; URSUS THUEMMLER ; URSUS THUMMLER ; URUZUSU CHIYUMURAA ; WALTER KLEMM ; WERNER HUGO ; THUEMMLER URSUS ; THUEMMLER URSUS DIPL CHEM DR ; WERNER HUGO DIPL ING ; WERNER HUGO ING ; WERNER HUGO ING DE

Inventor(s): WERNER HUGO DIPL ING 5030 HUERTH DE ; THUEMMLER URSUS DIPL CHEM DR 5042 ERFTSTADT DE ; THUEMMLER URSUS DE ; WERNER HUGO DE ; THUEMMEL URSUS DE ; LUHR PETER DIPL ING 5358 BAD MUENSTEREifel DE ; LUHR PETER HU ; LUHR PETER DE ; KUXFORD BERNHARD DE ; KUXDORF BERNHARD DIPL ING 5040 BRUEHL DE ; KUXDORF BERNHARD DE ; KUXDORF BERNHARD DE ; KLEMM WALTER DIPL ING 6941 RIPPENWEIER DE ; KLEMM WALTER DE ; KLEEM WALTER HU

Agent(s): WATERMARK PATENT AND TRADE MARKS ATTORNEYS; WATERMARK INTELLECTUAL PROPERTY PTY LTD; FETHERSTONHAUGH AND CO

Designated states: AT CH DE FR GB IT LI NL

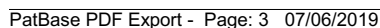
3) Family number: 8627029 (US4351813A)

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Title: Process for producing phosphorus pentoxide or phosphorus or phosphoric acid

Abstract: A process for producing phosphorus pentoxide from phosphate ores in a rotary-type kiln includes heating, by exposure to a flame, a porous bed comprising phosphate ore and solid carbonaceous material to a temperature sufficient to reduce the phosphorus pentoxide to phosphorus vapor. The phosphorus vapor is oxidized in an oxidation zone disposed over the porous bed to heat the porous bed. An inert gas is used to purge the porous bed of carbon monoxide formed during the reduction reaction to

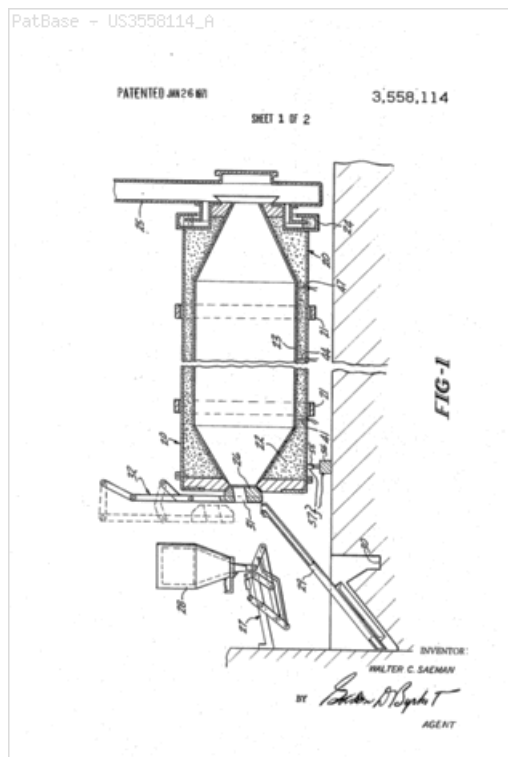
US: 423/304 423/318 423/322 423/323





Inventor(s): (std): HARD ROBERT A ; MU JACOB J

US: 236/15BC 236/15R 423/304



Publication number	Publication date	Application number	Application date
US3558114 A	19710126	US19690860198	19690923

US19690860198 19690923

OLIN CORP

OLIN CORP

SAEMAN WALTER C

WALTER C SAEMAN

Title: PHOSPHOROUS PENTOXIDE PRODUCING METHODS

Abstract: A phosphorous pentoxide producing method includes forming a kiln bed using feed agglomerates with a calcium-to-silica mole ratio of less than 1.0 and maintaining a bed temperature at or above 1180 degrees centigrade along at least 50 percent of the bed length without exceeding 1380 degrees centigrade along the entire bed length. Less than 10 percent of the agglomerates' phosphate input to the kiln remains in the kiln residue as phosphate. Another method includes maintaining a bed temperature at or above 1180 degrees centigrade along a portion of the bed length and establishing a bed surface-to-volume ratio multiplied by a time for bed heat up to 1180 degrees centigrade of less than 50 minutes-ft²/ft³

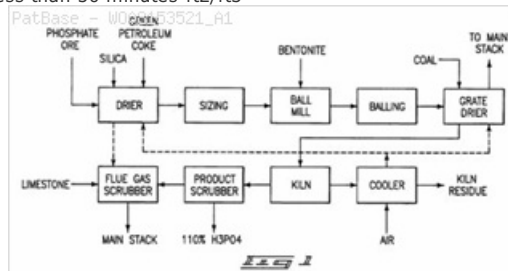
Classifications:

International (IPC 8-9): C01B25/01 C01B25/12 C01B25/18 C08K3/00 C08K3/32 (Advanced/Invention); C08K3/00 (Core/Invention); C01B C08K (Subclass/Invention)

