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(71) Applicant: SASOL (USA) CORPORATION [US/US];

12120 Wickchester Lane, Houston, TX 77079 (US).

(72) Inventors: RABAIOLI, Maria, Roberta; 2201 Old Span-

ish Trail, Westlake, LA 70669 (US). CHAUDHARY,

Umesh; 2201 Old Spanish Trail, Westlake, LA 70669 (US).

(74) Agent: WERNER, Erin, J.; Bushman Werner, P.C., 1800

Augusta Drive, Suite 220, Houston, TX 77057 (US).

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Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(54) Title: SILICA ALUMINA COMPOSITION WITH IMPROVED STABILITY AND METHOD FOR MAKING SAME

(57) Abstract: The invention relates to a novel method of making a silica alumina including the use of two silica sources, the first silica source differing chemically from the second silica source, to a silica alumina made according to the method of the invention and to a silica alumina having improved characteristics.



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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2019/062408

A. CLASSIFICATION OF SUBJECT MATTER

INV. B01J21/12 B01J35/10 B01J35/00 B01J37/02 B01J37/03
B01J37/08

ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B01J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EP0-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2013/011678 A1 (TE MURE [US] ET AL) 10 January 2013 (2013-01-10) example 1	1-14
Y	US 2009/098032 A1 (YANG XIAOLIN [US] ET AL) 16 April 2009 (2009-04-16) example 1	1-14
Y	US 2006/096891 A1 (STAMIRENS DENNIS [US] ET AL) 11 May 2006 (2006-05-11) paragraph [0141]	1-14
A	DE 33 18 088 A1 (DAINIPPON INK & CHEMICALS [JP]) 24 November 1983 (1983-11-24) example 3	1-14



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

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Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Zieba, Roman

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2019/062408

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of Item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-14

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-14

A method of making a silica alumina product outlined in claim 1, and the silica alumina product produced by the method.

2. claim: 15

Various silica alumina products, in particular silica alumina products including any of the characteristics i) to iv), or any combination of two of characteristics i) to iv) (6 products) and a product including all characteristics i) to iv).

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2019/062408

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2013011678 A1	10-01-2013	CN 103608290 A EP 2726415 A2 JP 5786093 B2 JP 2014520064 A US 2013011678 A1 WO 2013003623 A2	26-02-2014 07-05-2014 30-09-2015 21-08-2014 10-01-2013 03-01-2013
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