

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
15 June 2006 (15.06.2006)

PCT

(10) International Publication Number
WO 2006/062558 A1

(51) International Patent Classification:

C07C 51/56 (2006.01) *C07C 69/14* (2006.01)
C07C 53/12 (2006.01) *C07C 45/89* (2006.01)
C07C 67/08 (2006.01) *C07C 49/90* (2006.01)

(21) International Application Number:

PCT/US2005/029031

(22) International Filing Date: 11 August 2005 (11.08.2005)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

10/920,688 18 August 2004 (18.08.2004) US

(71) Applicant (for all designated States except US):
CELANESE INTERNATIONAL CORPORATION
[US/US]; 1601 West LBJ Freeway, Dallas, TX 75234
(US).

(72) Inventor: **WARNER, R., Jay**; 3507 East Pine Brook Way,
Houston, TX 77059 (US).

(74) Agents: **SPIERING, M., Susan** et al.; c/o Celanese Ltd.,
IP Legal Dept., IZIP 701, P.O. Box 428, Highway 77 South,
Bishop, TX 78343 (US).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA,
MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ,
OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL,
SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC,
VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT,
RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a
patent (Rule 4.17(ii))

Published:

— with international search report

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

(54) Title: ACETATE ANHYDRIDE AND ACETATE ESTER CO-PRODUCTION

(57) Abstract: A method of co-producing acetic anhydride and an acetate ester includes pyrolyzing acetic acid at elevated temper-
ature to produce a first ketene stream, the first ketene stream being a vapor phase stream comprising ketene, acetic acid and water;
cooling the first ketene stream to condense acetic acid and water therefrom, thereby generating (i) a weak acid aqueous stream and
(ii) a ketene feed stream; feeding the ketene feed stream to an acetic anhydride reactor where the ketene is reacted with acetic acid
to produce acetic anhydride; concurrently with step (c), feeding the weak acid aqueous stream to an esterification reactor wherein
acetic acid in the weak acid stream is reacted with an organic alcohol to produce an acetate ester. Preferably, the organic alcohol is
selected from organic alcohols which (i) form acetate esters which esters and optionally alcohols provide azeotropic mixtures with
water and (ii) wherein the azeotropic mixtures have a water content greater than the amount of water generated by reaction of the
alcohol with acetic acid to facilitate azeotropically separating the acetate ester from the reaction mixture.



WO 2006/062558 A1