International (IPC 1-7): C01B25/01 C01B25/12 C01B25/18 C08K3/00 C08K3/32

CPC: C01B25/12

European: C01B25/12



Family:

Publication number	Publication date	Application number	Application date
■ AP201005479 A0	20101231	AP20100005479	20070613
■ AP3422 A	20150930	AP20100005479	20070613
■ AU2007354897 AA	20081218	AU20070354897	20070613
■ AU2007354897 BB	20130711	AU20070354897	20070613
■ BRPI0721729 A2	20130213	BR2007PI21729	20070613
■ BRPI0721729 B1	20180904	BR2007PI21729	20070613
■ CA2689983 AA	20081218	CA20072689983	20070613
■ CA2689983 C	20140520	CA20072689983	20070613

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CN101730719 B	20130724	CN200780053313	20070613
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EP2160438 A1	20100310	EP20070796036	20070613
EP2160438 A4	20111026	EP20070796036	20070613
EP2160438 B1	20181114	EP20070796036	20070613
ES2715214 T3	20190603	ES20070796036T	20070613
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IL202222 A1	20140130	IL20070202222	20070613
MA31673 B1	20100901	MA20100032506	20100112
MX2009013101 A1	20100401	MX20090013101	20070613
MX342534 B	20160922	MX20090013101	20070613
TN2009000502 A1	20110331	TN20090000502	20091130
TR201902202 T4	20190321	TR20190002202T	20070613
WO08153521 A1	20081218	WO2007US13834	20070613

Priority:

BR2007PI21729 20070613 EP20070796036 20070613 WO2007US13834 20070613

Probable Assignee: JOSEPH MEGY

Assignee(s): (std): JDC INC ; JDC PHOSPHATE FERTILIZER CORP ; JDC PHOSPHATE INC ; JDCPHOSPHATE INC ; JOSEPH A MEGY ; MEGY JOSEPH A ; JOSEPH MEGY ; JOSEPHA A MEGY

Inventor(s): (std): MEGY JOSEPH A ; JOSEPH A MEGY

Agent(s): DAVIES COLLISON CAVE; DAVIES COLLISON CAVE PTY LTD; GOUDREAU GAGE DUBUC; LAVERY DE BILLY LLP; WARD DAVID IAN; BAILEY JENNIFER ANN; LEHMANN MARIA ISABEL; REINHOLD COHN AND PARTNERS; TOLGA CAYLAK; GRZELAK KEITH D ET AL

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

7) Family number: 22397217 (US3241917A)

© PatBase

Title: PRODUCTION OF PHOSPHORUS PENTOXIDE FROM A PHOSPHATIC ORE

Abstract: (Claim 1) What is claimed is: 35 and to supply the necessary endothermic heat of re- 1.

Classifications:

International (IPC 8-9): C01B25/12 (Advanced/Invention); C01B25/00 (Core/Invention)

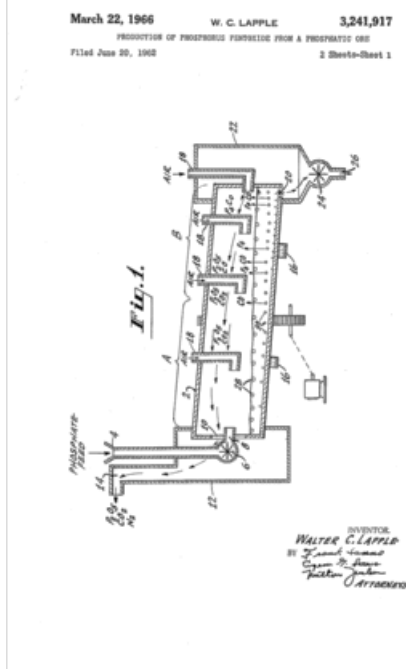
International (IPC 1-7): C01B25/12

CPC: C01B25/12

European: C01B25/12

US: 423/304 423/318 423/323 423/484

PatBase - US3241917_A



Family:

Publication number	Publication date	Application number	Application date
US3241917 A	19660322	US19620203898	19620620

Priority:

US19620203898 19620620

Probable Assignee:

FMC CORP

Assignee(s): (std):

FMC CORP

8) Family number: 7195270 (US4774064A)

© PatBase

Title: CONVERSION OF CALCIUM COMPOUNDS INTO SOLID AND GASEOUS COMPOUNDS**Abstract:** The invention relates to a process for the conversion of a calcium mineral into a calcium containing solid product and a gaseous stream which comprises subjecting the calcium mineral to a temperature in excess of about 3400 degrees Fahrenheit for less than one minute.**Classifications:****International (IPC 8-9):** B01J6/00 C01B17/50 C01B25/027 C01B25/12 C01B7/19 C01F11/04 C01F11/06 C04B2/10 C04B7/02 C04B7/04C04B7/44 (Advanced/Invention);
B01J6/00 C01B17/00 C01B25/00 C01B7/00 C01F11/00 C04B2/00 C04B7/00 (Core/Invention)**International (IPC 1-7):** B01J6/00 C01B/A C01B17/46 C01B17/56 C01B25/01 C01B25/02 C01B25/12 C01B7/19 C01B9/08 C01F/A C01F11/00 C01F11/02 C01F11/04 C01F11/46 C01F7/44 C04B11/00 C04B11/02 C04B11/26 C04B2/02 C04B2/10 C04B7/02 C04B7/04 C22BA**CPC:** Y02P40/121 Y02P40/42 C01F11/04 B01J6/008 C01B7/192

