PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 :
B01J 29/06, 27/16, C10G 11/05, 11/18

A1

(11) International Publication Number: **WO 99/46043**

(43) International Publication Date: 16 September 1999 (16.09.99)

(21) International Application Number: PCT/US99/05059

(22) International Filing Date: 9 March 1999 (09.03.99)

(30) Priority Data:
09/038,649 11 March 1998 (11.03.98) US

(71) Applicant: EXXON CHEMICAL PATENTS INC. [US/US]; 5200 Bayway Drive, Baytown, TX 77520–5200 (US).

(72) Inventors: CAO, Guang; 528 Woodside Lane, Branchburg, NJ 08876 (US). MARTENS, Luc, R., M.; Prinsenbeemdlaan 3, B–1860 Meise (BE). WHITE, Jeffrey, L.; 5211 Spring Pine Court, Kingwood, TX 77345 (US). CHEN, Tan–Jen; 5615 Lofty Magnolia Court, Kingwood, TX 77345 (US). SHAH, Matu, J.; 13 Harding Place, Livingston, NJ 07039–1803 (US).

(74) Agents: ZBORAY, James, A. et al.; Exxon Chemical Company, P.O. Box 2149, Baytown, TX 77522–2149 (US).

(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published
With international search report.
Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: ZEOLITE CATALYST ACTIVITY ENHANCEMENT BY ALUMINUM PHOSPHATE AND PHOSPHORUS

(57) Abstract

The present invention provides a process for improving the catalytic activity of small and medium pore acidic zeolite catalyst which comprises the steps of treating a zeolite with a phosphorus compound to form a phosphorus treated zeolite and combining the phosphorus treated zeolite with $AlPO_4$. Optionally the phosphorus treated zeolite is calcined. The step of combining the zeolite with $AlPO_4$ may optionally be followed by steaming the combined catalyst. Examples of useful phosphorus containing compounds useful in treating the zeolite include phosphoric acid, ammonium mono or dihydrogen phosphate, organic phosphites, and organophosphines. Preferably the phosphorus containing compound is an ammonium acid phosphate. An additional alternate embodiment provides a process for increasing the hydrothermal stability of a zeolite catalyst which comprises first treating a zeolite with a phosphorus containing compound then blending with $AlPO_4$. The catalyst of the invention may be combined with other catalysts or used alone. The invention may be used in a process for cracking hydrocarbons which comprises contacting a hydrocarbon feedstock with a catalyst prepared as described above.