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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.

(54) Title: CHABAZITE-TYPE MOLECULAR SIEVE, ITS SYNTHESIS AND ITS USE IN THE CONVERSION OF OXYGENATES TO OLEFINS

(57) Abstract: The synthesis of a crystalline material, in particular a high silica zeolite, having a chabazite-type framework is aided by the addition to the synthesis mixture of seeds of an AEI framework-type material. The chabazite-type product has a relatively small crystal size and exhibits activity and selectivity in the conversion of methanol to lower olefins, especially ethylene and propylene.



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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/042737

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C01B39/00 C01B39/02 C01B39/48 B01J29/00

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)

IPC 7 C01B 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 practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DIAZ-CABANAS M-J ET AL: "Synthesis and structure of pure SiO ₂ chabazite: the SiO ₂ polymorph with the lowest framework density" CHEMICAL COMMUNICATIONS - CHEMCOM, ROYAL SOCIETY OF CHEMISTRY, GB, no. 17, 1998, pages 1881-1882, XP002210781 ISSN: 1359-7345 the whole document	1-21,24
X	WO 00/06493 A (EXXON CHEMICAL PATENTS, INC; EXXON CHEMICAL LIMITED; VAN DEN BERGE, JA) 10 February 2000 (2000-02-10) claims 14,15 ----- -/--	1-21,24



Further documents are listed in the continuation of box C.



Patent family members are listed in 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.
- *G* document member of the same patent family

Date of the actual completion of the international search

8 September 2005

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/042737

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 03/078324 A (EXXONMOBIL CHEMICAL PATENTS INC; STROHMAIER, KARL, G; REYES, SEBASTIAN) 25 September 2003 (2003-09-25) paragraph '0042! paragraph '0043! claim 1 claims 6,7,14 claims 17,18 claim 19 & US 2003/176751 A1 (STROHMAIER KARL G ET AL) 18 September 2003 (2003-09-18) the whole document & EP 1 485 323 A (EXXONMOBIL CHEMICAL PATENTS INC) 15 December 2004 (2004-12-15) -----	25
X	US 2003/069449 A1 (ZONES STACEY I ET AL) 10 April 2003 (2003-04-10) paragraph '0004! claims 1,4 -----	25

INTERNATIONAL SEARCH REPORT

national application No.
PCT/US2004/042737

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.:
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. claim: 1

Claim 1 is directed to a method of synthesizing a crystalline material having a CHA framework-type comprising the use of seeds of a crystalline material comprising an AEI framework-type

2. claims: 2-24

Claim 2 is directed to a method of synthesizing a crystalline material having a CHA framework-type comprising the use of seeds of a crystalline material comprising a framework-type other than CHA, the said material having a calcined and anhydrous formula: $n \text{ X2O3} : \text{YO2}$ wherein n is from 0 to less than 0.01

3. claim: 25

Claim 25 is directed to a crystalline material having a CHA framework-type and particles having an average diameter less than 4 micron

4. claim: 26

claim 26 is directed to a crystalline material having a CHA framework-type and twinned particles