C01B17/50 C01B25/027 C01B25/12 C01F11/06 C01P2004/03 C01P2004/32 C01P2004/61 C04B2/10 C04B7/04 C04B7/44

European: B01J6/00P C01B17/50 C01B25/027 C01B25/12 C01B7/19B2

C01F11/04 C01F11/06 C04B2/10 C04B7/04 C04B7/44 M01P4/03

M01P4/32 M01P4/61

US: 106/103 106/109 106/765 106/766 106/85 423/168

PatBase - US4774064_A

U.S. Patent Sep. 27, 1988 Sheet 1 of 4 4,774,064

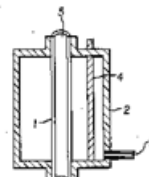


FIG. 1

Family:

Publication number	Publication date	Application number	Application date
BRPI8706959 A	19880726	BR1987PI06959	19871221
CA1327694 A1	19940315	CA19870555276	19871223
DE3785919 D1	19930624	DE19873785919	19871218
DE3785919 T2	19931028	DE19873785919T	19871218
EP0272984 A2	19880629	EP19870402919	19871218
EP0272984 A3	19891115	EP19870402919	19871218
EP0272984 B1	19930519	EP19870402919	19871218
IL84565 A0	19880429	IL19870084565	19871123
IL84565 A1	19920216	IL19870084565	19871123
IN170271 A	19920307	IN1987MA00769	19871023
JO1528 B	19890125	JO19870001528	19871221
JP1811490 C3	19931227	JP19870309761	19871209
JP5016373 B4	19930304	JP19870309761	19871209
JP63218509 A2	19880912	JP19870309761	19871209
KR19880007391 A	19880827	KR19870014669	19871222
KR910008730 B1	19911019	KR19870014669	19871222
MA21390 A1	19890701	MA19870021379	19871221
MX166927 B	19930215	MX19870009918	19871223
OA8787 A	19890331	OA19870059247	19871217
TNSN87142 A1	19900101	TN1987SN00142	19871217
US4774064 A	19880927	US19860945859	19861223
ZA8708473 A	19880509	ZA19870008473	19871111

Priority:

US19860945859 19861223 CA19870555276 19871223

Probable Assignee: MISSISSIPPI CHEMICAL CORP**Assignee(s):** (std): MISSISSIPPI CHEM CORP ; MISHISHITSUPI CHEM CORP**Assignee(s):** MISSISSIPPI CHEMICAL CORP ; MISSISSIPPI CHEMICAL CORP ; MISSISSIPPI CHEMICAL CORP YAZOO CITY MISS US ; ARNOLD DAVID W ; HARRIS TRUST AND SAVINGS BANK ; MCDONALD DANIEL P**Inventor(s):** (std): ARNOLD DAVID W ; ARNOLD DAVID ; ARNOLD DAVID W ; DANIEL P MCDONALD ; DAVID W ARNOLD ; MCDONALD DANIEL P ; DEBITSUDO DABURIYU AANORUDO ; DANIEL P MC DONALD ; DABIERU PII MAKUDONARUDO**Inventor(s):** MCDONALD DANIEL P GASTONIA NORTH CAROLINA 28054 US ; DAVID WARNOLD ; DEBITSUDO DABURYU

Agent(s): SWABEY OGILVY RENAULT; REINHOLD COHN AND PARTNERS**Designated states:** BE DE FR GB IT NL**9) Family number: 960275** (US3591336A)

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Title: MINIMIZING CARBON IN PHOSPHORUS RECOVERY

Abstract: ABSTRACT OF THE DISCLOSURE Phosphorus values in the form of P2O6 are xecovered from phosphate ores reacted with carbon, silica and oxy-gen-containing gas in a rotary furnace having a vitreous lining held in place centrifugally. This application is a continuation-in-part of copending application U.S. Ser. No. 727,115 filed Mar. 18, 1968, now U.S. Pat. 3,479,138 issued Nov. 18, 1969, which in turn is a continuation-in-part of U.S. Ser. No. 398,306, filed Sept. 22, 1964, now abandoned. The disclosures of these parent applications are incorporated herein by this reference as fully and completely as if literally copied herein.

Classifications:

International (IPC 8-9): C01B25/12 (Advanced/Invention);
C01B25/00 (Core/Invention)

International (IPC 1-7): C01B25/12

CPC: C01B25/12

European: C01B25/12

US: 231/650 422/209 423/304 432/3 432/4

Family:

Publication number	Publication date	Application number	Application date
US3591336 A	19710706	US19690860006	19690922

Priority:

US19690860006 19690922

Probable Assignee:

OLIN CORP

Assignee(s): (std):

OLIN CORP

Inventor(s): (std):

SAEMAN WALTER C

Inventor(s):

WALTER C SAEMAN

10) Family number: 2037385 (US4389384A)

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Title: Process for reducing phosphate ore

Abstract: A process for producing phosphorus pentoxide from phosphorus ore includes formation of a feed with a phosphate ore, silica and solid carbonaceous material in amounts to produce a feed mixture having a CaO/SiO₂ mole ratio of less than about 0.5. The feed mixture is formed into agglomerated feed particles and the particles are heated by exposure to radiation emanating from an oxidation zone to a temperature sufficient to reduce the phosphate by reaction from the solid carbonaceous material to form elemental phosphorus vapor without substantial melting of the agglomerated feed particles. Sufficient oxygen-containing gas is provided to cause oxidation of the elemental phosphorus vapor within the oxidation zone to produce phosphorus pentoxide.

