

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
11 February 2021 (11.02.2021)



(10) International Publication Number
WO 2021/026159 A1

(51) International Patent Classification:
C07C 67/54 (2006.01) C07C 69/15 (2006.01)

TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

(21) International Application Number:
PCT/US2020/044893

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))

(22) International Filing Date:
04 August 2020 (04.08.2020)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/882,911 05 August 2019 (05.08.2019) US

(71) Applicant: **LYONDELLBASELL ACETYL, LLC**
[US/US]; 1221 McKinney Street, Suite 300, Houston, TX
77010 (US).

(72) Inventors: **FANG, Linn**; c/o LyondellBasell IP Legal
Dept., 1221 McKinney Street, Suite 300, Houston, TX
77010 (US). **NGUYEN, Chuc, T.**; c/o LyondellBasell IP
Legal Dept., 1221 McKinney Street, Suite 300, Houston,
TX 77010 (US).

(74) Agent: **STREETER, Leslie** et al.; LyondellBasell, 1221
McKinney Street, Suite 300, Houston, TX 77010 (US).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN,
KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD,
ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO,
NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW,
SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,

(54) Title: ETHYL ACETATE REMOVAL DURING VAM PRODUCTION

(57) Abstract: Purification methods and systems for working up a crude vinyl acetate stream containing vinyl acetate monomer, acetic acid, water, ethyl acetate, and other impurities. Crude vinyl acetate streams are purified with an azeotropic distillation tower using a side draw to remove ethyl acetate and water, and a bottom stream to remove acetic acid from the crude vinyl acetate. The methods and systems move the side draw to a location on the azeotropic distillation tower that maintains a constant water concentration in the bottom product of about 4 to about 15 wt. % and forms a vapor side product. A second distillation tower is used to further purify the vapor side product to obtain water, VAM, ethyl acetate and AA. The system provides easier disposal of ethyl acetate, and cleaner water that can be recycled in the reactor or purification sections of a VAM plant and full recovery of AA.



WO 2021/026159 A1