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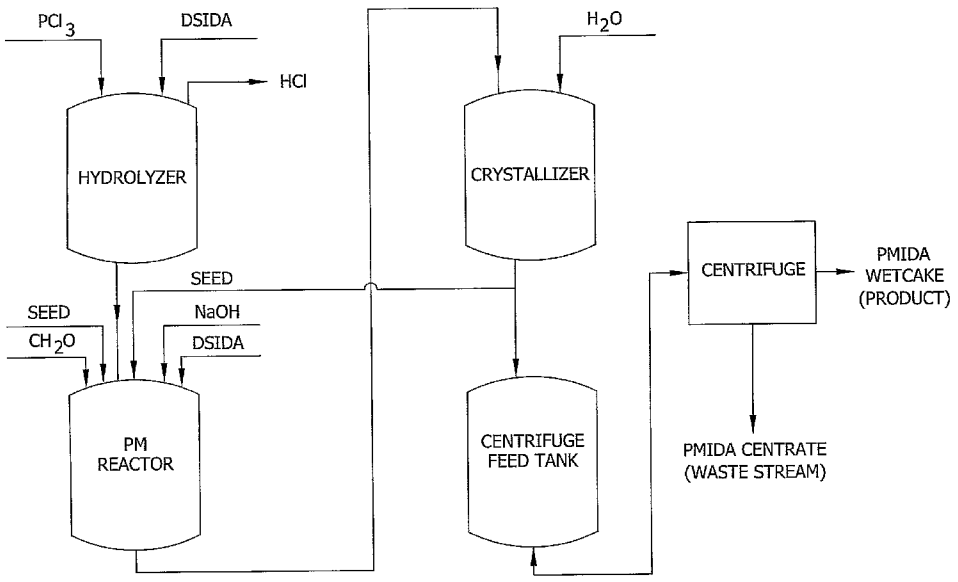
31 May 2007

[Continued on next page]

(54) Title: ALTERING THE CRYSTAL SIZE DISTRIBUTION OF N-(PHOSPHONOMETHYL) IMINODIACETIC ACID FOR IMPROVED FILTRATION AND PRODUCT QUALITY



(57) Abstract: Improved processes for preparing and crystallizing N-(phosphonomethyl)iminodiacetic acid are provided. The processes include adding N-(phosphonomethyl)iminodiacetic acid seed crystals to N-(phosphonomethyl)iminodiacetic acid reaction solutions. Provided are beds of crystallized N-(phosphonomethyl)iminodiacetic acid having improved permeability and filtration rate and reduced impurities.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/015765

A. CLASSIFICATION OF SUBJECT MATTER
INV. C07F9/38

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)
C07F

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 practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 199 14 375 A1 (SKW TROSTBERG AG) 5 October 2000 (2000-10-05) example 1	1-16
A	DE 197 07 994 A1 (SUED-CHEMIE AG, 80333 MUENCHEN, DE) 3 September 1998 (1998-09-03) example 1	1-16
A	EP 0 425 131 A (W.R. GRACE & CO.-CONN. ; HAMPSHIRE CHEMICAL CORPORATION) 2 May 1991 (1991-05-02) claims 1,4-7,10,30,31	1-16
X	WO 00/14093 A (HAMPSHIRE CHEMICAL CORP [US]; CULLEN BARRY A [US]) 16 March 2000 (2000-03-16) claims 1,4,6; example 1	17-81

☐ 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 document 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	Date of mailing of the international search report
7 February 2007	16/03/2007

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2006/015765

Box 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 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 fee, this Authority did not invite payment of any additional fee.

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.:

1-81

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.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☒ 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: 1-16

Method for crystallization of PMIDA according to independent claim 1

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2. claims: 17-81

Method for crystallization of PMIDA according to independent claim 17 and the use of this product in the preparation of N-(phosphonomethyl)glycine

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3. claims: 84,85

Method for crystallization of PMIDA according to independent claim 84

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4. claims: 86-89

A bed of PMIDA crystals according to independent claim 86

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5. claim: 90

Crystallization method

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2006/015765

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