Classifications:

International (IPC 8-9): C01B25/02 C01B25/12 (Advanced/Invention);
C01B25/00 (Core/Invention)

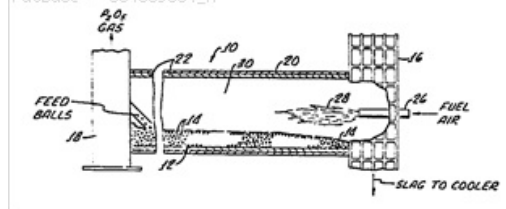
International (IPC 1-7): C01B25/00 C01B25/01 C01B25/02 C01B25/12
C01B25/16 C01B25/20 C01BA C22B1/00

CPC: C01B25/12

European: C01B25/12

US: 423/304 423/318 423/322 423/323

PatBase - US4389384_A

**Family:**

Publication number	Publication date	Application number	Application date
AU198314350 A1	19831117	AU19830014350	19830509
BR8302419 A	19840110	BR19830002419	19830509
CA1184370 A1	19850326	CA19830427712	19830509
EP0093952 A1	19831116	EP19830104105	19830427
ES522201 A0	19840816	ES19830522201	19830509
ES8406979 A1	19840816	ES19830522201	19830509
JP58208111 A2	19831203	JP19830081585	19830510
MA19789 A1	19831231	MA19830020010	19830502
PH16576 A	19831122	PH19830028828	19830429
US4389384 A	19830621	US19820376335	19820510

Priority:

US19820376335 19820510 AU19830014350 19830509 CA19830427712 19830509

Probable Assignee: OCCIDENTAL RESEARCH CORP

Assignee(s): (std): OCCIDENTAL RES CORP ; OKUSHIDENTARU RESEARCH CORP

Assignee(s): HARD ROBERT A ; OCCIDENTAL RESEARCH CORP

Inventor(s): (std): HARD ROBERT A ; ROBAATO EI HAADO ; ROBERT A HARD

Inventor(s): HARD ROBERT AMOS

Agent(s): WATERMARK PATENT AND TRADE MARKS ATTORNEYS; WATERMARK INTELLECTUAL PROPERTY PTY LTD;
SMART AND BIGGAR
Designated states: AT BE CH DE FR GB IT LI LU NL SE

11) Family number: 22606395 (US3235330A)

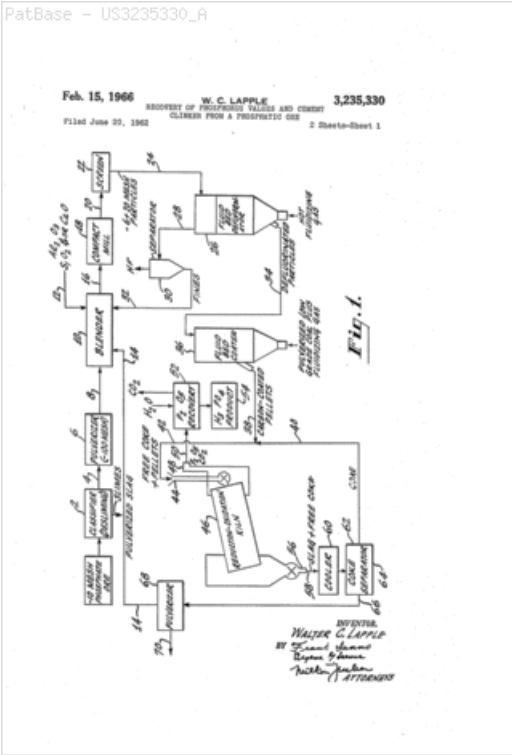
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Title: RECOVERY OF PHOSPHORUS VALUES AND CEMENT CLINKER FROM A PHOSPHATIC ORE

Abstract: (Claim 1) 2. Process of claim 1 wherein said feed is heated to about 1250° C.

Classifications:

International (IPC 8-9): C01B25/027 C01B25/12
C04B7/36 (Advanced/Invention);
C01B25/00 C04B7/00 (Core/Invention)
International (IPC 1-7): C01B25/20 C04B7/24
CPC: C01B25/027 C01B25/12 C04B7/36
European: C01B25/027 C01B25/12 C04B7/36
US: 423/157.5 423/304 423/322 423/331



Family:

Publication number	Publication date	Application number	Application date
US3235330 A	19660215	US19620203784	19620620

Priority:

US19620203784 19620620

Probable Assignee:

FMC CORP

Assignee(s): (std):

FMC CORP

Inventor(s): (std):

LAPPLE WALTER C

12) Family number: 21489550 (US2075212A)

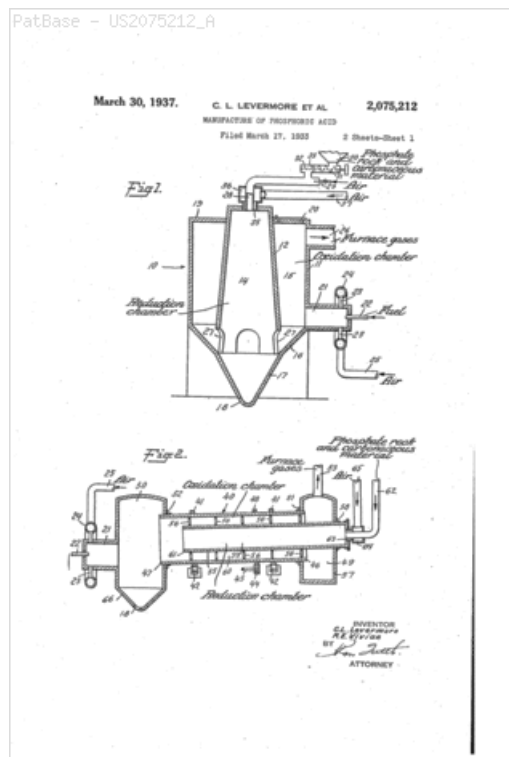
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Title: MANUFACTURE OF PHOSPHORIC ACID

Abstract: 1. The method of producing phosphoric acid which comprises introducing finely divided phosphate rock and an excess carbonaceous reducing material in suspension in air into a reduction zone reducing the phosphate at elevated temperatures to phosphorous. While passing the re is- X_2 , 75 ~ ~ A , ' acting materials co-current through the reduction zone, regulating the amount of air fed into the zone to afford oxygen sufficient to oxidize the excess of reducing material to carbon monoxide thereby supplying heat to the reducing reaction, separating gases containing phosphorus and carbon monoxide from non-gaseous residue of the reduction reaction, introducing into an oxidizing zone phosphorus, carbon monoxide and preheated air to support oxidation thereof together with sufficient extraneous heat to maintain reaction temperatures, oxidizing the phosphorus and carbon monoxide to phosphorous peroxide and carbon dioxide while in heat transfer relation with the reduction zone, thereby utilizing the heat generated by the oxidation reaction to fumer the reduction reaction, and recovering phosphoric acid

Classifications:

International (IPC 8-9): C01B25/12 C01B25/20 (Advanced/Invention);
C01B25/00 (Core/Invention)
International (IPC 1-7): C01B25/20
CPC: C01B25/20 C01B25/12 Y02P20/129
European: C01B25/12 C01B25/20
US: 422/189 422/605 423/304 423/317 423/323

**Family:**

Publication number	Publication date	Application number	Application date
■ US2075212 A	19370330	US19330661266	19330317

Priority:

US19330661266 19330317

Probable Assignee: GEN CHEMICAL CORP**Assignee(s):** (std): GEN CHEMICAL CORP**Assignee(s):** GENERAL CHEMICAL CO ; GENERAL CHEMICAL COMPANY**Inventor(s):** (std): VIVIAN ROBERT E ; LEVERMORE CHARLES L**13) Family number: 3882627** (US4420466A)

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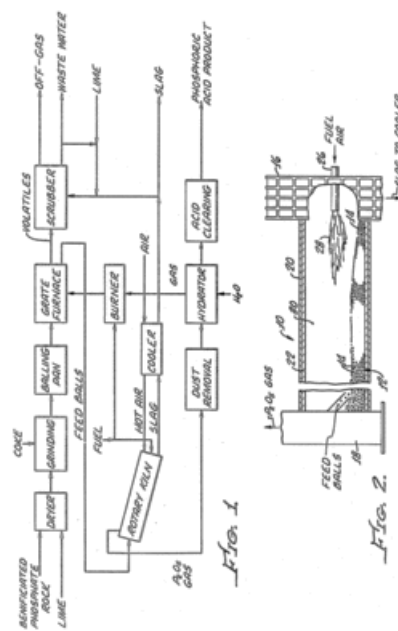
Title: Process for producing phosphorus pentoxide

Abstract: A process for producing phosphorus pentoxide from phosphate ore includes the mixing and formulation of a feed mixture of phosphate ore with lime and solid carbonaceous material in amounts to produce a feed mixture having a CaO/SiO_2 mole ratio greater than about 8.0. This mixture is formed into pellets which are then exposed to radiation emanating from an oxidation zone, preferably within a rotary type kiln, in order to heat the pellets to a temperature sufficient to reduce the phosphate by reaction with the solid carbonaceous material to form elemental phosphorus vapor without substantial melting of the pellets. Sufficient oxygen-containing gas is provided to cause oxidation of the elemental phosphorus vapor within the oxidation zone to produce phosphorus pentoxide.

Classifications:**International (IPC 8-9):** C01B25/12 (Advanced/Invention);

C01B25/00 (Core/Invention)

International (IPC 1-7): C01B25/01 C01B25/02 C01B25/12 C01B25/16**CPC:** C01B25/12**European:** C01B25/12**US:** 423/157.2 423/167 423/304 423/318 423/322 423/323

**Family:**

Publication number	Publication date	Application number	Application date
US4420466 A	19831213	US19820376341	19820510

Priority:

US19820376341 19820510

Probable Assignee:

OCCIDENTAL RES CORP

Assignee(s): (std):

OCCIDENTAL RES CORP

Assignee(s):

OCCIDENTAL RESEARCH CORP

Inventor(s): (std):

MU JACOB J ; PARK WON C

14) Family number: 30651795 (US2004109809A)

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Title: METHOD OF FORMING PHOSPHORIC ACID FROM PHOSPHATE ORE

Abstract: The process disclosed herein involves the high temperature processing of phosphate ore in a solid state using a ported rotary kiln. Prior to insertion into the kiln, the ore is pulverized and beneficiated to remove excessive quantities of unwanted materials such as clay, silica, iron, sodium, potassium, and alumina. The calcium oxide to silica ratio of the beneficiated is then adjusted to within a specific acceptable range, a carbon source containing sulfur such as petroleum coke is added and the resulting feed material is pelletized using a binding agent if necessary. The pelletized feed material is then dried, preheated, and fed into a ported rotary kiln. At the elevated temperature maintained in the reducing kiln, tricalcium phosphate undergoes a reduction reaction to produce phosphorus gas and carbon monoxide. Atmospheric air is injected into the rotating kiln chamber, which facilitates the oxidation of phosphorus gas to phosphorus pentoxide and the oxidation of carbon monoxide to carbon dioxide. The reducing kiln exhaust gas stream containing the phosphorus pentoxide and carbon dioxide gas components is processed in an absorption column in which the phosphorus pentoxide is hydrolyzed by water to phosphoric acid. The phosphoric acid is then recovered and concentrated to a commercial grade strength. The slag residue serves as a raw material for cement manufacture.

Classifications:**International (IPC 8-9):** C01B25/12 C01B25/18 C01B25/20

C08F2/00 (Advanced/Invention);

C01B25/00 C08F2/00 (Core/Invention)

International (IPC 1-7): C01B25/16 C01B25/18 C08F**CPC:** C01B25/12 C01B25/20**European:** C01B25/12 C01B25/20**US:** 423/318

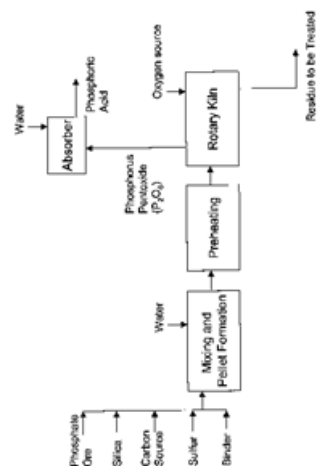


FIG. 1

Family:

Publication number	Publication date	Application number	Application date
AU2003298858 AA	20040630	AU20030298858	20031204
AU2003298858 AH	20040630	AU20030298858	20031204
CN1747893 A	20060315	CN200380109639	20031204
US2004109809 AA	20040610	US20020315842	20021210
US2005002845 AA	20050106	US20040894297	20040719
WO04052938 A2	20040624	WO2003US38493	20031204
WO04052938 A3	20050113	WO2003US38493	20031204

Priority:

US20020315842 20021210 WO2003US38493 20031204 US20040894297 20040719

Probable Assignee: CAROLINA PROCESS ASSOCIATES INC

Assignee(s): (std): CAROLINA PROCESS ASSOCIATES ; CAROLINA PROCESS ASSOCIATES IN ; HOKANSON ALLAN E ; WILLIAMS CHRISTOPHER S ; WILLIAMS DEREK

Assignee(s): CAROLINA PROCESS ASSOCIATES INC

Inventor(s): (std): ALLAN WILLIAMS DEREK WILLIAMS ; HOKANSON ALLAN ; WILLIAMS CHRISTOPHER ; WILLIAMS DEREK ; WILLIAMS CHRISTOPHER S ; HOKANSON ALLAN E

Inventor(s): ALLAN HOKANSON ; WILLIAMS DEREK WILLIAMS CHRISTOPHER HOKANSON ALLAN ; CHRISTOPHER WILLIAMS ; DEREK WILLIAMS

Agent(s): COATS AND BENNETT PLLC

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SN SY SZ TD TG TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW

15) Family number: 32482880 (US2007253882A)

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Title: PHOSPHOROUS PENTOXIDE PRODUCING METHODS

Abstract: A phosphorous pentoxide producing method includes forming a kiln bed using feed agglomerates with a calcium-to-silica mole ratio of less than 1.0 and maintaining a bed temperature at or above 1180 degrees centigrade along at least 50 percent of the bed length without exceeding 1380 degrees centigrade along the entire bed length. Less than 10 percent of the agglomerates' phosphate input to the kiln remains in the kiln residue as phosphate. Another method includes maintaining a bed temperature at or above 1180 degrees centigrade along a portion of the bed length and establishing a bed surface-to-volume ratio multiplied by a time for bed heat up to 1180 degrees centigrade of less than 50 minutes-ft²/ft³.

Classifications:

International (IPC 8-9): C01B21/00 C01B25/12 C01B25/18 C01B25/20

C05B17/00 (Advanced/Invention);

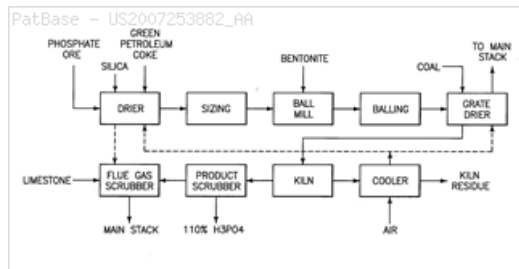
C01B21/00 C01B25/00 C05B17/00 (Core/Invention)

International (IPC 1-7): C01B21/00

CPC: C01B25/12 C05B17/00

European: C01B25/12 C05B17/00

US: 423/157.2 423/304 423/304S 423/317 71/33 71/33P



Family:

Publication number	Publication date	Application number	Application date
US2007253882 AA	20071101	US20070818115	20070613
US2008219909 AA	20080911	US20080125751	20080522
US2008289385 AA	20081127	US20080186413	20080805
US7378070 BB	20080527	US20070818115	20070613
US7910080 BB	20110322	US20080186413	20080805
WO05118468 A2	20051215	WO2005US19598	20050603
WO05118468 A3	20070405	WO2005US19598	20050603

Priority:

US20040577286P 20040604	US20050648360P 20050128	US20050145564 20050603
US20060330034 20060111	US20070818115 20070613	US20080125751 20080522
US20080186413 20080805		

Probable Assignee: JDCPHOSPHATE INC

Assignee(s): (std): JDCPHOSPHATE INC ; MEGY JOSEPH A

Assignee(s): JDC INC ; AGRIFOS PARTNERS LLC ; AVENIRA HOLDINGS LLC ; AVENIRA LTD ; EDELSTEIN AARON ; EDELSTEIN CRAIG ; FLORIDA OPPORTUNITY FUND INC ; FOWLER THEODORE P ; FUNDO DE CAPITAL DE RISCO ESPIRITO ; HANDMAN LAWRENCE ; HARTUNG RONALD F ; ISSUES OVER LLC ; MEGY DEVIN ; MEGY JEFF ; MEGY JOSEPH ; MEGY SEAN ; MINEMAKERS LTD ; LOCKE LORD LLP ; MITSUI AND CO USA INC ; RED CHURCH LLC ; VULCAN PHOSPHATES LLC ; THETIS INVESTMENTS LLC

Inventor(s): (std): MEGY JOSEPH A

Inventor(s): MEGY JOSEPH

Agent(s): WELLS ST JOHN PS; JAMES E

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

16) Family number: 61996900 (US2016090305A)

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Title: PHOSPHOROUS PENTOXIDE PRODUCING METHODS AND SYSTEMS WITH INCREASED AGGLOMERATE COMPRESSION STRENGTH

Abstract: A phosphorous pentoxide producing method includes forming pre-feed agglomerates containing phosphate ore particles, carbonaceous material particles, and silica particles and heating the pre-feed agglomerates in a reducing or inert atmosphere to an induration temperature from above 900 C to less than 1180 C and maintaining the induration temperature for 15 minutes or more. The method includes forming feed agglomerates and increasing a compression strength of the feed agglomerates to above 25 lbf using the heating, the feed agglomerates exhibiting a calcium-to-silica mole ratio less than 1 and a silica-to-(calcium+magnesium) mole ratio greater than 2. A reducing kiln bed is formed using the feed agglomerates, kiln off-gas is generated, and phosphorous pentoxide is collected from the kiln off gas.

Classifications:

International (IPC 8-9): C01B C01B25/12 (Advanced/Invention);

C01B (Subclass/Invention)

CPC: C01B25/12

US: 423/304

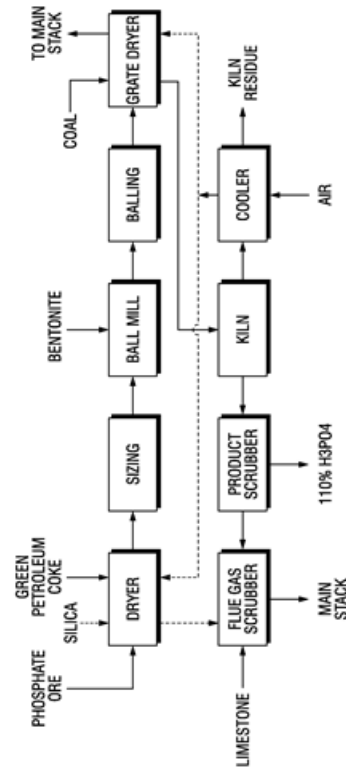


FIG. 1

Family:

Publication number	Publication date	Application number	Application date
AU2015320315 AA	20170511	AU20150320315	20150925
BR112017006127 A2	20180417	BR20171106127	20150925
CN107108211 A	20170829	CN201580062054	20150925
CN107108211 B	20190503	CN201580062054	20150925
CO20170004014 A2	20170911	CO20170004014	20170425
EA201790712 A1	20170831	EA20170090712	20150925
EP3197828 A2	20170802	EP20150784986	20150925
IL251252 A0	20170529	IL20150251252	20150925
IN201747014393 A	20170505	IN201747014393	20170424
JP2017530083 T2	20171012	JP20170516518T	20150925
KR20170074889 A	20170630	KR20177011288	20150925
MX2017003880 A1	20171012	MX20170003880	20150925
PE07472017 A1	20170704	PE20170000513	20150925
TN2017000101 A1	20180704	TN20170000101	20150925
US2016090305 AA	20160331	US20150864731	20150924
US9783419 BB	20171010	US20150864731	20150924
WO16049554 A2	20160331	WO2015US52402	20150925
WO16049554 A3	20160506	WO2015US52402	20150925
ZA201702782 A	20180425	ZA20170002782	20170420

Priority:

US20140056254P 20140926 US20140085778P 20141201 US20150864731 20150924
 WO2015US52402 20150925

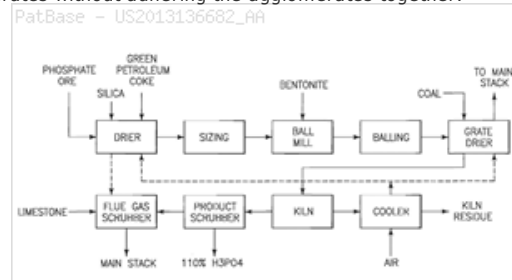
Probable Assignee: JDCPHOSPHATE INC**Assignee(s):** (std): JDCPHOSPHATE INC**Assignee(s):** THETIS INVESTMENTS LLC ; AGRIFOS PARTNERS LLC ; AVENIRA HOLDINGS LLC ; AVENIRA LTD ; JDCPHOSPHA TE INC**Inventor(s):** (std): PACHPOR SOURABH A ; VIGNOVIC MARK ; HANDMAN LAWRENCE M ; BLAKE DAVID B ; FOWLER THEODORE P ; MEGY JOSEPH A ; TRAINHAM JAMES A ; BLAKR DAVID B ; VICNOVIC MARK ; DAVID B BLAKE ; SOURABH A PACHPOR ; LAWRENCE M HANDMAN ; THEODORE P FOWLER ; JAMES A TRAINHAM ; MARK VIGNOVIC ; JOSEPH A MEGY ; JOSEPH A MEGY FALECIDO**Inventor(s):** MEGY JOSEPH A DECEASED**Agent(s):** DAVIES COLLISON CAVE PTY LTD; CAROLINA MERCEDES DAZA MONTALVO; WARD DAVID IAN; PARSONS BEHLE AND LATIMER; LAKE JAMES ET AL**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM

17) Family number: 53856978 (US2013136682A)

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Title: PHOSPHOROUS PENTOXIDE PRODUCING METHODS AND PHOSPHATE ORE FEED AGGLOMERATES

Abstract: A phosphorous pentoxide producing method includes forming a reducing kiln bed using feed agglomerates containing a lignin sulfonate both inside the agglomerates and coating a surface of individual agglomerates. Freeboard particulates are generated from the agglomerates, an amount of particulates generated being less than would occur in the method with no lignin sulfonate. Kiln off gas is generated and phosphorous pentoxide is collected from the kiln off gas. The kiln discharges a residue containing processed agglomerates, less than 20 percent of the agglomerates' phosphate input to the kiln remaining in the residue. The percentage of input phosphate that remains in the residue is less than would occur in the method with no lignin sulfonate. The method may include forming green agglomerates. Controlling a drying rate of the green agglomerates may wick some of the lignin sulfonate onto the surface of individual drying agglomerates without adhering the agglomerates together.

Classifications:**International (IPC 8-9):** B05D7/00 C01B25/12 (Advanced/Invention)**CPC:** C01B25/12**US:** 423/304 427/220**Family:**

Publication number	Publication date	Application number	Application date
AR089009 AA	20140723	AR2012P104462	20121128
US2013136682 AA	20130530	US20110306890	20111129
US8734749 BB	20140527	US20110306890	20111129
WO13081999 A1	20130606	WO2012US66597	20121127

Priority:

US20110306890 20111129

Probable Assignee: JDCPHOSPHATE INC**Assignee(s):** (std): JDCPHOSPHATE INC ; MEGY JOSEPH A ; MEGY JOSPEH A

Assignee(s): MEGY DEVIN ; MEGY JEFF ; MEGY JOSEPH ; MEGY SEAN ; MINEMAKERS LTD ; MITSUI AND CO USA INC ; RED CHURCH LLC ; VULCAN PHOSPHATES LLC ; THETIS INVESTMENTS LLC ; LOCKE LORD LLP ; EDELSTEIN CRAIG ; FLORIDA OPPORTUNITY FUND INC ; FOWLER THEODORE P ; FUNDO DE CAPITAL DE RISCO ESPIRITO ; HANDMAN LAWRENCE ; HARTUNG RONALD F ; ISSUES OVER LLC ; AGRIFOS PARTNERS LLC ; AVENIRA HOLDINGS LLC ; AVENIRA LTD ; EDELSTEIN AARON

Inventor(s): (std): MEGY JOSEPH A ; MEGY JOSPEH A**Agent(s):** PARSONS BEHLE AND LATIMER; LAKE JAMES E ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW